DO HUMAN DEVELOPMENT INDEX (HDI) AND UNEMPLOYMENT AFFECT POVERTY IN MADURA, INDONESIA?

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Abstract
The main objective of this study is to analyze the effect of the Human Development Index (HDI) and unemployment rate on poverty in Madura. This research uses a quantitative approach with an associative research type. The sample in this study includes HDI, which is measured based on the HDI level; unemployment, which is calculated based on the open unemployment rate; and poverty, which is estimated based on the poverty rate of four districts in Madura for the last 10 years, starting from 2014-2023. Based on the results of the research conducted, it can be concluded that the Human Development Index affects poverty in Madura. Meanwhile, unemployment has no effect on poverty in Madura. However, both variables, namely the Human Development Index and unemployment, simultaneously affect poverty in Madura by 51.55%.
Keywords: Human Development Index, Unemployment, Poverty.

INTRODUCTION

Poverty is one of the main challenges faced by many developing countries, including Indonesia. In certain regions, such as Madura, the problem of poverty has different characteristics due to the influence of distinctive social, economic, and cultural factors. Madura, which consists of four districts, Bangkalan, Sampang, Pamekasan, and Sumenep, has a relatively high poverty rate compared to other regions in East Java Province. Poverty is a phenomenal problem in Indonesia; so far, the government has not found policies and strategies to alleviate poverty effectively with empowerment programs for the poor that favour the poorest layers in the districts located on Madura Island (Sari et al., 2019). Poverty is the inability of people to meet basic standards of decent living needs such as food, clothing, education, and health (Susilowati et al., 2015). It is theoretically shown that poverty is an essential aspect in determining economic outcomes (Bao & Liao, 2024). Therefore, efforts to understand and reduce poverty in Madura are significant.

The Human Development Index (HDI) is one of the leading indicators used to measure the success of a region's development in improving the welfare of its people. Humans have an essential role in resources and supporting factors for the success of poverty alleviation (Charimah & Setiawati, 2024). Research (Widiastuti et al., 2022) shows that an increase in HDI will alleviate poverty. HDI includes aspects of education, health, and decent living standards that contribute directly to poverty levels. According to (Masduki et al., 2022), quality government spending can increase HDI and will reduce poverty levels. The ultimate goal of a country's development is how each of its residents achieves welfare in ideal proportions (Regina et al., 2020).

In addition, a high unemployment rate is also often associated with an increase in poverty because limited employment opportunities have an impact on people's income. Widespread unemployment will increase poverty (Sumaila et al., 2024). Based on (Ngubane et al., 2023),

unemployment will increase poverty in the long run. It is also supported by (Al-Jundi et al., 2020) that unemployment affects poverty. In Madura, the problems of low HDI and high unemployment rates are of particular concern that contribute to significant poverty levels.

This research is vital because poverty affects the quality of life of individuals and the social and economic development of the region as a whole. Reducing poverty in Madura will improve the welfare of the local community and contribute to the achievement of national development targets. Therefore, comprehensive research is needed to understand how HDI and the unemployment rate affect poverty in Madura in order to formulate more effective and targeted policies.

This study offers a novelty in analyzing the relationship between HDI, unemployment, and poverty, specifically in Madura, a region with different economic and social characteristics from the other areas in Indonesia. This study will combine data from all four districts in Madura to provide a clearer picture of the influence of these variables on poverty at the regional level. Thus, this study is expected to provide specific new insights regarding the factors that influence poverty in the Madura region.

The main objective of this study is to analyze the effect of the Human Development Index (HDI) and unemployment rate on poverty in Madura. This research is expected to provide a strong empirical basis for policy-making in an effort to improve the welfare of the people of Madura by improving the quality of human resources and reducing unemployment.

METHOD

This research uses a quantitative approach with an associative research type. In this study, the population of this study is the Human Development Index (HDI), which is measured based on the HDI level; unemployment, which is measured based on the open unemployment rate; and poverty, which is measured based on the poverty rate in Madura, namely Bangkalan Regency, Sampang Regency, Pamekasan Regency and Sumenep Regency. The data collection technique in this study is by means of purposive sampling. The samples in this study include HDI measured based on the HDI level of four districts in Madura for the last 10 years starting from 2014-2023, unemployment measured based on the open unemployment rate of four districts in Madura in 2014-2023 and poverty measured based on the poverty rate of four districts in Madura in 2014-2023. The data source in this study uses secondary data obtained from the Central Bureau of Statistics of East Java Province, Bangkalan Regency Central Bureau of Statistics, Sampang Regency Central Bureau of Statistics, Pamekasan Regency Central Bureau of Statistics and Sumenep Regency Central Bureau of Statistics.

