The Role Of Investment And Government Expenditure On Grdp And Human Development In East Kalimantan

Tri Cicik Wijayanti, Dio Caisar Darma

Abstract:The study aimed to analyze the direct and indirect effects of Investment and Government Expenditure on Gross Regional Domestic Products (GRDP) and Human Development of the East Kalimantan Province. Based on the formulation, objectives, relationships between variables, to the hypothesis proposed, the data is processed using the Path Analysis-Partial Lest Square (PLS) model and the SmartPLS 3.0 program. The type of data used is quantitative in the form of a period of 2011-2018 that was sourced from the Central Statistics Bureau and Integrated One-Stop Investment Services Agency of East Kalimantan Province. The results of the study state that direct Investment has a positive and significant effect, while Government Expenditure has a negative and significant effect on GRDP. Direct Investment has a negative and insignificant effect, while Government Expenditure and GRDP both have a positive and not significant effect on Human Development. Indirect Investment has a positive and significant effect, but Government Expenditure actually have a negative and significant effect on Human Development through GRDP.

Index Terms:Investment; Goverment expenditure; GRDP; Human development; Path Analysis-PLS; SmartPLS 3.0

1 INTRODUCTION

In the investment component is an important component if it is associated with the Gross Regional Domestic Products (GRDP), because investment, especially in the private sector, is expected to increase the production of goods and services in an area because investment in goods and capital means spending on capital goods or services that can increase the production of goods and services in the future, such as building office buildings, and establishing industrial buildings. So, with the increasing amount of investment, the greater the GRDP from an area [10]. The investment component is an important component if it is associated with the Gross Regional Domestic Products (GRDP), because investment, especially in the private sector, is expected to increase the production of goods and services in an area because investment in goods and capital means spending on capital goods or services that can increase the production of goods and services in the future, such as building office buildings, and establishing industrial buildings. So, with the increasing amount of investment, the greater the GRDP from an area [9]. The number of GRDP in the past 8 years has tended to fluctuate. The highest achievement of GRDP is in 2017 reaching IDR 592,502,522 Million and the lowest is IDR 383,293,002 Million in 2010 [4]. This gives a sign that a phenomenon of oil and gas sluggishness in the last 5 years in East Kalimantan Province is an indication that East Kalimantan Province is not too depends on the element of oil and gas as income GRDP. Another component that has an important influence on GRDP is the element of government expenditure through the mechanism of regional income. Regional income through the indicator GRDP is then processed and managed by the local government in a government expenditure [5].

- *Tri Cicik Wijayanti as a Lecturer in Master of Management Program, Faculty of Economy, Muhammadiyah Gresik of University, Indonesia (61121), PH-08123041251. E-mail: tricicikwijayanti@yahoo.com*
- *Dio Caisar Darma as a Lecturer in Managament Study, Samarinda High College of Economics Science, Indonesia (75252), PH-085247160010.*
- *E-mail: dio.cessar@yahoo.com*

The welfare of the community in an area includes economic aspects, and social aspects such as the level of education and the degree of public health. Therefore, there are 4 important elements of the Human Development Index (HDI) based on the latest method in 2010, namely: life expectancy, mean years of schooling, expected years of schooling, and purchasing power parity. With this combination, measuring the level of welfare will be better and more comprehensive, not only covering the economic aspects, but also the social aspects of education and public health. Since 2010, [3] has introduced new calculations in HDI with 4 indicators. It aims to make the HDI method as one of the aspects of human resource development, paying more attention to all dimensions in human development in Indonesia. In these 8 periods, HDI in East Kalimantan Province has increased significantly from year to year. Marked with the highest achievement is 75.12 in 2017 and the lowest is in 2010 which is 71.31. Based on a brief description of macroeconomic variables in East Kalimantan Province, such as: Investment and Government Expenditure, a description is obtained that the relationship between these variables has significant significance to be analyzed, especially during the research period. How the rate of economic growth is influenced by these sectors which are centered on the annual GRDP value and the achievement of HDI. Referring to the background described earlier, a question arises, Is the phenomenon of changes in macroeconomics elements, namely: Foreign and Domestic Investment, and Government Expenditure in the form of direct and indirect affecting the GRDP in East Kalimantan or not, and whether it has an impact on Human Development from the perspective of: Life Expectancy, Mean Years of Schooling, Expected Years of Schooling, and Purchasing Power Parity. This research is supported and is a development of previous research. The results of this study indicate that of the five variables suspected to affect HDI, assuming ceteris paribus condition that Economic growth has a significant positive effect on HDI due to the increase of economic growth. The percentage of poor people does not affect to the HDI. Government expenditures in the field of education have no effect on HDI. Government expenditures in the field of health have a significant positive effect on HDI and income inequality has no effect [2]. [7] in their research revealed that: (1) Areas which

