

The Effect of Education Expenditure as a Moderating Variable on Factor Influence HDI (Study on Distircts/Cities in the provinces of Java-Bali in 2018-2020)

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Abstract: This research aims to examine the significant impact of owned local government revenue, general allocation funds, special allocation funds, and the average length of schooling on human development index with education expenditure as a moderating variable. Purposive sampling is utilized with a sample of 356 districts/cities around Java and Bali. This study uses secondary data from the realization of the provincial government's revenue and expenditure budget. Moderated Regression Analysis is use for analytical method. The study result shows that Owned Local Government Revenue, General Allocation Funds, Average Years of Schooling have a significant positive effect on the Human Development Index. Meanwhile, the Special Allocation Fund has a significant negative effect on the Human Development Index. In addition, Education Expenditure also acts as a quasi moderator so that it can moderate PAD on HDI, however Education Function Expenditure cannot moderate DAU, DAK, RLS on HDI because it acts as a moderator predictor here. Simultaneous testing shows that the variables used have a significant effect on HDI.

Keywords: Owned Local Government Revenue, General Allocation Fund, Special Allocation Fund, Average Years Schooling, Human Development Index, Education Expenditures.

1. Introduction

A nation needs a plan to promote sustainable growth. The regional autonomy policy, as outlined in Law No. 22 of 1999 Governing Regional Government, has started to be implemented in Indonesia. The regional autonomy policy has the consequence that the regions are in charge of balancing the interests of their separate regional governments with the demands of the community. In order to meet these needs, the government administers and makes use of regional income for things like economic, social, and community education needs that can promote the welfare of the community.

The Human Development Index (HDI) is a critical tool for assessing progress in raising the standard of living for people in a community or nation, and it can rank or rank the level of development in an area or nation. This shows that HDI is used to evaluate how well a region has performed in terms of human development through the delivery of high-quality public services. In this situation, having a high degree of social welfare entails having good public services, which will raise the Human Development Index.

To get good results from HDI, namely success in terms of education. The Government of the Republic of Indonesia has basically issued Law No. National Education System.20 of 2003. In this law, the government explains that national education functions to develop capabilities and shape dignified national character and civilization in the context of educating the nation's life. The government also emphasizes that all Indonesian citizens have the right to education, that the government is obligated to finance basic education free of charge, and that the government is mandated to allocate a minimum of 20% of its state budget for education. With this budget, it is hoped that it will improve the education system in Indonesia.

2. Literature Review and Hypothesis

2.1 Budgeting Theory

Budgeting within the context of the public sector is a process of allocating resources for limitless requirements. The budget includes projections for what the organization will do in the future. According to Mardiasmo (2002:62) Each budget outlines the actions that will be taken during the coming few periods. The regional budget, sometimes referred to as the Regional Income and Expenditure Budget (APBD), is a financial plan that serves as a direction for the provision of public services by the Regional Government. The APBD must include a budget for all regional government receipts and outlays for the fiscal year, whether they take the form of cash, products, or services.

2.2 Human Development Index

The Human Development Index is an important indicator for measuring success in building the quality of human life (in a community or population), and the HDI can determine the rank or level of development of a region or country. This indicates that HDI is used to assess the success of human development performance in an area through the provision of good public services. In this context, the provision of good public services means having a high level of social welfare, which in turn will increase the Human Development Index (Mutiha, 2018).

Essentially, the HDI measures three major dimensions of human development that are thought to reflect the population's ability status, namely:

- 1) A long and healthy life, which measures the chances of living,
- 2) Knowledgeable and skilled
- 3) Access to the resources needed to achieve a decent standard of living

2.3 Owned Local Government Revenue and Human Development Index

Based on Law No. 33 of 2004, PAD is owned local government revenue, which is collected based on regional regulations in accordance with statutory regulations. Owned Local Government Revenue is an important source of income for a region in fulfilling its expenditure. The goal is to give freedom to regional governments to finance the implementation of regional autonomy based on their regional potential. PAD is used to improve services to the community, which can be in the form of building education, health, and other infrastructure that can support the Human Development Index (HDI). Mutiha, (2018), and Sembiring, (2019), in their research, showed results that had a positive significance value. Meanwhile, in the research by Williantara&Budiasih (2016), PAD has no effect on HDI.