This research uses panel data because it is a combination of time series and cross-section data. The cross-section data in this study is in the form of data on HDI (X1), unemployment (X2) and poverty (Y) variables in four districts in Madura over ten years (time series), namely 2014-2023. Based on the balance of the data, this research is a balanced panel data. Panel data is balanced if each cross-section unit has the same number of time series observations (Suliyanto, 2011, p. 229). In this

study, there are three cross-section units; each district has ten years of time series observations. In this study, researchers will examine the effect of HDI (X1) and unemployment (X2) variables on poverty (Y) in Madura, namely in Bangkalan Regency, Sampang Regency, Pamekasan Regency and Sumenep Regency during the period 2014-2023. In this study, four districts have ten data series and three variables, so researchers have 120 observations.

RESULTS AND DISCUSSION

Model Selection Test Results

Table 1. Chow test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	50.044374	(3,34)	0.0000
Cross-section Chi-square	67.571939	3	0.0000

Source: Data processed by researchers (2024)

Based on the Chow test conducted, it can be seen that the Prob value is 0.0000 <0.05, so the FEM model was chosen.

Table 2. Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.806623	2	0.6681

Source: Data processed by researchers (2024)

Based on the Hausman test conducted, it can be seen that the Prob value is 0.6681> 0.05, so the REM model is chosen.

Table 3. Legrange Multiplier Test (LM)

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided
   (all others) alternatives

| | Test Hypothesis | | |
	Cross-section	Time	Both
Breusch-Pagan	82.97793	0.655506	83.63343
	(0.0000)	(0.4182)	(0.0000)
Honda	9.109222	-0.809633	5.868696
	(0.0000)	(0.7909)	(0.0000)
King-Wu	9.109222	-0.809633	7.484001
	(0.0000)	(0.7909)	(0.0000)
Standardized Honda	14.70080	-0.544937	4.589930
	(0.0000)	(0.7071)	(0.0000)
Standardized King-Wu	14.70080	-0.544937	7.701176
	(0.0000)	(0.7071)	(0.0000)
Gourieroux, et al.	--	--	82.97793
			(0.0000)

Source: Data processed by researchers (2024)

Based on the Lagrange multiplier test carried out, it can be seen that the Prob value is 0.0000 <0.05, so the REM model is chosen. So, based on the results of the Chow test, Hausman test, and LM test, the best model in this study is REM.

<div align="center">Table 4. Panel Data Regression</div>

Estimation Command:

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LS (? CX=R) Y C X1 X2

Estimation Equation:

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Y = C (1) + C (2) *X1 + C (3) *X2 + [CX=R]

Substituted Coefficients:

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Y = 52.647348111 - 0.521512712924*X1 + 0.110841245362*X2 + [CX=R]

<div align="center">Source: Data processed by researchers (2024)</div>

Based on these results, the regression equation analysis is as follows:

1. The constant value obtained is 52.647348111, so it can be interpreted if the independent variable increases and the dependent variable will also increase by 52.647348111.

2. The regression coefficient value of variable X1 is negative -0.521512712924, which means that if variable X1 decreases, variable Y will also decrease by 0.521512712924.

3. The regression coefficient value of the X2 variable is positive by 0.110841245362, which means that if the X2 variable increases, the Y variable also increases by 0.110841245362.

Hypothesis Test Results

<div align="center">Table 5. Partial Test (t-Test)</div>

Dependent Variable: Y
Method: Panel EGLS (Cross-section random effects)
Date: 11/22/24   Time: 09:37
Sample: 2014 2023
Periods included: 10
Cross-sections included: 4
Total panel (balanced) observations: 40
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	52.64735	5.318687	9.898561	0.0000
X1	-0.521513	0.081357	-6.410186	0.0000
X2	0.110841	0.109152	1.015474	0.3165

Effects Specification			S.D.	Rho
Cross-section random			3.065627	0.9109
Idiosyncratic random			0.958726	0.0891

Weighted Statistics				
R-squared	0.540424	Mean dependent var		1.944239
Adjusted R-squared	0.515582	S.D. dependent var		1.355081
S.E. of regression	0.943138	Sum squared resid		32.91185
F-statistic	21.75450	Durbin-Watson stat		1.081039
Prob(F-statistic)	0.000001			

Unweighted Statistics				
R-squared	0.467880	Mean dependent var		19.75550
Sum squared resid	202.0260	Durbin-Watson stat		0.176111

Source: Data processed by researchers (2024)

Based on the partial Test (t-test), the results obtained are as follows:

1. The HDI variable (X1) has a t-statistic of -6.410 with a prob. value of 0.0000 <0.05, so the HDI variable (X1) has a significant effect on the Poverty variable (Y).