have HDI below the average national HDI show that the average variable spending per capita, population, unemployment rate, budget allocation for education and health significant effect on the HDI; and (2) Areas which have HDI above of the average National HDI show that GDP at constant prices, average spending per capita, the dependency ratio, unemployment rate, and the education budget have a significant effect on the HDI.

2 METHODS

Research uses associative analysis with quantitative methods, namely the type of research that tests the causal relationship between two or more variables. Latent variable (exogenous construct) which is determined is Investment and Government Expenditure. Whereas, latent variables (endogenous constructs) are determined namely Human Development, Gross Regional Domestic Product (GRDP) as mediation (intervening), and manifest (observed) variables consisting of: Direct Expenditure, Indirect Expenditure, Foreign Investment, Domestic Investment, GRDP of Oil and Gas Sector, GRDP of Non Oil and Gas Sector, Mean Years of Schooling, Expected Years of Schooling, Life Expectancy, and Purchasing Power Parity. Research is designed to determine whether an explanation (causality) is valid or not. The design of this study uses quantitative methods to prove the hypotheses that have been formulated before and make an analysis of calculations based on existing data and systematically describe the phenomena that exist in the object of research [8]. A causal relationship is a causal relationship, that is, one of the variables (independent/exogenous) influences the other (dependent/endogenous) variables, either directly or indirectly through mediating variables. This research is a study that discusses GRDP and human development in East Kalimantan Province with variables that influence it (investment and government expenditure). Based on the formulation, objectives, the relationship between the research model and the hypothesis proposed, the data is processed using the Path Analysis-Partial Lest Square (PLS) model. The purpose of PLS is to test weak theories and weak data such as small number of samples or the existence of data normality problems, predict the influence of variable X (exogenous variable) on Y (endogenous variables) and explain the theoretical relationship between the two variables [1]. Research limits the focus of the discussion in order to remain in line with the title that has been presented, so the researcher limits the object (coverage) of several variables used. The scope is limited to the administrative region of East Kalimantan Province for 8 years (2011-2018). This is intended, so that researchers can save time, effort, and research costs. Analysis of structural models on PLS, carried out with 3 stages: (1) Analysis of the outer model; (2) Analysis of inner models; and (3) Hypothesis testing. Outer model analysis is done to ensure that the measurements used are feasible to be used as measurements (valid and reliable). Outer model analysis can be seen from several indicators: (1) Convergent validity, (2) Discriminant validity, and (3) Unidimensionality. Meanwhile, the analysis of the inner model/structural analysis of the model is carried out to ensure that the structural models are robust and accurate. Evaluation of the inner model can be seen from several indicators which include: (1) The coefficient of determination (R^2), (2) Predictive relevance (Q^2), and (3) Goodness of Fit Index (GoF). To test the hypothesis, it is done by looking at the probability values and t-statistics. For probability values, the p-value with alpha 5% is less than 0.05. The t-table value for alpha 5% is 1.96. So, the hypothesis acceptance criteria are when t-statistics > t-table.

