International Journal of Economics, Commerce, and Management

E-ISSN: 3047-9754
P-ISSN: 3047-9746

The Effect of Population Growth and Human Development Index on Economic Growth and Unemployment in East Kalimantan Province

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Abstract: This study investigates the impact of population growth and the Human Development Index (HDI) on economic growth and unemployment in East Kalimantan Province using path analysis with secondary data from 2014–2023. Population growth and human development are two critical demographic and socio-economic factors that often generate complex effects on regional economic performance. The results indicate that population growth has a negative and significant effect on economic growth, highlighting the pressure that rapid demographic expansion places on natural resources, infrastructure, and employment absorption capacity. Conversely, HDI demonstrates a positive and significant relationship with economic growth, suggesting that improvements in education, health, and income contribute to higher productivity and competitiveness. On the other hand, the direct effect of population growth and HDI on unemployment is negative but statistically insignificant, which implies that the availability of jobs and structural conditions of the labor market are more influential than demographic changes alone. Interestingly, economic growth shows a negative and significant effect on unemployment, supporting the classical theory that sustained economic expansion generates employment opportunities and reduces joblessness. Mediation tests reveal that economic growth does not significantly mediate the relationship between population growth or HDI and unemployment, underscoring that unemployment dynamics in East Kalimantan are influenced by broader structural factors such as sectoral concentration, policy effectiveness, and industrial diversification. These findings highlight the importance of integrating demographic management, human capital development, and sectoral economic strategies in policy formulation. Strengthening human development while controlling excessive population growth can provide a solid foundation for inclusive and sustainable economic progress in East Kalimantan.

Keywords: East Kalimantan; Economic Growth; Human Development Index (HDI); Population Growth; Unemployment.

Received: July 26, 2025
Revised: August 15, 2025
Accepted: October 06, 2025
Published: October 09, 2025
Curr. Ver.: October 09, 2025

1. Introduction

The existence of social institutions (social capital) is also maintained and even their functions are enhanced. Meanwhile, in terms of the environment, the preservation of natural capital is also given significant attention for the benefit of humanity. Development is a process of change that encompasses the entire social system, such as politics, economics, infrastructure, defense, education and technology, institutions, and culture (Alexander 1994). Portes (1976) defines

development as economic, social, and cultural transformation. Development is a planned process of change aimed at improving various aspects of people's lives.

According to Deddy T. Tikson (2005), national development can also be defined as deliberate economic, social, and cultural transformation through policies and strategies toward a desired direction. Transformation in the economic structure, for example, can be seen through the rapid increase or growth of production in the industrial and service sectors, resulting in a greater contribution to national income. Conversely, the contribution of the agricultural sector will decrease and be inversely proportional to the growth of industrialization and economic modernization.

Social transformation can be seen through the distribution of prosperity through equitable access to socio-economic resources, such as education, health care, housing, clean water, recreational facilities, and participation in political decision-making processes. Cultural transformation, on the other hand, is often associated with, among other things, the rise of nationalism and patriotism. Traditionally, development has been defined as the continuous increase in a country's Gross Domestic Product (GDP). For regions, the traditional definition of development focuses on increasing the Gross Regional Domestic Product (GRDP) of a province, district, or city (Kuncoro, 2004).

Economic growth is an important indicator in measuring a country's economic progress. Economic growth is defined as an increase in a country's capacity to produce goods and services (Samuelson & Nordhaus, 2009). Economic growth is typically measured using Gross Domestic Product (GDP) or Gross National Product (GNP) per capita.

Several factors influence economic growth, including (Mankiw, 2012): Natural resources: the more abundant and diverse a country's natural resources, the greater its potential for economic growth. Human resources: the quality and quantity of the workforce will influence productivity and innovation, which will ultimately drive economic growth. Capital accumulation: investments in equipment, infrastructure, and technology will increase production capacity and efficiency. Technological progress: innovation and the adoption of new technologies will increase productivity and competitiveness. Government institutions and policies: political stability, law enforcement, and conducive fiscal and monetary policies will drive economic growth.