H1: Owned Local Government Revenue has an effect on the Human Development Index

2.4 General Allocation Fund and Human Development Index

The General Allocation Fund (DAU) is a fund sourced from the State Revenue and Expenditure Budget (APBN), which is allocated with the aim of equal distribution of financial capacity among regions to fund regional needs in the context of decentralization. Article 34 states that the government formulates and calculates the DAU by taking into account the considerations of the council in charge of providing suggestions and considerations for regional autonomy policies. DAU is allocated to provincial and regency/municipal areas. Because of this, DAU is a dominant source of funds and can improve services to the community by taking into account regional potential, area size, geographical conditions, population, and income level. Raviyanti, Mahardika, Krishna et al. (2017), and Wulandari, Rani, and Utpalal (2018) found that DAU has a positive effect on HDI. Whereas in the research of Sarkoro&Zulfikar (2016) and Mutiha (2018), DAU has a negative effect on HDI.

H2: The General Allocation Fund has an effect on the Human Development Index

2.5 Special Allocation Fund and Human Development Index

Special Allocation Funds (DAK) are funds originating from the APBN that are allocated to regions to finance special needs that are regional affairs and in accordance with national priorities while taking into account the availability of funds in the APBN. For this reason, in order for DAK to run optimally, the government is directing the allocation of funds to development investment activities and infrastructure facilities. Williantara&Budiasih (2016) showed in their research that the DAK/BM ratio had a negative and significant effect on HDI. If the greater the DAK finances Capital Expenditure, the HDI achievement is considered low, conversely the smaller the DAK finances Capital Expenditure, the HDI achievement is considered high. In Wulandari, Rani, Utpalal's research (2018) DAK also explained that DAK had an effect on HDI. Meanwhile, DAK, according to Mutiha's research (2018), has a negative effect on HDI.

H3: Special Allocation Funds affect the Human Development Index

2.6 Average Level of Schooling and Human Development Index

The high average number of years of schooling (mean years of schooling) indicates the level of education a person has or is currently occupying. The higher the MYS number, the longer or higher the level of education completed. so that the quality of human resources can be increased. Mahya's (2021) research shows that the expected years of schooling, average years of schooling, and spending per capita have a simultaneous effect on the human development index. The average length of schooling has an effect on HDI in Ozyigit's research (2021) and has a positive effect on ThiThanhBinhDau's research (2019).

H4: Average Years of Schooling has an effect on the Human Development Index

2.7 Spending on the Education Function moderates the effect of Original Local Government Revenue (PAD) on the Human Development Index (HDI)

In order to assist regional governments in enacting regional autonomy, PAD is a crucial source of funding. The installation of public services, including one in the area of education, is typically done using PAD. One of the public services that local governments must provide is in the area of education. The budgetary flexibility of each of these areas unquestionably shows that the regional original revenue (PAD) attained by the regions can pay for capital expenditures, including capital expenditures in the education sector. The capital investment in education increases with the level of PAD possessed by the district or city PAD. Regional original revenue (PAD) has a positive significant value in all provincial governments in Mutiha's (2018) research, In Yoanika's research (2018), DAU has an effect on HDI, and BDBP has an effect and can moderate the PAD relationship on HDI.

H5: Regional Original Income (PAD) has an effect on the Human Development Index (IPM) with Education Function Expenditures (BFP) as a moderating variable.

2.8 Spending on the Education Function moderates the effect of General Allocation Fund (DAU) on the Human Development Index (HDI)

The General Allocation Fund is one of the components of the balancing fund, where the budget contained in the DAU is the budget originating from the central government, which is sourced from APBN revenues. This DAU is equitable by taking into account regional potential, area size, geographical conditions of population, and level of income. Because of this, DAU is a dominant source of funds and can improve services to the community. According to Raviyanti, Mahardika, Krishna, et al. (2017)'s research, DAU has a significant positive effect on HDI when capital expenditures are included as an intervening variable. It can be assumed that the higher the DAU's ability to finance capital expenditures, the higher the HDI will be.

