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THE EFFECT OF INFORMATION AND COMMUNICATION TECHNOLOGY DEVELOPMENT INDEX, FOREIGN DIRECT INVESTMENT, AND HUMAN DEVELOPMENT INDEX ON POVERTY IN JAVA ISLAND

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Abstract

Poverty in Java Island remains a significant socio-economic challenge, despite its role as Indonesia's economic center. Although provinces such as DKI Jakarta and East Java have shown improvements in infrastructure, education, and industrial development, income inequality and urban-rural disparities persist. This study aims to analyze the influence of the information and communication technology development index, foreign investment, and the human development index on poverty in Java Island. Data analysis uses multiple linear regression analysis techniques. This data uses panel data processed with E-Views 12 software. This study uses secondary data with six research objects: DKI Jakarta Province, West Java Province, East Java Province, Banten Province, DI Yogyakarta Province, and Central Java Province for 13 years from 2012 to 2024, with data sources originating from the Central Statistics Agency and the Investment Coordinating Board of the Ministry of Investment and Downstreaming. Based on the study findings, poverty is negatively and significantly affected by the information and communication technology development index. In addition, foreign investment also negatively and insignificantly affects poverty. However, the human development index also negatively and significantly influences poverty. Simultaneously, all independent variables influence the dependent variable in this study.

Keywords: *poverty, information and communication technology development index, foreign investment, human development index*

BACKGROUND

The United Nations (UN) introduced the Sustainable Development Goals (SDGs) in 2015 as a solution for broad global sustainability (Alamoush et al., 2021). Among the 17 United Nations Sustainable Development Goals (SDGs) implemented until 2030, the first listed is to end poverty in all its forms everywhere. This program was created as a global effort to eradicate extreme poverty and reduce income inequality by 2030. This is crucial because poverty is a widespread and complex problem that affects billions of people worldwide. Poverty can have

serious consequences for individuals, societies, and economies, including poor health, limited access to education and other essential services, and reduced economic opportunities.

The World Bank defines poverty as a lack of well-being (Murjani, 2018). Poverty was originally described as an economic phenomenon, a condition in which an individual's household income falls short of a basic standard of living. With socioeconomic development, the definition of poverty has gradually shifted from a lack of economic income to a multidimensional measurement that includes lack of access to education, medical care, housing, and other social deprivations (Liu et al., 2020). Poverty is a condition characterized by insufficient economic resources to meet daily living needs. Absolute poverty is defined as the inability to meet minimum basic needs such as food, clothing, health care, housing, and education, which are necessary for living and working. The World Bank released poverty statistics, showing that currently, nearly 700 million people (8.5 percent of the global population) live in extreme poverty, living on less than $2.15 a day. Progress has stalled amid low growth, setbacks from COVID-19, and increasing fragility. Poverty rates in low-income countries are higher than before the pandemic. Approximately 3.5 billion people (44 percent of the global population) remain poor by the more relevant standard for upper-middle-income countries ($6.85 a day), and the number of people living on less than this standard has remained virtually unchanged since the 1990s due to population growth (World Bank, 2024)

Poverty remains a major problem that Indonesia has yet to fully address. According to the latest statistical data as of September 2024, the number of poor people in Indonesia was 24.06 million, or 8.57 percent. This number decreased by 1.16 million compared to the number of poor people in Indonesia in March 2024, which was 25.22 million, and by 1.84 million compared to the number of poor people in March 2023. The percentage of poor people in Indonesia also decreased, from 8.57 percent in September 2024, down 0.46 percent compared to March 2024, and down 0.79 percent compared to March 2023 (Badan Pusat Statistik, 2024). The number of poor people in Indonesia varies from province to province. However, the provinces with the highest number of poor people in Indonesia are highlighted. Of the 10 provinces, three are from Java. According to September 2024 data, the province with the highest number of poor people in Indonesia is East Java, with 3,893.82 million people. This is followed by West Java, with 3,668.35 million people. Central Java holds the third position in terms of the number of poor people in Indonesia, with 3,396.34 million people.