2. The Unemployment variable (X2) has a t-statistic of 1.015 with a prob. value of 0.3165> 0.05, so the Unemployment variable (X2) has no significant effect on the Poverty variable (Y).

Table 6. Simultaneous Test (Test-f)

Weighted Statistics			
R-squared	0.540424	Mean dependent var	1.944239
Adjusted R-squared	0.515582	S.D. dependent var	1.355081
S.E. of regression	0.943138	Sum squared resid	32.91185
F-statistic	21.75450	Durbin-Watson stat	1.081039
Prob(F-statistic)	0.000001		

Source: Data processed by researchers (2024)

Based on the simultaneous Test (f-test), the results obtained are the F-Statistic value of 21.75450 with a prob value. 0.000001 <0.005 means that the independent variables HDI (X1) and Unemployment (X2) have a significant effect simultaneously (simultaneously) with the dependent variable, namely Poverty (Y).

Table 7. Determination Coefficient Test

Weighted Statistics			
R-squared	0.540424	Mean dependent var	1.944239
Adjusted R-squared	0.515582	S.D. dependent var	1.355081
S.E. of regression	0.943138	Sum squared resid	32.91185
F-statistic	21.75450	Durbin-Watson stat	1.081039
Prob(F-statistic)	0.000001		

Source: Data processed by researchers (2024)

Based on the coefficient of determination test, the results obtained are the Adjusted R-squared value of 0.5155, which means that the contribution of the influence of HDI and poverty variables has a significant effect on poverty simultaneously (together) of 51.55%.

The Effect of the Human Development Index (HDI) on Poverty in Madura

The results of the hypothesis testing show that the Human Development Index (HDI) has a significant effect on poverty in Madura. In accordance with (Fahrika et al., 2020) (Hasan, 2021) (Ipmawan et al., 2022). However, according to research (Dahliah & Nur, 2021), HDI has a negative and insignificant effect on the poverty rate.

The Human Development Index (HDI) is proven to have a significant influence on the poverty rate in Madura, as the research results have shown. The HDI classification results of Sampang Regency have a low classification compared to all regencies on Madura Island (Susilowati et al., 2019). It shows that an increase in HDI, which includes aspects of education, health, and decent living

standards, contributes directly to poverty alleviation efforts. The HDI provides a picture of the quality of human resources that affects the ability of individuals and communities to move out of poverty. Poverty results in a decline in the quality of human resources, which is a global problem in development (Reynaldo et al., 2023). Research shows that improvements in aspects related to HDI, such as increased access to education and health services, can significantly reduce poverty in the region. Education is one of the most important factors in breaking the vicious cycle of intergenerational poverty (Kamalia et al., 2020). Therefore, policies that focus on improving HDI in Madura have great potential to support sustainable poverty reduction by strengthening the foundations of human development at the local level.

The results of this study show that the Human Development Index (HDI) has a significant influence on the poverty rate in Madura, which implies the importance of continued investment in education, health, and improved living standards. Improved access to and quality of education can empower people to acquire skills relevant to the labour market, thereby structurally reducing the poverty rate. In addition, improvements in health services will increase individual productivity, while the provision of decent basic needs helps people to escape the cycle of poverty. Local governments in Madura, along with other stakeholders, should prioritize budget allocations that support HDI development to create a long-term positive impact on people's welfare.

Strategically, this research also underscores the need for synergy between various development programs to improve HDI as a concrete step in poverty alleviation. Integrated policies, such as community-based job training, equitable development of education and health infrastructure, and women's empowerment, can accelerate improvements in people's quality of life. In addition, collaboration with the private sector and civil society organizations can provide additional support to ensure the sustainability of these initiatives. By focusing on improving HDI, the government is not only reducing poverty but also strengthening the foundation of social and economic development in Madura as a whole.

The Effect of Unemployment on Poverty in Madura

Based on the results of hypothesis testing show that unemployment does not significantly affect poverty in Madura. It is in accordance with research conducted by (Eren et al., 2014) (Susilowati et al., 2019). However, according to (Fahrika et al., 2020) (Dahliah & Nur, 2021) unemployment has a positive effect on the poverty rate.

The results show that unemployment does not significantly affect the poverty rate in Madura. It can be explained by the possibility of alternative sources of income in the region, such as the informal sector or subsistence agriculture, which allow people to continue to fulfil their basic needs despite high unemployment rates. On the other hand, the effect of unemployment on poverty may be reduced by Madurese socio-economic patterns, including the still-strong role of community solidarity or

extended family support. These factors may reduce the direct impact of unemployment on poverty conditions.