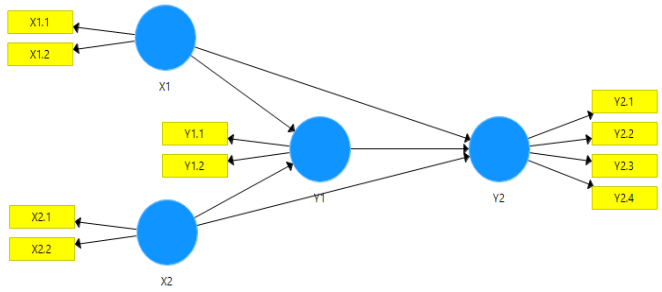

Figure-1
Construction of Research Path Diagrams

Note: X1 = Investment (X1.1 = Foreign Investment, X1.2 = Domestic Foreign); X2 = Goverment Expenditure (X2.1 = Direct Expenditure, X2.2 = Indirect Expenditure); Y1 = GRDP (Y1.1 = GRDP of Oil and Gas Sector, Y1.2 = GRDP of Non Oil and Gas Sector); Y2 = Human Development ((Y2.1= Mean Years of Schooling (MYS), Y2.2 = Expected Years of Schooling (EYS), Y2.3 = Life Expectancy, Y2.4 = Purchasing Power Parity (PPP)).

The structural model testing of PLS can be done with the help of the SmartPLS Program version 3.0 for Windows through 2 tested models, namely the measurement model (outer model) and the inner model. The complete structural model can be examined in the following Figure 1.

3 RESULTS

Outer models can be interpreted by looking at some coverage, including: Convergent Validity, Discriminant Validity, Composite Reliability, Average Variance Extracted (AVE), Alpha Cronbach's, and Outer Collinearity Statistics (VIF). The PLS Algorithm model can be presented in Figure 2.

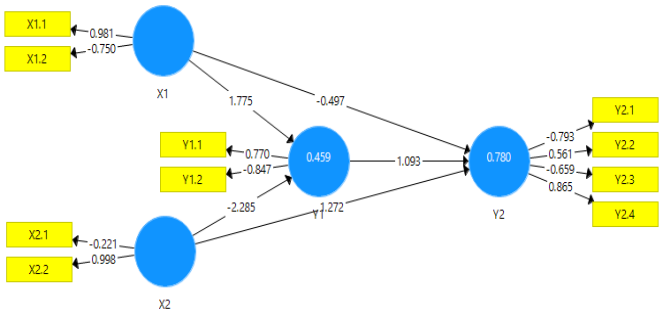

Figure-2
PLS Algorithm Model

First, is the convergent value that is in order to measure the magnitude of the loading factor on each latent variable. Loading Factor above 0.70 is highly recommended. However, the size above 0.60 can be tolerated as long as the research model is in the development stage. The output that explains the relationship between indicators is as follows:

Table-1
Outer Model (Loading Indicator)

Indicator	X1	X2	Y1	Y2
X1.1	0.981	-	-	-
X1.2	-0.750	-	-	-
X2.1	-	-0.221	-	-
X2.2	-	0.998	-	-
Y1.1	-	-	0.770	-
Y1.2	-	-	-0.847	-
Y2.1	-	-	-	-0.793
Y2.2	-	-	-	0.561
Y2.3	-	-	-	-0.659
Y2.4	-	-	-	0.865

Source: SmartPLS 3.0 Output (2019)

Second, the discriminant value is useful to assess whether the variable has adequate discriminant validity by comparing the indicator correlation with the intended construct must be greater than the correlation with the other constructs. If the correlation of the indicator has a higher value than the indicator correlation in other constructs, it is said that the variable has high discriminant validity. This value can be seen in the value of the data validity test or cross loading factor. The results of the complete data validity test are as follows:

Table-2
Test Validity of Data (Cross Loading)