Economic development is essentially a series of efforts and policies aimed at improving people's standards of living, expanding employment opportunities, equitable distribution of income, and improving economic relations between regions. The expected results of these various efforts and policies are regional economic growth and increased public welfare, followed by optimal equitable distribution of development outcomes. (BPS Kaltim, 2024)

Achievements in economic growth and improved public welfare need to be presented periodically to serve as material for evaluating results and as a basis for formulating future development policy plans. Various indicators, both social and economic, are used to measure development performance in specific sectors/areas, such as the Gross Regional Domestic Product (GRDP) indicator, which is used to measure economic performance. (BPS Kaltim, 2024)

2. Literature Review

Economic Growth

Economic growth is the development of economic activities that results in an increase in the production of goods and services within a society and increased prosperity. Over time, it is expected that a country's ability to produce goods and services will increase. Meier and Baldwin define economic growth as the process of increasing output per capital over the long term. This definition emphasizes three important aspects: 1) process, 2) output per capital, and 3) long-term. Economic growth is a process, not a snapshot of the economy at a specific point in time.

Unemployment

Unemployment is a macroeconomic problem that directly affects human survival. For most people, losing a job means a decline in their standard of living. It's not surprising, then, that unemployment is a frequent topic of political debate, with politicians often arguing that their proposed policies will help create jobs (Mankiw, 2000).

Population growth

Population Growth Population is all people who reside in the geographical area of Indonesia for six months or more and/or those who reside for less than six months but intend to settle. Population Growth is a change in population over time, and can be calculated as the change in the number of individuals in a population using "per unit time" for measurement. The term population growth refers to all species, but always refers to humans, and is often used informally for the demographic term population growth rate, and is used to refer to world population growth.

Human Development Index

According to the Statistics Indonesia (BPS), the Human Development Index (HDI) describes how people access development outcomes in terms of income, health, education, and so on. The Human Development Index was introduced by the United Nations Development Programme (UNDP) in 1990 and is published periodically in its annual Human Development Report (HDR).

3. Research Methods

Research Design

This type of research is a quantitative research used to examine a specific population or sample, data collection using research instruments, statistical data analysis, with the aim of testing a predetermined hypothesis (Sugiyono, 2012). This research is an explanatory research.

Methods and Analysis Tools

Based on the conceptual framework of this study, it appears that there is no reciprocal arrow direction (double headed arrow) or there is no reciprocal influence from one variable to another, so this research model is called a recursive model with one arrow head (one headed arrow). To explain the causal relationship, the quantitative method and appropriate and suitable analysis tool used is a quantitative method with a path analysis tool or path analysis using the SPSS 25 application. This study uses an equation model, with 2 (two) structural equation models. The data used is time series data.

4. Research Results And Discussion

Research Results

Substructure Analysis Results 1

The influence of population growth variables and the Human Development Index (exogenous variables) on economic growth (endogenous variables) can be seen in the following table:

Table 1. *Coefficient*

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	539.216	322.067		1.674	.138
	Log_X1	-251.203	128.805	-1.980	-1.950	.092
	IPM	4.711	1.876	2.550	2.511	.040

a. Dependent Variable: Pert Eko

The definition of the path analysis hypothesis (Path Analysis) is a partial test of variables that have a direct influence between endogenous variables and exogenous variables. The test conducted was a t-test (critical ratio). If t count > t table or significant < 0.05, then the hypothesis is accepted (rejecting Ho and accepting H1). Or if t count < t table with significant value of 0.05, then the hypothesis is rejected (accepting H0 and rejecting H1). By comparing the T value with the T table, the test results are as follows:

The direct effect of population growth (X1) and the Human Development Index (X2) on economic growth (Y).

a. The direct effect of population growth (X1) on economic growth (Y). The Sig (significant) column in Table 1. Coefficient shows a sig value of 0.092. It turns out that the sig value is smaller than the probability value of 0.05, or a value of 0.092 < 0.05, then Ho is accepted and H1 is rejected. This means that the path analysis coefficient is significant, so the direct effect of population growth is significant on economic growth.

b. The direct effect of the Human Development Index Human (X2) on economic growth (Y) It can be seen that in the Sig (significant) column in Table 1. Coefficient, the sig value is 0.040. It turns out that the sig value of 0.040 is smaller than the probability value of 0.05 or a value of 0.040 < 0.05, so Ho is accepted and H1 is rejected. This means that the path analysis coefficient is significant, so the direct effect of the Human Development Index has a significant effect on economic growth.

