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The Influence of Economic Factors on the Human Development Index in East Kalimantan Province

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Abstract
This study aims to determine economic factors such as the regional minimum wage, economic growth rate, poverty, and open unemployment rate to the human development index in East Kalimantan in 2015-2024. This research method is a quantitative method using secondary data. Panel data regression analysis technique with a Fixed Effect Model (FEM) approach through EViews 13 software. These findings indicate that partially the regional minimum wage and the rate of economic growth have a significant positive effect on the human development index in East Kalimantan, while poverty and open unemployment have a negative but insignificant effect on the human development index in East Kalimantan. Simultaneously, the regional minimum wage, economic growth rate, poverty, and open unemployment rate have a significant effect on the human development index in East Kalimantan in 2015-2024.

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INTRODUCTION

Quoting from the Human Development Report (HDR) in 1990, human development is a system to improve alternative options owned by a person such as being elderly and fit, being educated, and accessibility to facilities and infrastructure for a decent life. In Sustainable Development (SDGs), human development is the foundation for achieving economic, social, and environmental welfare in a sustainable manner. Efforts to realize the ideal human development achievement require a responsive strategy to overcome various global issues that are challenges to increase human development achievements (Indonesian Central Statistics Agency, 2025).

Theoretically, the welfare of the community represents an indicator of human development achievement to realize a decent life including the values of sufficiency, self-esteem, and freedom (Todaro & Smith, 2011). One of the parameters needed to measure the welfare of the community is the Human Development Index (HDI). HDI is a standard needed to calculate the realization of regional human development. The concept in HDI reflects the quality of life of the community which includes aspects of health, education, and decent living standards. In general, increasing HDI is the government's main goal in order to improve the welfare of the community as a whole. In a region, there are economic factors that can affect the increase in HDI, such as the regional minimum wage and the rate of economic growth, but on the other hand, there are economic issues that cause human development to take place unexpectedly, namely poverty and open unemployment.