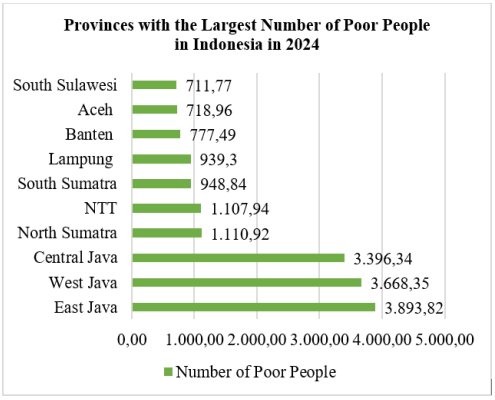


FIGURE 1 PROVINCE WITH THE LARGE NUMBER OF POOR PEOPLE IN INDONESIA IN 2024

International Journal of Current Economics & Business Ventures, 5 (2) 2025, 597-622
International Journal of Current Economics & Business Ventures
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Poverty, of course, does not arise by itself; it is caused by many factors, including digital factors. One of the main elements shaping modern development outcomes is the Information and Communication Technology Development Index (ICT). The rapid expansion of digital technology has transformed the way individuals and communities access information, interact economically, and engage with public services. Information and communication technology can serve as a catalyst for poverty alleviation by opening pathways to digital education, online business opportunities, financial technology, and e-government services. Information and communication technology also enables more efficient markets and reduces transaction costs, which can improve welfare and productivity. However, not all regions in Java have the same level of information and communication technology readiness. Indonesia's information and communication technology development index in 2024 reached 6.02. This figure is an increase from the previous year's score of 5.90. This figure indicates that Indonesia remains in the "moderate" category in information and communications technology development. However, the index growth indicates progress in expanding digital access, utilization, and skills among the public. Of all the provinces in Indonesia, the top 10 with the highest information and communication technology development index scores are DKI Jakarta Province, with a score of 7.88. This is followed by DI Yogyakarta Province in second place with a score of 7.36. Four other provinces on the island of Java also have relatively high information and communication technology development indexes: West Java Province with a score of 6.33, Central Java Province with a score of 5.98, East Java Province with a score of 6.07, and Banten Province with a score of 6.46.

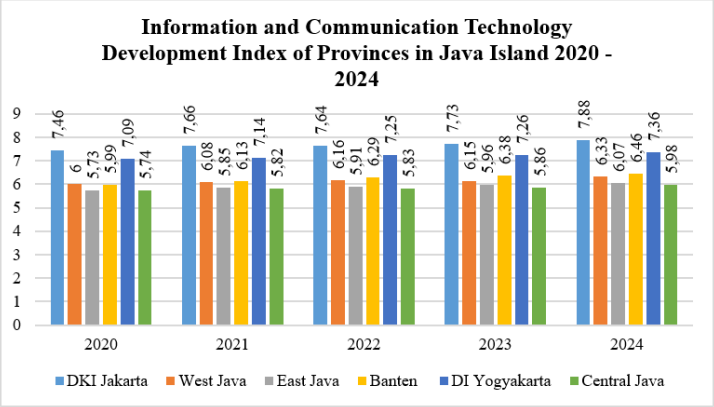


FIGURE 2 INFORMATION AND COMMUNICATION TECHNOLOGY DEVELOPMENT INDEX OF PROVINCE IN JAVA ISLAND 2020 - 2024

In addition to the factors mentioned above, there are other factors that can influence poverty, namely foreign investment. According to Law No. 25 of 2007, foreign investment is the activity of investing capital to conduct business in the territory of the Republic of Indonesia, carried out by foreign investors, whether using foreign capital entirely or in partnership with domestic investors. FDI is considered a key driver of economic growth because it brings not only financial resources but also technology transfer, managerial expertise, and access to global markets. Foreign investment in Indonesia in 2024 reached IDR 900.2 trillion (US$55.33 billion), a 21% year-on-year increase. The highest realization of foreign investment in Indonesia in 2024 was in West Java Province, with an investment value of US$9,972,328.2. This was followed by Jakarta Province with an investment value of US$7,563,411.5, East Java Province with an investment value of US$3,661,076.8, Central Java Province with an

International Journal of Current Economics & Business Ventures, 5 (2) 2025, 597-622
International Journal of Current Economics & Business Ventures
https://scholarsnetwork.org/journal/index.php/ijeb

investment value of US$2,358,034.8, Banten Province with an investment value of US$386,816.8, and the Special Region of Yogyakarta Province with an investment value of US$35,443.1 (Hilirasi/BKPM, 2025).