Results of Substructure Analysis 2

Furthermore, the significance and partial influence of exogenous variables on endogenous variables can be seen in the following table:

Table 2. Coefficients for Substructure 2

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	102.583	81.402		1.260	.254
	Log_X1	-31.463	34.176	-.819	-.921	.393
	IPM	.217	.552	.388	.393	.708
	Pert Eko	-.195	.081	-.643	-2.411	.052

a. Dependent Variable: TPT

Direct Effect of Population Growth, Human Development Index, and Economic Growth on Unemployment

a. Direct Effect of Population Growth (X1) on Unemployment (Z). The Sig (Significant) column in Table 2 shows a sig value of 0.393. This sig value is greater than the probability value of 0.05, or 0.393 > 0.05. Therefore, Ho is accepted, H1 is rejected, and H1 is rejected. This means the path analysis coefficient is insignificant. Therefore, the direct effect of population growth does not significantly influence unemployment.

b. The direct effect of the Human Development Index (X2) on unemployment (Z). The Sig (significant) column in Table 2. shows a sig value of 0.708. This sig value is greater than the probability value of 0.05, or 0.708 > 0.05. Therefore, Ho is accepted and H1 is rejected. This means the path analysis coefficient is insignificant. Therefore, the direct effect of the Human Development Index on unemployment is insignificant.

c. The direct effect of economic growth (X3) on unemployment (Y2). The Sig (significant) column in Table 2. shows a sig value of 0.052. This sig value is smaller than the probability value of 0.05, or 0.052 < 0.05. Therefore, Ho is accepted and H1 is rejected. This means the path analysis coefficient is significant. Therefore, the direct effect of economic growth on unemployment is significant.

Discussion

The Effect of Population Growth on Economic Growth

The results of this study indicate that population growth has a significant negative impact on economic growth. This indicates that population growth does not always translate directly into increased economic productivity. Conversely, rapid population growth can put pressure on natural resources, infrastructure, and public services, which in turn hinders sustainable economic growth.

Furthermore, rapid population growth is often accompanied by rising unemployment rates, especially if job opportunities cannot absorb the available workforce. In this context, economic growth can be hampered by the inability of the government and the private sector to create sufficient job opportunities. This poses a challenge for policymakers to formulate effective strategies to manage population growth while simultaneously promoting economic growth.

The Influence of Human Development Index (HDI) on Economic Growth

The results of this study indicate that the Human Development Index (HDI) has a positive and significant impact on economic growth. This indicates that improvements in people's quality of life, reflected in HDI components such as health, education, and income, contribute to increased productivity and economic competitiveness. When people have better access to education and healthcare, they tend to be more productive and innovative, which in turn contributes to sustainable economic growth.

Furthermore, an increase in the HDI also creates a conducive environment for investment. Investors tend to be more attracted to countries with high levels of education and good public health, as this indicates the availability of a skilled and healthy workforce. Therefore, countries that successfully improve their HDI not only improve the welfare of their people but also create a more attractive climate for foreign and domestic investment.

The Effect of Population Growth on Unemployment

The results of this study indicate that population growth has a negative and insignificant effect on unemployment. This suggests that although population growth does not always lead to a commensurate increase in unemployment. This

phenomenon can be explained by other factors influencing labor market dynamics, such as increased employment opportunities capable of absorbing new workers and government policies that support job creation.

Furthermore, stable economic growth can be a determining factor in stabilizing the unemployment rate despite population growth. If the economy grows well, the industrial and service sectors can expand their capacity to absorb new workers. Thus, while population growth can increase the number of job seekers, supportive economic conditions can mitigate the negative impact on the unemployment rate.

The Influence of the Human Development Index (HDI) on Unemployment

The results of this study indicate that the Human Development Index (HDI) has a negative and insignificant effect on unemployment in East Kalimantan Province. This indicates that despite improvements in aspects of human resource quality such as health, education, and standard of living, as reflected in the HDI, these effects do not directly or significantly reduce the unemployment rate in the region. This phenomenon may be due to complex labor market dynamics, where other structural factors such as regional economic development, job availability, and government policies significantly influence the unemployment rate.