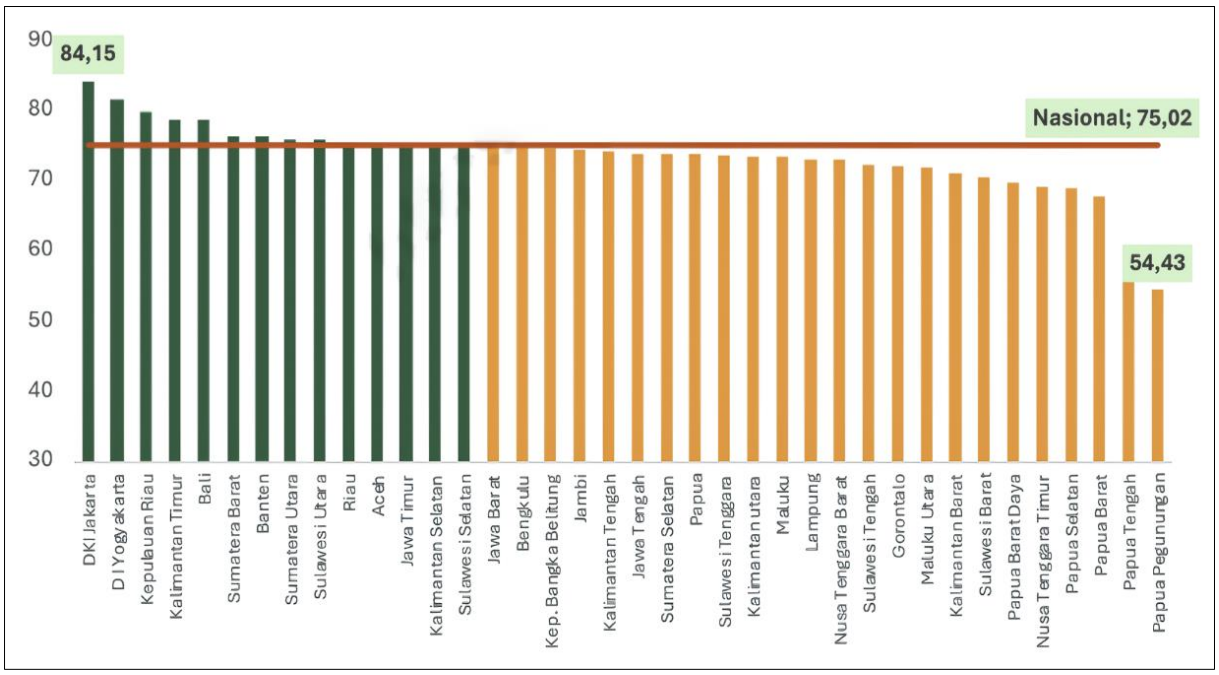

Figure 1. Human Development Index Achievement by 2024

Source: BPS, Development Index Compilation, 2026

Referring to BPS data, it shows that the HDI in East Kalimantan Province in 2024 occupies the fourth position with the highest HDI value compared to 38 other provinces in Indonesia. During the period 2020-2024, East Kalimantan's HDI increased by 2.89 points with an achievement of 78.83 in 2024 compared to 2020 of only 75.94. The highest HDI values are in Samarinda City and Bontang City, while the lowest HDI values are in Mahalam Ulu Regency and North Penajam Paser Regency. This indicates that there is an inequality in human development in East Kalimantan. This situation can be influenced by differences in people's welfare, such as differences in wage levels, job availability, and opportunities for access to education and health in each region of East Kalimantan.

Based on the problems that have been explained above related to uneven human development in all districts/cities in East Kalimantan Province. Where the paradigm of

human development refers to the principle of equitable distribution of development and is very contrary to development disparity. However, the fact that there is still a development disparity between districts and cities in East Kalimantan is known from the difference between the highest district/city HDI (Samarinda City with an HDI of 82.81) and the lowest (Mahulu Regency with a HDI of 70.35) which is still above 10 points or precisely 12.46 points in 2024 (BPS East Kalimantan Province, 2025)

Several previous studies have examined at the provincial and national levels that examined several of these variables, but there is still a research gap in East Kalimantan Province regarding how much each variable contributes simultaneously to HDI between kapubaten/cities. Given this, it is necessary to empirically examine the influence of economic factors on the human development index in East Kalimantan Province by considering disparities between districts/cities and the use of valid and up-to-date data so that the results can be the basis for targeted policies.

METHOD

This study uses a quantitative approach with a secondary data type as a combination of inter-object data (*cross section*) and time *series* data. The research object covers 10 districts and cities in East Kalimantan with an observation period from 2015 to 2024. The variables used consisted of the regional minimum wage, economic growth rate, poverty, and open unemployment rate as independent variables, while the human development index as dependent variables. Data was obtained from the Central Statistics Agency of East Kalimantan Province.

The analysis technique used was panel data regression using EViews 13 software. The best model selection method consists of the Chow test, the Hausman test, and the Lagrange Multiplier test. Classical assumption testing is needed to confirm that regression modeling has estimational accuracy, is objective, and consistent consists of normality tests, multicollinearity tests, and heteroscedasticity tests. Furthermore, hypothesis testing consists of a t-test, an F test, and a determinant coefficient test. The equation of the research model can be formulated as follows:

$$\boldsymbol{Y_{it} = + + + + + \beta_0 \beta_1 X_{1it} \beta_2 X_{2it} \beta_3 X_{3it} \beta_4 X_{4it} e_{it}}$$

Description:

Y : Human Development Index
X_1 : Upah Minimum Regional
X_2 : Economic Growth Rate
X_3 : Poverty Rate
X_4 : Open Unemployment Rate
β_0 : Constant
β_{1-4} : Partial coefficients of UMR, LPE, TK, and TPT variables
e_{it} : *Error term* at T time in the unit *cross section*
i : 1,2,3,4,5,6,7,8,9,10 (data *cross section* 10 districts/cities in East Kalimantan)
t : 1,2,3,4,5 (data *time series* 2015-2024)

RESULTS AND DISCUSSION

Research Results

Selection of Panel Data Regression Estimation Techniques

Regression with panel data was decided to select a model with three estimates in managing the data. The estimate includes the *Common Effect Model*, *Fixed Effect Model*, and *Random Effect Model* (Basuki & Prawoto, 2023). The following is the application of the selection of model estimation techniques applied, including:

Table 1. Chow Test

Effect Test	Statistic	d.f.	Prob.
Cross-section F	163,8112	(9,86)	0,0000
Cross-section Chi-square	289,8286	9,0000	0,0000

Referring to Table 1. shows that the probability value is 0.0000 < 0.05, then it is accepted. Therefore, the best model is the H_1*fixed effect model*.

Table 2. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	56,9687	4,0000	0,0000

Referring to Table 2. shows that the probability value is 0.0000 < 0.05, then it is accepted. Therefore, the best model is the H_0fixed effect model.

In the results of the Chow test and the Hausman test, the fixed effect model has been consistently selected, so the Lagrange Multiplier test does not have to be carried out. The best model was set for this study, namely the Fixed Effect Model (FEM).