Province	2020	2021	2022	2023	2024
DKI Jakarta	3613262.5	3330567.7	3744070.1	4830021.5	7563411.5
West Java	4793707.2	5217691.3	6534450.1	8283746.1	9972328.2
East Java	1575459.8	1849172.6	3134043.2	4740978.2	3661076.8
Banten	2143559.2	2189967.2	3410682.1	4451586.5	3868168
DI Yogyakarta	9722.7	21813.6	113893.3	46008.4	35443.1
Central Java	1363635	1465939.3	2362039	1563663.6	2358034.8

FIGURE 3 REALIZATION OF FOREIGN INVESTMENT IN PROVINCES ON THE ISLAND OF JAVA

Another factor influencing poverty is the Human Development Index. The Human Development Index (HDI) is a composite statistical measure used to assess the overall development and well-being of a country's population. Developed by the UNDP, the HDI takes into account three main dimensions: health, education, and a decent standard of living. The Human Development Index (HDI) serves as an important tool for understanding the diverse nature of poverty by integrating health, education, and income into a single measure. A country with a high HDI typically indicates that its population enjoys better health outcomes, higher levels of education, and greater economic resources. Based on the data above, the human development index for Jakarta Province is above 80. This value indicates that Jakarta Province is classified as very high, with a Human Development Index (HDI) of 83.08. In fact, with this index value, Jakarta Province is the province with the highest human development index in Indonesia. In addition to Jakarta Province, the Special Region of Yogyakarta also has a very high human development index, with a HDI of 81.55. This means that two of the six provinces on Java Island have achieved very high human development index scores.

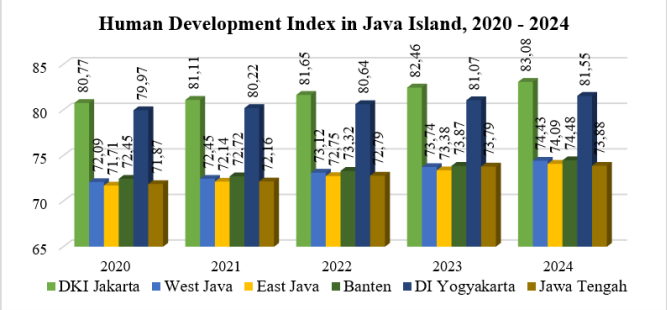


FIGURE 4 HUMAN DEVELOPMENT INDEX IN JAVA ISLAND, 2020 - 2024

Seeing the relatively high value of the information and communication technology development index, foreign investment with a large investment value, and the human development index figure that is in the high categories, it is interesting to study more deeply regarding what impact it has on poverty. Based on the above background, the researcher is interested in examining and developing factors that are believed to be able to influence poverty, including the Information and Communication Technology Development Index, Foreign Direct Investment, and the Human Development Index. So the title of the research raised by the researcher is "**The Effect of the Information and Communication Technology Development Index, Foreign Direct Investment, and the Human Development Index on Poverty in Java Island**".

International Journal of Current Economics & Business Ventures, 5 (2) 2025, 597-622
International Journal of Current Economics & Business Ventures
https://scholarsnetwork.org/journal/index.php/ijeb

THEORETICAL FRAMEWORK

Poverty

Poverty is "a real lack of well-being." Poor people are those who do not have enough income or consumption to place them above an adequate minimum threshold (World Bank, 2019). The definition of poverty according to the Big Indonesian Dictionary (KBBI) is a situation or condition in which an individual or group of people are unable to meet their basic needs. According to Supriatna (Kadji, 2012), poverty is a situation of limitations that occurs not at the will of the individual concerned. Therefore, we can see that poverty is not an intentional desire, but rather something that occurs due to several specific factors.