H6: General Allocation Fund (DAU) has an effect on the Human Development Index (IPM) with Education Function Expenditure (BFP) as a moderating variable

2.9 Spending on the Education Function moderates the effect of Special Allocation Fund (DAK) on the Human Development Index (HDI)

DAK is allocated to the regions to finance special needs which are regional affairs and in accordance with national priorities while taking into account the availability of funds in the APBN. For this reason, in order for DAK to run optimally, the government is directing the allocation of funds to the education sector. With the increase in funds for educational activities so as to increase HDI. Febriani & Asmara, (2018) in his research shows this means that the higher the DAK received by the regions, the greater the capital expenditure for the education function.

H7: Special Allocation Funds (DAK) have an effect on the Human Development Index (IPM) with Education Function Expenditure (BFP) as a moderating variable

2.10 Spending on the Education Function moderates the effect of Average Level of Schooling (RLS) on the Human Development Index (HDI)

Education is one of the main components in measuring HDI in an area. If an area has quality education, it will produce a quality community as well. To organize quality education requires a fund that has been listed in the budget to be allocated specifically, namely 20% of the APBD. For this reason, the existence of education spending is expected to be able to moderate between PAD which has an important role to fund programs in supporting HDI increases. Hidayati & Bawono, (2020) in their research shows that the average length of schooling will affect spending in the education sector. In Thi Thanh Binh Dao's research, Anh Ngoc Nguyen, 2020 also provides information that RLS will affect HDI.

H8: Average Years of Schooling (RLS) has an effect on the Human Development Index (IPM) with Education Function Expenditures (BFP) as a moderating variable

3. Research Methodology

This study uses a quantitative approach by testing the hypothesis. The population in this study were districts/cities in Java and Bali with a total sample of 356 districts/cities. Researchers used data on Owned Income (PAD), General Allocation Funds (DAU), Special Allocation Funds, Education Function Expenditures (BFP), and the Human Development Index (IPM) for 2018-2020 in this study. Data related to the APBD Realization Report were obtained through publication from the website of the Directorate General of Fiscal Balance (DJPK) of the Ministry of Finance (www.djpk.kemenkeu.go.id). Meanwhile, HDI data was obtained through publications on the website of the Central Statistics Agency (www.bps.go.id).

The linear regression model used in the test is as follows:

$$IPM = \alpha + \beta_1PAD + \beta_2DAU + \beta_3DAK + \beta_4RLS + e$$

The moderated regression analysis equation is as follows:

$$IPM = \alpha + \beta_1PAD + \beta_2DAU + \beta_3DAK + \beta_4RLS + \beta_5RLS + \beta_6PAD*BFP + \beta_7DAU*BFP + \beta_8DAK*BFP + \beta_9RLS*BFP + e$$

Information:

- HDI : Human Development Index
- PAD : Original Local Government Revenue
- DAU : General Allocation Fund
- DAK : Special Allocation Fund
- RLS : Average School Years
- BFP : Education Function Expenditure
- α : Regression Constant
- e: Error Term

4. Results and Discussion

4.1 Descriptive Statistical Analysis

Table 1: Descriptive Statistical Test Results

Variabel	N	Minimum	Maximum	Mean	Std. Dev
PAD	356	100.745.347.096	5.381.920.253.810	594.171.072.877,92	740.880.230.092.962
DAU	356	330.336.650.000	2.149.817.107.000	964.705.135.816,25	338.231.047.110,147
DAK	356	26.626.702.999	744.504.933.102	299.238.589.368,94	138.634.275.337,744
RLS	356	4,36	11,81	8,085421	1,51242
IPM	356	61,00	86,11	72,1176	5,05778
BFP	356	164.638.395.224	2.802.034.551.642	787.019.066.747,86	423.591.587.213,252
Valid N (listwise)	356				

Source: Data Analysis Results, 2023

Based on the results of the descriptive analysis table above, Regional Original Revenue (PAD) has a minimum value of IDR 100,745,347,096 which is owned by the City of Banjar in 2019. The maximum value is IDR 5,381,920,253,810 owned by the City of Surabaya in 2019. The standard deviation value is 740,880,230,092.962 and the average value of PAD is 594,171,072,877.92. The General Allocation Fund (DAU) has a minimum value of IDR 330,336,650,000 owned by Badung Regency in 2018. The maximum value is IDR 2,149,817,107,000 owned by Bandung Regency in 2019. The standard deviation value is 338,231,047,110.147 and the average DAU value is 964,705,135,816.25.