Indicator	X1	X2	Y1	Y2
X1.1	0.981	0.998	-0.544	0.197
X1.2	-0.750	-0.592	0.006	-0.339
X2.1	-0.188	-0.221	0.044	0.004
X2.2	0.975	0.998	-0.558	0.184
Y1.1	-0.130	-0.183	0.770	0.693
Y1.2	0.568	0.672	-0.847	-0.338
Y2.1	-0.264	-0.171	-0.397	-0.793
Y2.2	0.012	-0.119	0.534	0.561
Y2.3	-0.232	-0.232	-0.380	-0.659
Y2.4	0.180	0.176	0.505	0.865

Source: SmartPLS 3.0 Output (2019)

In Table 2, broadly speaking only 4 indicators are consistently and of higher value to the intended construct variable. The indicators are Indirect Expenditure (X2.2) to the constructs of Government Expenditure with 0.998, GRDP of Oil and Gas Sector (Y1.1) to GRDP construct of 0.770, EYS (Y2.2) indicator of the Human Development construct is 0.561 and the PPP indicator (Y2.4) to the Human Development construct is 0.865. Likewise for other indicators, there are 6 indicators, namely: Foreign Investment (X1.1), Domestic Investment (X1.2), Direct Ependiture (X2.1), GRDP of Non Oil and Gas Sector (Y1.2), MYS (Y2.1), and Life Expectancy (Y2.3) has a higher loading value to another construct that is not intended. *Third*, high composite reliability values indicate good consistency of each indicator in latent variables to measure these variables. Criteria for composite reliability values > 0.7 indicate that these variables have good internal consistency. The full composite reliability value is presented below:

Table-3
Value of Composite Reliability

Construct	Composite Reliability
Investment (X1)	0.101
Government Expenditure (X2)	0.387
GRDP (Y1)	0.008
Human Development (Y2)	0.000

Source: SmartPLS 3.0 Output (2019)

The composite reliability value of Investment is 0.101, Government Expenditures 0.387, GRDP 0.008, and 0.000 (Human Development). The four construct variables with composite reliability values < 0.07, it can be said that they do not have good internal consistency. *Fourth*, Average Variance Extracted (AVE) shows the variance value of each indicator in the construct that can be captured by these variables more than the variance caused by measurement errors. Expected AVE value > 0.5. The following is the AVE result in the SmartPLS output:

Table-4
AVE Value

Construct	AVE
Investment (X1)	0.763
Government Expenditure (X2)	0.522
GRDP (Y1)	0.655
Human Development (Y2)	0.532

Source: SmartPLS 3.0 Output (2019)

The AVE value of the investment construct is 0.763, Expediture Government is 0.522, GRDP 0.655 and Human Development 0.532. Therefore, all construct variables with AVE values > 0.5 or can be said to be appropriate according to statistical criteria. *Fifth*, the reliability test of the research model was strengthened with alpha cronbach's score. The limit of alpha cronbach's reliability test is > 0.7. The results of the reliability test of the PLS model are:

Table-5
Cronbach's Alpha Value

Construct	Cronbach's Alpha
Investment (X1)	-3.107
Government Expenditure (X2)	-0.366
GRDP (Y1)	-0.912
Human Development (Y2)	-1.201

Source: SmartPLS 3.0 Output (2019)

The results of reliability with the cronbach's alpha value prove that all construct variables are negative and below 0.7. The meaning of these values is that all constructs are proven to lack accuracy, consistency, and inaccuracy of instruments in measuring constructs (see Table 5).

Table-6
Outer Collinearity Statistics (VIF) Value

Indicator	VIF
Direct Investment (X1.1)	1.588
Domestic Investment (X1.2)	1.588
Direct Expenditure (X2.1)	1.025
Indirect Investment (X2.2)	1.025
GRDP of Oil and Gas Sector (Y1.1)	1.109
GRDP of Non Oil and Gas Sector (Y1.2)	1.109
MYS (Y2.1)	2.181
EYS (Y2.2)	1.143
Life Expectancy (Y2.3)	1.160
PPP (Y2.4)	2.376

Source: SmartPLS 3.0 Output (2019)

Sixth, for the multicollinearity test can see the output results through the Collinearity Statistic Variance Inflation Factor (VIF). The VIF value must be < 10 or < 5. Below are the statistics from VIF [6]. From Table 6, it is known that all indicators have a VIF value of < 10, so that it can be concluded that for each of these variables it represents no multicollinearity. Inner model or structural analysis of the model is carried out to ensure that the structural models are robust and accurate. Evaluation of inner model can be seen from several indicators which include: Determination Coefficient (R^2), Predictive Relevance, and Goodness of Fit Index (GoF), and Outer Collinearity Statistics (VIF). The output of SmartPLS based on the inner model criteria is described in the following section.