Another definition of poverty is a condition in which a person is unable to meet the minimum needs considered reasonable by the standards of the society in question (Ravallion, 1992). This definition of poverty implies a need for basic goods and services in addition to social participation. The cost of a minimum standard of living in any society depends on (a) the extent to which goods and services are provided by the state or the market; (b) social norms; and (c) the prices of food and other goods. Each of these can change over time, meaning poverty also changes with the broader economic context. Types of poverty are classified into several categories, namely structural poverty, natural poverty, cultural poverty, absolute poverty, relative poverty.

Poverty can be defined in various ways. Historically, poverty has been linked to income, which remains the core concept today. Poverty has evolved from the 19th-century notion of "necessities," which refers to what a person needs to survive, to the mid-20th-century conceptualization of the lack of "basic needs," which broadened the notion of living to include basic amenities and services such as health care, sanitation, and education, to the late-20th-century understanding of poverty as "relative deprivation," including income and other resources, as well as social conditions.

Information and Communication Technology Development Index (ICT)

The Information and Communication Technology Sector Development Index (ICT Development Index), published annually since 2009, is a composite index that, until 2017, combined 11 indicators into a single benchmark. This index is used to monitor and compare the development of information and communication technology (ICT) across countries and over time. The Information and Communication Technology Development Index (ICT) is a composite indicator used to measure the overall level of readiness, use, and capability of information and communication technology in a region or country. This index reflects how well individuals, households, and institutions can access and utilize digital technologies such as internet services, telecommunications, cellular networks, and digital infrastructure. Information and Communication Technology (ICT) refers to all technologies used for collecting, storing, processing, transmitting, and sharing information. ICT includes devices such as computers, smartphones, and tablets; communication networks like the internet and mobile networks; and digital services such as software, cloud computing, and online platforms. ICT plays a key role in improving access to information, enhancing communication, supporting education, enabling business activities, and driving economic development. In many studies, ICT is seen as an important factor that can increase productivity, expand economic

opportunities, and reduce poverty through improved connectivity and access to digital services (ITU, 2025).

Foreign Direct Investment (FDI)

According to Law Number 25 of 2007, foreign investment is the activity of investing capital to conduct business in the territory of the Republic of Indonesia, carried out by foreign investors, whether using foreign capital entirely or in partnership with domestic investors (Kemenkeu, 2007). According to Salim (2007) foreign investment is the activity of investing capital carried out by foreign investors to conduct business in the territory of the Republic of Indonesia with the aim of generating profits. The purpose of foreign investment is to gain profits from the investment made and to have a positive impact on economic growth and development in the recipient country. According to Amalia (2013), foreign investment can complement the shortage of domestic savings. Foreign investment entering a country will increase the country's foreign exchange reserves and encourage local employment.

In accordance with Law Number 25 of 2007 concerning Investment, foreign investors can be defined as individual foreign citizens, foreign business entities, and/or foreign governments that invest in the territory of the Republic of Indonesia. In this case, foreign capital refers to capital owned by foreign countries, individual foreign citizens, foreign business entities, foreign legal entities, and/or Indonesian legal entities whose capital is partially or wholly owned by foreign parties. Several business sectors are closed to foreign investment, including the production of weapons, ammunition, explosives, war equipment, and other business sectors explicitly stated by law.

Human Development Index (HDI)

The Human Development Index (HDI) is a composite statistical measure developed by the United Nations Development Program (UNDP) to evaluate and compare levels of human development across countries. The HDI was first introduced in 1990 in the Human Development Report as an alternative to purely economic measures such as Gross Domestic Product (GDP), which do not provide a complete picture of people's well-being. The classification of a country as developed, developing, or least developed is determined by the HDI, which also evaluates economic policies related to quality of life. Within the framework of regional economic development, the HDI is considered an important indicator of regional economic development. The role of the HDI in regional development is clearly evident. A low HDI results in high poverty rates in the region, as it fails to create prosperity for its residents and has the potential to trigger crime. Efforts to increase HDI in a number of areas fields such as education and health are needed to encourage its creation prosperous society and ultimately reduce crime (Jamaliah & Elyta, 2022)