The Special Allocation Fund (DAK) has a minimum value of IDR 26,626,702,999 which is owned by the City of Serang in 2018. The maximum value is IDR 744,504,933,102 owned by Bogor Regency in 2019. The standard deviation value is 138,634,275,337.744 and the average DAU value is 299,238,589,368.94. The average length of schooling (RLS) has a minimum value of 4.36 which is owned by Sampang Regency in 2018. The maximum value is 11.81 which is owned by the City of Tangerang Selatan in 2020. The standard deviation value is 1.51242 and the average RLS value is 8.085421.

The Human Development Index (IPM) has a minimum value of 61.00 which is owned by Sampang Regency in 2018. The maximum value is 86.11 which is owned by the City of Yogyakarta in 2018. The standard deviation value is 5.05778 and the average HDI value is 72.1176. Education Function Expenditure (BFP) has a minimum value of 164,638,395,224 owned by Magelang City in 2020. The maximum value is 2,802,034,551,642 owned by Ngawi Regency in 2018. The standard deviation value is 423,591,587,213.252 and the average value - average BFP of 78,701,9066,747.86.

4.2. Discussion

Data tabulation was processed with the IBM SPSS Statistics 25 application, then produced descriptive statistics, fixed effect tables for regression equations, and t-test results, but previously the data had passed the classic assumption test results which included normality tests, multicollinearity tests, autocorrelation tests, and

heteroscedasticity tests. In the normality test when testing the regression using the Kolmogorov-Smirnov test using a significance level of $0.080 > 0.050$ while testing the moderated regression analysis equation using CLT and $N 356 > 30$. So that the residual data is normally distributed, during the multicollinearity test there is no multicollinearity problem because the coefficient between the tolerance variables is more than 0.10 and the VIF value is less than 10. The autocorrelation test found no signs of autocorrelation because the Durbin Watson value lies between -2 to 2, which is 1.164. Likewise, in the heteroscedasticity test there is no heteroscedasticity problem because the Spearman's rho results have a significance value or sig. (2-tailed) is greater than 0.05

Table 2: Result of Linear Regression Analysis

Variable	P	T _{count}	T _{table}	Sig.	Conclusion	Information
PAD	0,05	2,478	1,967	0,014	Significant	H ₁ Accepted
DAU	0,05	2,273	1,967	0,024	Significant	H ₂ Accepted
DAK	0,05	-3,736	1,967	0,000	Significant	H ₃ Accepted
RLS	0,05	35,576	1,967	0,000	Significant	H ₄ Accepted

Source: Data Analysis Results, 2023

Table 3: Result of Moderated Regression Analysis

Variable	P	T _{count}	T _{table}	Sig.	Conclusion	Information	Moderation Type
PAD*BFP	0,05	3,059	1,967	0,002	Significant	H ₅ Accepted	Quasi Moderating
DAU*BFP	0,05	-1,413	1,967	0,158	Not significant	H ₆ Rejected	Predictor
DAK*BFP	0,05	-0,732	1,967	0,464	Not significant	H ₇ Rejected	Predictor
RLS*BFP	0,05	0,888	1,967	0,375	Not significant	H ₈ Rejected	Predictor

Source: Data Analysis Results, 2023

Owned Local Government Revenue has a significance value of 0.014, which means less than 0.05 or 5% and a t_{count} of 2.478 is greater than a t_{table} of 1.967. This shows that partially the PAD variable has a significant effect on HDI. Thus it can be concluded that **H1 is accepted**. PAD is a source of regional income that is used to fulfill regional government spending in the implementation of autonomy in order to improve services to the community that can support the Human Development Index (IPM). This research is in line with research that has been conducted by Mutiha, (2018) and Sembiring, (2019).

The General Allocation Fund has a significance value of 0.024 which means it is less than 0.05 or 5%. and the t_{count} value is 2.273 greater than the t_{table} 1.967. This shows that partially the DAU variable has a significant effect on HDI. Thus it can be concluded that **H2 is accepted**. This DAU is a form of equity by taking into account regional potential, area size, geographical conditions of population, and income level, so as to increase the Human Development Index. This research is in line with research conducted by Raviyanti, Mahardika, Krishna et al (2017).