In addition, this result indicates the need for a more in-depth analysis of the characteristics of the labour market in Madura and the relationship between employment and community welfare. Although unemployment is statistically insignificant, local governments still need to increase the creation of quality jobs to support local economic growth. This strategy can be directed at sectors with great potential, such as tourism, fisheries and local handicrafts, to sustainably increase community income and strengthen the foundation of the regional economy.

The results of this study, which show that unemployment does not significantly affect poverty in Madura, imply that other factors may be more dominant in influencing the poverty rate in this region. It opens up opportunities to examine other socio-economic aspects, such as the quality of human resources, access to education, basic infrastructure, or people's consumption patterns. In addition, it is likely that many Madurese work in the informal sector, which is often not recorded in official unemployment data. Therefore, government policy should not only focus on reducing the unemployment rate but also pay attention to developing the informal sector and strengthening social protection networks to support vulnerable communities.

Another implication of these findings is the importance of improving the quality of jobs available in Madura, not just the quantity. By creating decent and sustainable jobs in potential sectors such as agriculture, fisheries or local tourism, people can have a more stable income and be able to fulfil their needs. Local governments also need to adopt an inclusive approach that takes into account local dynamics, such as community culture and traditions, to ensure that development programs are genuinely relevant and practical. Thus, although unemployment is not directly significant to poverty, a comprehensive economic development strategy is still needed to improve the overall quality of life of Madurese people.

The Effect of Human Development Index (HDI) and Unemployment on Poverty in Madura

The results of the hypothesis testing show that the Human Development Index (HDI) and unemployment simultaneously affect poverty in Madura. This is in accordance with (Dahliah & Nur, 2021) (Ipmawan et al., 2022) (Sinaga & Zalukhu, 2022). The results showed that the Human Development Index (HDI) and unemployment simultaneously affect poverty in Madura. It indicates a complex relationship between the quality of human development labour market conditions and the level of community welfare. A low HDI can limit people's access to education, health, and other basic needs, which in turn increases vulnerability to poverty. Meanwhile, although unemployment is partially insignificant, its impact can become more pronounced when combined with other variables such as HDI. It underscores the importance of a holistic approach to understanding poverty dynamics, where various variables interact with each other to affect economic and social outcomes.

This analysis has practical implications for policymakers in Madura. Improving HDI should be a top priority with a focus on quality education, access to health services, and provision of adequate basic infrastructure. On the other hand, job creation policies need to be geared towards creating decent and sustainable jobs, especially in sectors relevant to local needs, such as agriculture and tourism. This integrated approach will not only help reduce poverty levels but also strengthen the socio-economic resilience of Madurese communities in the long term. It shows that the solution to poverty requires synergy between human quality improvement and labour market stability.

The results of the study, which show that the Human Development Index (HDI) and unemployment simultaneously affect poverty in Madura, imply that poverty alleviation policies should integrate the improvement of human development quality and labour market management. Improving HDI through investment in the education, health, and essential infrastructure sectors can give people the ability to participate better in the labour market and improve their welfare. At the same time, efforts to create decent and sustainable jobs, especially in local leading sectors, such as agriculture, fisheries, and tourism, can reduce unemployment and have a direct impact on poverty reduction.

Another implication of this finding is the importance of synergy between human quality improvement programs and economic policies to create a broader impact. Local governments can develop job training programs tailored to local needs and encourage investment in sectors that have great potential to absorb labour. In addition, collaboration with the private sector and civil society organizations can accelerate the implementation of these policies. By adopting an integrated approach, the government will not only be able to reduce poverty levels but also create a stronger foundation for economic and social development in Madura.

CONCLUSION

Based on the results of the research conducted, it can be concluded that the Human Development Index affects poverty in Madura. Meanwhile, unemployment has no effect on poverty in Madura. However, the two variables, namely the Human Development Index and unemployment, simultaneously affect poverty in Madura by 51.55%.

Based on the research conclusions, it is recommended that the Madura regional government focus on increasing the Human Development Index (HDI) through programs that support access to quality education, equitable health services, and improving people's living standards. In addition, although unemployment does not have a significant effect partially, efforts to create decent and sustainable employment remain important to support poverty reduction simultaneously. The government also needs to strengthen the synergy between improving the quality of human resources and inclusive economic policies, such as local needs-based job training and empowering potential sectors such as agriculture, fisheries, and tourism, to create a broader impact in reducing poverty in Madura.

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