In the context of East Kalimantan Province, the economic conditions based on specific sectors such as mining and extractive industries may create an imbalance between improvements in human resource quality and available job opportunities. Although the HDI has increased as an indicator of welfare and human resource capacity, the lack of economic diversification and limited employment in the formal sector may hinder a significant reduction in unemployment. This is consistent with research showing that increases in the HDI are not always followed by a reduction in unemployment if not supported by adequate job opportunities and well-targeted policies.

The Effect of Economic Growth on Unemployment

The results of this study indicate that economic growth has a negative and significant effect on unemployment in East Kalimantan Province. This indicates that increased economic growth in the region effectively contributes to a decrease in the unemployment rate. This phenomenon is consistent with economic theory, which states that healthy economic growth will create more jobs through the expansion of the production and service sectors, thereby absorbing previously unemployed workers.

In the context of East Kalimantan Province, economic growth driven by key sectors such as mining, extractive industries, and infrastructure development has had a significant positive impact on employment. Although these sectors are generally capital-intensive, government policies and focused investment have also encouraged the emergence of other, more labor-intensive sectors, thus supporting economic growth by creating broader job opportunities. This negative and significant relationship between economic growth and unemployment suggests that a sustainable economic development strategy will be effective in reducing unemployment in the region.

The Effect of Population Growth on Unemployment Through Economic Growth

The results of the Sobel test with a z-value of 1.515, which is smaller than the critical value of 1.96, indicate that the Economic Growth (Y) variable does not act as a mediator in the relationship between Population Growth (X1) and Unemployment (Z) in East Kalimantan Province. This means that although there is a direct relationship between population growth and unemployment, economic growth does not significantly mediate the relationship. This finding indicates that the

effect of population growth on unemployment runs independently of the mechanism of economic growth in the East Kalimantan Province region.

The Influence of the Human Development Index (HDI) on Unemployment Through Economic Growth

Based on the results of the Sobel test with a z value of -1.737 which is smaller than the critical value of 1.98, it shows that the economic growth variable is unable to mediate the relationship between the Human Development Index (HDI) (X2) and unemployment (Z) through economic growth (Y) in East Kalimantan Province. This finding indicates that the influence of the HDI on the unemployment rate in the region is not passed on or significantly mediated by economic growth. In other words, other factors besides economic growth are likely more dominant in explaining the relationship between the HDI and unemployment.

5. Conclusion

The Effect of Population Growth on Economic Growth: Population growth has a significant negative effect on economic growth. This occurs because rapid population growth can put pressure on natural resources, infrastructure, and public services, and increase the unemployment rate due to limited job opportunities; The Effect of the Human Development Index (HDI) on Economic Growth: The HDI has a significant positive effect on economic growth. Improvements in the quality of life, education, and public health increase productivity and economic competitiveness, which in turn drives sustainable economic growth; The Effect of Population Growth on Unemployment: Population growth has a negative but insignificant effect on unemployment. This shows that population growth is not always directly proportional to increased unemployment, as other factors such as stable economic growth and government policies can absorb new workers; The Effect of the HDI on Unemployment: The HDI has a negative but insignificant effect on unemployment in East Kalimantan Province. Although the quality of human resources has improved, its influence has not directly reduced the unemployment rate due to other structural factors, such as job availability and suboptimal government policies; The Effect of Economic Growth on Unemployment: Economic growth has a negative and significant effect on unemployment. This is consistent with economic theory, where healthy economic growth creates more jobs through the expansion of the production and service sectors, thereby reducing the unemployment rate; Economic Growth as a Mediator (Population Growth on Unemployment): Based on the Sobel test, economic growth does not act as a significant mediator in the relationship between population growth and unemployment. This means that the effect of population growth on unemployment operates independently of the mechanism of economic growth; Economic Growth as a Mediator (HDI on Unemployment): Economic growth is also unable to significantly mediate the relationship between HDI and unemployment. This means that factors other than economic growth may be more dominant in explaining the relationship between improvements in quality of life and the unemployment rate in East Kalimantan Province.

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