The Special Allocation Fund has a significance value of 0.000 which means less than 0.05 or 5% and the t_{count} is -3.736 which is smaller than the t_{table} of 1.967. This shows that partially the DAK variable has a significant negative effect on HDI. Thus it can be concluded that **H3 is accepted**. DAK is allocated to the regions to finance special needs that lead to the allocation of funds to development investment activities and infrastructure. So, with an increase in development but if the DAK is too high it can reduce the HDI. This is in accordance with research conducted by Williantara&Budiasih, (2016).

The average length of schooling has a significance value of 0.000 which means it is less than 0.05 or 5% and the t_{count} is 35.576 which is greater than the t_{table} 1.967. This shows that partially the RLS variable has a significant effect on HDI. Thus it can be concluded that **H4 is accepted**. The average length of schooling (mean years of schooling) shows the level of education a person has/is currently occupying. The higher a person is educated, the better the quality of human resources produced. So, it can increase HDI.

Owned Local Government Revenue and Education Expenditures have a significance value of 0.002, which means less than 0.05 or 5 and a t_{count} of 3.059 is greater than a t_{table} of 1.967. Thus it can be concluded that **H5 is accepted**, meaning that Expenditures for the Education Function include **quasi-moderating variable** which can moderate the relationship between Regional Original Revenue and HDI. Education spending will improve people's welfare in pursuing education. Not only that, with an increase in the level of education, the quality of human resources will increase thereby affecting the Human Development Index.

General Allocation Funds and Education Expenditures have a significance value of 0.158, which means

greater than 0.05 or 5% and the t_{count} value is -1.413 which is smaller than the t_{table} of 1.967. Thus it can be concluded that **H6 is rejected**, meaning that Education Function Expenditure cannot moderate the relationship between general allocation funds and HDI and Education Function Expenditure only acts as a **moderator predictor variable**. The General Allocation Fund is basically able to increase the Human Development Index from the funds that have been allocated by the government in the form of equity with the level of income from personnel spending which can help increase the HDI. However, it has not been able to help education spending in increasing HDI.

Special Allocation Funds and Education Expenditures have a significance value of 0.464, which means greater than 0.05 or 5% and the t_{count} is -0.732 which is smaller than the t_{table} of 1.967. Thus it can be concluded that **H7 is rejected**, meaning that Education Function Expenditure cannot moderate the relationship between special allocation funds and HDI and Education Function Expenditure only acts as a **moderator predictor variable**. The government has allocated Special Allocation Funds to build infrastructure, but general allocation funds cannot help increase the HDI from education spending.

The average length of schooling and spending on the education function has a significance value of 0.375, which is greater than 0.05 or 5%. and the t_{count} value of 0.888 is greater than the t_{table} of 1.967. Thus it can be concluded that **H8 is rejected**, meaning that Education Function Expenditures cannot moderate the relationship between the average length of schooling and HDI and Education Function Expenditure only acts as a **moderator predictor variable**.

5. Conclusion

5.1 Conclusion

This study aims to empirically examine the effect of local own income, general and special allocation funds, and average years of schooling on the community development index with education function expenditures as moderating variables in regions and cities throughout Java and Bali in 2018–2020. Based on the test results and discussion obtained in the previous chapter, it can be concluded that the variables used in the study have a significant effect on HDI of 0.000, which is less than 0.05. Partially, local revenue, the general allocation fund, and the average length of school have a positive effect on HDI, while special allocation funds have a negative effect. Expenditures The education function can only moderate the relationship between regional own-source income and the Human Development Index, and here it serves as a quasi-moderator.

5.2 Research Limitations

Based on the test results obtained in the previous chapter, there are several limitations, namely:

1. This research was only conducted by districts/cities on the islands of Java and Bali with a period of three years 2018-2020.
2. The results of the test for the coefficient of determination (Adjust R square) show that the dependent variable explains the variation of the dependent variable, namely the Human Development Index of 0.897 or 89.7% while the remaining 10.3% is explained by other variables not included in this study.

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