The Vicious Circle Theory of Poverty

Ragnar Nurkse's Vicious Circle of Poverty theory is a fundamental concept in development economics that explains why underdeveloped countries remain trapped in poverty for long periods. Nurkse introduced this theory in his influential 1953 work, "Problems of Capital Formation in Underdeveloped Countries." The essence of this theory is that poverty is both a cause and an effect of itself, creating a self-reinforcing cycle that is difficult to break without significant intervention (Ragnar Nurkse, 1953). The vicious circle of poverty can be understood by focusing on the interaction between low income, low savings, and low

International Journal of Current Economics & Business Ventures, 5 (2) 2025, 597-622
International Journal of Current Economics & Business Ventures
https://scholarsnetwork.org/journal/index.php/ijeb

investment. In poor countries, low income levels limit the ability of individuals and governments to save. Low savings, in turn, mean there is insufficient capital available to finance investments in physical and human capital, which are essential for economic growth. Without investment, the economy's productive capacity remains low, creating a cyclical trap.

Nurkse highlights that this cycle occurs at both the micro and macro levels. At the micro level, poor families face low incomes and productivity, which reduces their capacity to save and invest in better education and skills for their family members. At the macro level, the country's aggregate savings remain insufficient to finance the infrastructure and industrialization necessary for sustained growth. As a result, the economy remains underdeveloped and stagnant. Another key insight from Nurkse is that the vicious cycle operates through the "demand" and "supply" sides of the economy. On the demand side, the vicious cycle begins with low income levels. In many underdeveloped countries, a large portion of the population lives below the poverty line, which severely limits their purchasing power. This lack of income leads to low consumption of goods and services, creating a situation where businesses face minimal demand for their products.

Research Hypothesis

A hypothesis is a temporary result of research conducted to determine its truth. Based on the theoretical framework above, the hypothesis for this research is:

H1: The Information and Communication Technology Development Index has a significant negative effect on poverty.

H2: Foreign Direct Investment has a significant negative effect on poverty.

H3: The Human Development Index has a significant negative effect on poverty.

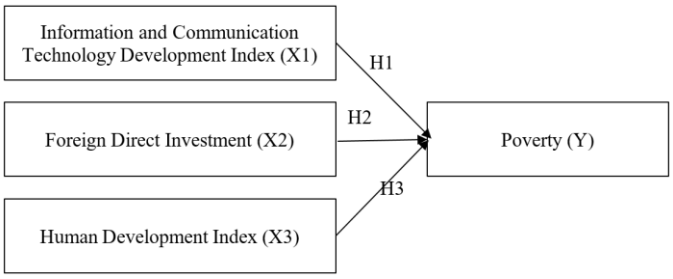


FIGURE 5 THINKING FRAMEWORK

METHOD

The object of this study is the poverty rate as a dependent variable on the island of Java, which consists of six provinces. This study examines the poverty rate on Java as influenced by the Information and Communication Technology Development Index, Foreign Direct Investment, and the Human Development Index. The data used in this study are annual panel data of the Information and Communication Technology Development Index, Foreign Direct Investment, and the Human Development Index, obtained from the official websites of the Ministry of Investment/Investment Coordinating Board (BKPM) and the Central Statistics Agency. This study uses data spanning 13 years from 2012 to 2024. The data was analyzed using E-Views 12 software, and the analysis used includes panel data regression analysis, analysis requirements testing, classical assumption testing, and hypothesis testing. The regression model used as a basis is a linear function as follows:

$$Yit = \alpha + \beta 1X1it + \beta 2X2it + \beta 3X3it + e\ it$$

International Journal of Current Economics & Business Ventures, 5 (2) 2025, 597-622
International Journal of Current Economics & Business Ventures
https://scholarsnetwork.org/journal/index.php/ijeb

Description:

Yit = Poverty Percentage
A = Constant/Intercept
B = Slope Coefficient for All Units
X1it = Information and Communication Technology Development Index
X2it = Foreign Direct Investment
X3it = Human Development Index
e = error

RESULT

Model Selection Test Results

Panel data testing involves data analysis that combines cross-sectional and time-series dimensions, allowing researchers to study changes over time and across multiple subjects. Panel data testing has several approaches that can be used, namely the Chow test, the Hausman test, and the Lagrange multiplier (LM) test.