Table-7
R Square

Construct	R Square
GRDP (Y1)	0.459
Human Development (Y2)	0.780

Source: SmartPLS 3.0 Output (2019)

Seventh, the results of the coefficient of determination from GRDP obtained the R2 value of 0.459 which can be interpreted that the variant on GRDP can be explained by the construct of Investment and Go vernment Expenditure is 45.9%. Meanwhile, the remainder of 0.541 or 54.1% (1 - 0.459) is explained by other variables other than those studied. Likewise the Human Development construct with R2 values obtained is 0.780. The figure shows if the variants in the Human Development construct can be explained by Investment variables, Government Expenditure, and GRDP of 78.0%, while the remaining 0.220 or 22.0% (1 - 0.780) are other variables outside the research model (see Table 7) .

Table-8
f Square

Variable	X1	X2	Y1	Y2
X1	-	-	0.281	0.042
X2	-	-	0.465	0.243
Y1	-	-	-	2.946
Y2	-	-	-	-

Source: SmartPLS 3.0 Output (2019)

Eighth, effect size (f Square) needs to be done to find out the goodness of this research model. The value of f^2 from the Human Development construct which is supported by the Investment variable of 0.042 indicates that it has a weak influence on the latent variable predictor (exogenous latent variable) at the structural level. Meanwhile, the f^2 value of the GRDP construct which is supported by the Investment variable of 0.281 and the Human Development construct by the Government Expenditure variable of 0.243 is categorized as the effect of moderate (sufficient) latent variable predictors (exogenous latent variables) at the structural level. As for those classified as having a strong influence from the latent variable predictor (exogenous latent variable) at the structural level is the part of Government Expenditure on the constructs of GRDP and GRDP on Human Development with their respective values of 0.465 and 2.946 (see Table 8). *Ninth*, the magnitude of Q-Square predictive relevance for the structural model, measures how well the observation value is generated by the model and also its parameter estimates. Q-square value > 0 indicates the model has the opposite predictive relevance if the Q-square value ≤ 0 indicates the model lacks predictive relevance. Q-Square value has the same meaning as determination coefficient (R-Square) in PLS analysis, where the higher the Q-Square, the model can be said to be better or more fit with the data. The results of calculating the Q-Square value are as follows:Q-Square $= 1 – [(1 – R^2 1) \times (1 – R^2 2)]$ $= 1 – [(1 – 0.459) \times (1 – 0.780)]$ $= 1 – (0.541 \times 0.220)$ (1)= $1 – 0.119 = 0.881$ Based on the results of the above calculations, obtained the Q-Square value of 0.881. This shows the magnitude of the diversity of the research data that can be explained by the research model is 88.1%. Meanwhile, the remaining 0.119 or 11.9% is explained by other factors that are outside the research model. Thus, from these results, this research model can be stated to have good goodness of fit. *Tenth*, is to look for the value of Goodness of Fit (GoF). GFI describes the level of suitability of the overall model calculated from the residual square of the predicted model compared to the actual data. Unlike CBSEM, for GoF on PLS-SEM it must be searched manually. This GoF value is obtained from the square root of the average communalities index multiplied by the average value of the R^2 model. Here are the calculations: **GoF** $= \sqrt{\overline{AVE} \times \overline{R^2}} = \sqrt{0.618 \times 0.619}$ (2)= $\sqrt{0.382} = 0.618$ Referring to the calculation above, the GoF value is 0.618. These results are used to validate the combined performance between the measurement model (outer model) and the structural model (inner model) which extends between 0 - 1, with an interpretation of that value > 0.36 (large GoF). *Eleventh*, [6] suggests that PLS theory excludes Ordinal Least Square (OLS) assumptions such as