Classic Assumption Testing

Normality Test

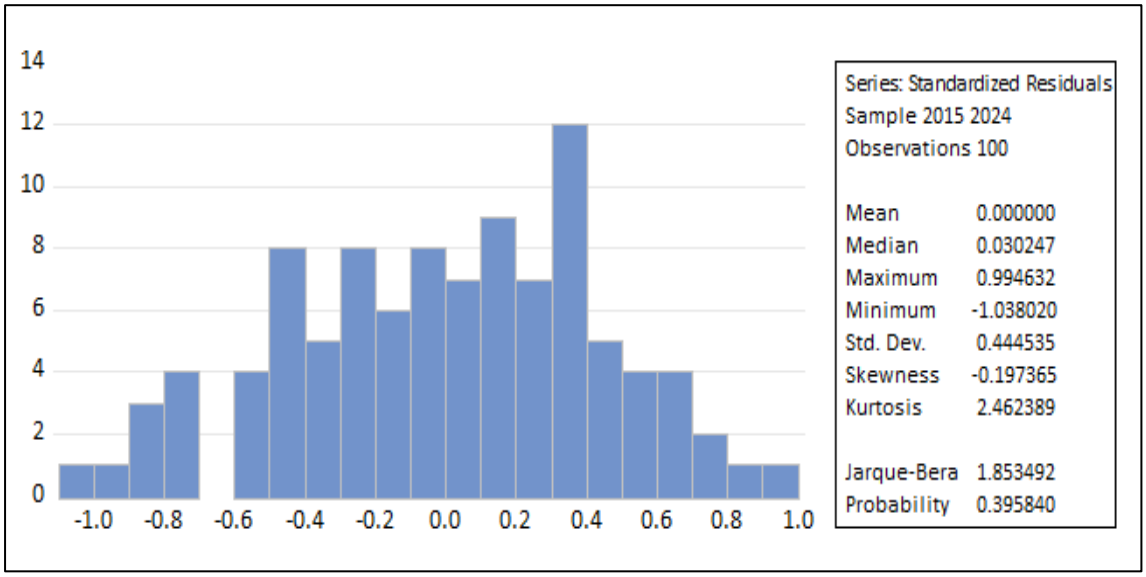

***Figure* 2. Normality Test**

Referring to Figure 2. shows that the result of the *Jarque-Berra probability value* is 0.39, meaning that the probability value is greater than the value of α= 5% (0.39 > 0.05), then it is rejected and accepted. Thus, the equation model of H_0H_1*the fixed effect model* is fulfilled with the assumption of normal distributed data.

Multicollinearity Test

Table 3. Multicollinearity Test

	LIFESPAN	LPE	Poverty	TPT
LIFESPAN	1,0000	0,3691	0,0433	-0,4596
LPE	0,3691	1,0000	-0,0322	-3,3847
Poverty	0,0433	-0,0322	1,0000	-0,4658
TPT	-0,4596	-0,3847	-0,4658	1,0000

Referring to Table 3. shows that all variables have a correlation value below 0.85 which means that the *fixed effect model* is avoided by the problem of multicollinearity.

Heteroscedasticity Test

Table 4. Heteroscedasticity Test
Heteroskedasticity Test: Glejser

Null hypothesis: Homoskedasticity			
F-statistic	0,8199	Prob.F(4,95)	0,5156
Obs*R-squared	3,3371	Prob. Chi-Square (4)	0,5031
Scaled explained SS	2,4937	Prob. Chi-Square (4)	0,6458

Referring to Table 4. shows that the probability value of Obs*R-squared is 0.5031 > 0.05. This means that the *fixed effect model* is avoided by heteroscedasticity problems or the homogeneity assumption is fulfilled in the regression model.

Panel Data Regression Test Results

Table 5. Panel Data Regression Test Results Fixed Effect Model (FEM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-60,144713	0,001721	-8,838839	0,000000
LIFESPAN	9,031676	0,447268	20,193004	0,000000
LPE	0,050114	0,010856	4,616226	0,000014
Poverty	0,000242	0,135005	-0,001794	0,998573
TPT	0,001721	0,037691	-0,045671	0,963678
Fixed Effects (Cross)				
Balikpapan				5,8672210
Berau				-0,306707
Bontang				5,916599
Kubar				-3,121136
Kukar				-0,694357
Kutim				-1,271320
Mahulu				-7,293919
Pass				-1,626900
PPU				-3,557044
Samarinda				6,087576
Effects Spesification				
Cross-section fixed (dummy variables)				
R-squared	0,989872	Mean dependent var		74,541700
Adjusted R-squared	0,988341	S.D. dependent var		4,417234
S.E. of regression	0,476952	Akaike info criterion		1,486376
Sum squared resid	19,563567	Schwarz criterion		1,851100
Log likelihood	-60,318794	Hannan-Quinn criter.		1,633986
F-statistic	646,579996	Durbin-Watson stat		1,051472
Prob(F-statistic)	0,000000			

T test

Regional Minimum Wage (X_1)

The regional minimum wage has a positive t-statistical value of 20.193004 with a probability of 0.000000. The UMR probability value is smaller than the significance level of α = 5 % (0.000000 < 0.05), which means that the UMR variable has a positive and significant effect on HDI partially.

Economic Growth Rate (X_2)

The economic growth rate has a positive t-statistical value of 4.616226 with a probability of 0.000014. The probability value of LPE is less than the significance level of α = 5 % (0.000014 < 0.05), meaning that the LPE variable has a positive and significant effect on HDI partially.

Poverty Rate (X_3)

Poverty has a negative t-statistical value of -0.001794 with a probability of 0.998573. The poverty probability value is greater than the significance level of α = 5 % (0.998573 > 0.05), meaning that the poverty variable has a negative but not significant effect on HDI partially.

Open Unemployment Rate (X_4)

The open unemployment rate has a negative t-statistical value of -0.045671 with a probability of 0.963678. The probability value of TPT is greater than the significance level of α = 5 % (0.963678 < 0.05), meaning that the TPT variable has a negative but not significant effect on HDI partially.

Test F

Referring to the F-statistical value of 646.58 and the probability (F-statistic) of 0.000000, this value is lower than the significance level of α = 5% (0.000000 < 0.05), then simultaneously there is a significant influence of the regional minimum wage, economic growth rate, poverty, and open unemployment rate on the human development index in East Kalimantan in 2015-2024.

Coefficient of Determination

Refer to Table 5. shows that the R-squared value is 0.989872, meaning that the Y variable (HDI) can be described using the X variables (UMR, LPE, Poverty, and TPT). The conclusion of this test is that the variables of the regional minimum wage, economic growth rate, poverty, and open unemployment rate can explain the human development index of 99 percent, while the remaining 1 percent is explained by other factors that are not described in this study.

Panel Data Regression Equation

Referring to the table of results of *the fixed effect equation model* in regression modeling for East Kalimantan, as follows:

$$\boldsymbol{Y_{Kaltim}} \textbf{= -60.144713 + 9.031676 + 0.050114 – 0.000242 – 0.001721}\boldsymbol{X_1X_2X_3X_4}$$

The interpretation of the above research regression model equation statistically is as follows:

- A constant of -60.14471 shows that a constant of this magnitude does not mean that the human development index will fall by 60.14471 if there is a change in the free variable.
- The value of the coefficient X_1(UMR) is 9.031676 which means that every increase in the regional minimum wage is worth 1%, then the human development index has increased by 9.031676%.
- The value of the coefficient X_2(LPE) is 0.050114 which means that every increase in the economic growth rate is worth 1%, then the human development index has increased by 0.050114%.
- The value of the coefficient X_3(TK) is -0.000242 which means that every increase in the poverty rate is worth 1%, then the human development index decreases by 0.000242%.
- The value of the coefficient X_4(TPT) is -0.001721 which means that every increase in open unemployment is worth 1%, then the human development index has decreased by 0.001721%.

Furthermore, referring to the analysis of the selection of the best fixed effect regression model obtained for each district/city in East Kalimantan, as follows:

1) Y_{BPP}= -54.27750 + 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$
2) Y_{Berau}= -60.45142 + 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$
3) $Y_{Bontang}$= -54.22811 + 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$
4) Y_{Kubar}= -63.26585 + 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$
5) Y_{Kukar}= -60.83907 + 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$
6) Y_{Kutim}= -61.41603 + 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$

7) Y_{Mahulu}= -67.43863 + 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$
8) Y_{Paser}= -61.77161 + 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$
9) Y_{PPU}= -63.70175+ 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$
10) Y_{SMD}= -54.05713+ 9.031676 + 0.050114 – 0.000242 – 0.001721$X_1X_2X_3X_4$

From the equation above, it can be seen that 10 districts/cities in East Kalimantan have a negative coefficient. The coefficient of the negative constant ranging from -63 to -54 is not interpreted as a human development index that decreases by 63 units to 54 units if there is a change in the free variable. This constant number does not have a direct economic interpretation because the differences between regions in 10 districts/cities in East Kalimantan have been accommodated in the FEM model.