data that are normally distributed in a multivariate manner and there are no multicollinearity problems between exogenous variables. The Table 9 illustrates the value of the collinearity statistic (VIF) of the inner model. For the Investment and Government Expenditure variables, both GRDP and Human Development together achieve similar results with inner VIF values above 10 and multicollinearity has occurred. Meanwhile, only GRDP against Human Development has a value of 1.874, so the VIF value of these variables represents no multicollinearity due to the VIF criteria < 10.

Table-9
Inner Collinearity Statistics (VIF) Value

Variable	X1	X2	Y1	Y2
X1	-	-	20.724	26.541
X2	-	-	20.724	30.369
Y1	-	-	-	1.847
Y2	-	-	-	-

Source: SmartPLS 3.0 Output (2019)

The next test is to see the significance of each influence between exogenous constructs to endogenous and answer what has been formulated and hypothesized. The testing of the significance level is 0.05 or 5%, if the t-statistic value is > 1.96, then the hypothesis is acceptable. The value of the t-statistic of the effect coefficient of the latent construct is obtained through PLS Bootstrapping. The results of the model are presented in Figure 3.

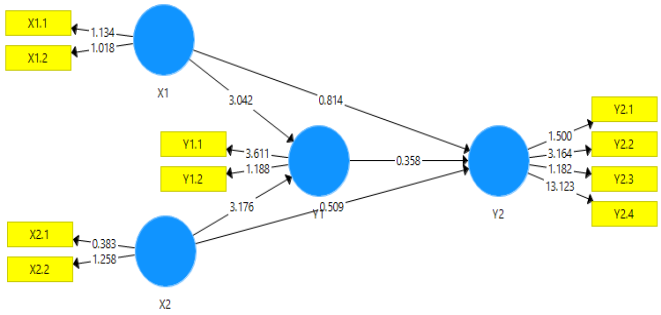

Figure-3
Bootstrapping Result

The parameter coefficient value can be seen in the original sample and p-values summarized in Table 10.

Table-10
Highlights of the Coefficient and Probability Value

Variable	Original Sample (O)	T Statistics (|O/STDEV|)	P Values	Hypothesis
X1 -> Y1	1.775	3.042	0.016	Accepted
X1 -> Y2	-0.497	0.814	0.439	Rejected
X2 -> Y1	-2.285	3.176	0.013	Accepted
X2 -> Y2	1.272	0.509	0.625	Rejected
Y1 -> Y2	1.093	0.358	0.730	Rejected
X1 -> Y1 -> Y2	1.940	2.975	0.018	Accepted
X2 -> Y1 -> Y2	-2.498	0.824	0.434	Rejected

Source: SmartPLS 3.0 Output (2019)

4 CONCLUSION

Referring to the results of the analysis, then conclusions can be taken are: (1) Investment directly has a positive and significant effect, while Government Expenditure has a negative and significant effect on GRDP; (2) Investment directly has a negative and insignificant effect, while Government Expenditure and GRDP both have a positive and not significant effect on Human Development: and (3) Investment indirectly has a positive and significant effect, but Government Expenditure actually has a negative and significant effect towards Human Development through GRDP.

5 IMPLICATIONS

According to the results of this study, there are implications aimed at several parties: (1) The government can provide more stimulus for the development of GRDP and Human Development outside Java, such as East Kalimantan Province by creating a conducive investment climate and mapping of fiscal degrees (division of regional expenditure) according to the proportion of income of abundant natural resource producing regions from the oil and gas and non oil and gas sector; (2) As a subject and object in development, the community should be more participatory, so that the economic performance of East Kalimantan Province is more productive by aiming at various business sectors; and (3) Researchers in the future can expand the scope of exogenous, endogenous, or mediating construct variables that are more variant, so that the object of research can reach several other macroeconomic determinants.

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