Discussion

Upah Minimum Regional

Based on the results of the study, it was obtained that the regional minimum wage has a significant positive influence on the human development index in East Kalimantan Province. This research is also in line with the theory of community welfare from Todaro and Smith (2011) regarding the role of income can affect people's purchasing power in access to nutritious food, decent housing, health services, and better education. This research supports this theory because increased income correlates with an increase in overall well-being. The results of this study are in line with the research conducted by Faizin (2021) and Gunawan *et al.* (2022) which states that the government's policy to increase the minimum wage will have an impact on improving the quality of life of the community which will lead to an increase in HDI achievement in East Java and provinces on the island of Sumatra.

The increase in the minimum wage in 10 districts/cities in East Kalimantan aims to maximize the needs of a decent life so that the standard of living will also increase. The government participates in dealing with wage issues through various interventions contained in laws and regulations. Referring to Law Number 6 of 2023 concerning Job Creation, every worker or laborer has the right to a decent livelihood for humanity. The purpose of setting this minimum wage is as social protection in ensuring that wages remain stable and do not cause economic inequality. The minimum wage must be able to meet the minimum basic needs of workers, especially clothing, food, and household needs.

Economic Growth Rate

Based on the results of the study, it was obtained that the rate of economic growth has a significant positive influence on the human development index in East Kalimantan Province. The theory of community welfare from Todaro and Smith (2011) related to the role of economic growth in influencing people's per capita income so as to increase opportunities to access nutritious food, decent housing, health services, and education to be better. Sustainable economic growth encourages job creation, increases people's incomes, and expands the government's capacity to provide public services. The results of this study are in line with the research conducted by Awary et al (2025) which stated that increasing economic growth will contribute to increasing HDI in East Java.

The economy of East Kalimantan in 2024 will be contributed by the Mining and Quarrying, Processing Industry, Construction, and Agriculture, Forestry, and Fisheries sectors. In terms of labor composition, this sector absorbs 40.84 percent of the workforce. This condition shows that an increase in the distribution of GDP according to the business field is followed by an increase in the number of working population. This indicates an increase in labor absorption which results in an increase in income and community expenditure allocation, so that the welfare of the people in East Kalimantan increases.

Poverty Rate

Based on the results of the study, it was found that poverty has a negative influence on the human development index in East Kalimantan Province. This condition can be caused by observation data from 2015-2024 which shows that although the poverty rate has

decreased not so significantly in each district/city, the achievement of the human development index tends to increase significantly every year, so that the change in poverty does not significantly affect the development of the human development index in East Kalimantan. The results of this study are in line with research conducted by Resmana & Gunawan (2025) and Faizin (2021) which stated that the level of poverty affects the quality of human life itself, but the effect is not real or direct.

Government policies and interventions play a role in reducing the direct impact of poverty on the human development index. Some of the government interventions that have been implemented against this poverty problem are local governments through the BPJS Kesehatan (JKN-KIS) programs, the East Kalimantan Tuntas Scholarship, the Smart Indonesia Program (PIP), the construction of Livable Houses (RLH), the provision of Direct Cash Assistance (BLT), and the Family Hope Program (PKH) which encourages increased access to education, health, and decent living standards. This shows that government policies tend to make people able to access a better life through sustainable education, health, and human development, which are more responsive to changes in the human development index.

Open Unemployment Rate

Based on the results of the study, it was obtained that the Open Unemployment Rate has a negative influence on the human development index in East Kalimantan Province. This condition can be caused by observation data from 2015-2024 which shows that although the open unemployment rate fluctuates in each district/city, the achievement of the human development index tends to increase every year, so that changes in the open unemployment rate do not significantly affect the human development index in East Kalimantan. The results of this study are in line with research conducted by Rohaini (2024) and Nasution et al. (2025) which stated that in the short term, the open unemployment rate has a negative effect on the human development index.

One of the other factors is the dominance of formal sector workers in East Kalimantan. The formal sector workforce in 2024 will be worth 57.68 percent, which is relatively high compared to the national average of 42.05 percent. This suggests that formal sector workers tend to have more stable incomes, job protection, and access to better health and education facilities. This condition causes the human development index to tend to be relatively maintained even though there is still open unemployment because most of the population works in the formal sector with better incomes, so that the welfare of the community in general is maintained.

CONCLUSION

This study shows that economic factors such as the regional minimum wage and the rate of economic growth have a very important role in increasing the achievement of the human development index as a representation of the welfare of the people of East Kalimantan. The results of the panel's data regression analysis show that the increase in the regional minimum wage and economic growth rate based on a positive is significant to the human development index for the 2015-2024 period. On the other hand, poverty and open unemployment rates show a negative but not significant direction for human development achievements for the 2015-2024 period. This condition shows that poverty reduction and TPT are not substantially in increasing HDI achievement in East Kalimantan regions.

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