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

Effect Test	Statistic	d.f.	Prob.
Cross-section F	114.404354	(5.69)	0.0000
Cross-section Chi-square	173.858639	5	0.0000

FIGURE 6 CHOW TEST

The Chow or likelihood test is a test that aims to select the best estimation model between the common effects model (CEM) and the fixed effects model (FEM) to estimate panel data. If the F-prob. result is greater than α (0.05), then H0 is rejected, indicating that the FEM is the test model used. If the F-prob. result is less than α (0.05), then H0 is accepted, indicating that the CEM is the test model used (Hutagalung & Darnius, 2022). Based on the Chow test table above, it shows that the Chi-square probability value is 0.0000 < α = 5% (0.05), which means H0 is rejected. This means that the most suitable model approach for estimating the relationship between common effects and fixed effects is the fixed effects model. Next, the analysis to be continued with testing using the 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	15.470270	3	0.0000

FIGURE 7 HAUSMAN TEST

The Hausman test was conducted to determine the appropriate model for use in this study, between the fixed effects model and the random effects model. If the F-prob. result is greater than α (0.05), then H0 is accepted, meaning that the REM model is the test result. If the F-prob. result is less than α (0.05), then H0 is rejected, meaning that the FEM model is the test result (Sari et al., 2020). Based on Table 4.3 above, the probability is 0.0000 < α = 5% (0.05), which rejects H0. This means the most suitable approach is the fixed effects model. Furthermore, there is no need to conduct the LM test, because the results of the Chow and Hausman tests indicate that the most suitable model for this study is the fixed effects model.

International Journal of Current Economics & Business Ventures, 5 (2) 2025, 597-622
International Journal of Current Economics & Business Ventures
https://scholarsnetwork.org/journal/index.php/ijeb

Normality Test

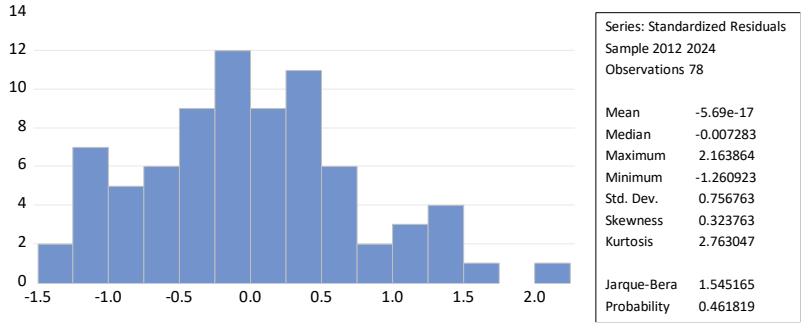


FIGURE 8 NORMALITY TEST

The normality test is used to test whether the confounding variables in a regression model have a normal distribution. To test normality, the JB (Jarque-Bera) test is used. If the result of the JB prob. <5% (0.05), then the data is not normal (the residuals are not normally distributed). If the result of the JB prob. >5% (0.05) then Ha is rejected (not significant), meaning the data is normal or the residuals are normally distributed (Sari et al., 2020). Based on the figure above, the Jarque-Bera value is 0.461819. This means that the Jarque-Bera probability value is 0.461819 > 0.05, so it can be stated that the data in this study is normally distributed.

Multikolinearity Test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	47.02424	662.5427	NA
IPTIK	0.156560	83.71550	3.461522
PMA	1.69E-14	3.103822	1.141774
IPM	0.013468	1047.890	3.451941

FIGURE 9 MULTIKOLINEARITY TEST

The multicollinearity test aims to detect whether there is a strong correlation or relationship between independent variables (free variables) in a regression model. A good regression model should not have multicollinearity problems. Multicollinearity occurs when two or more independent variables in a regression model have a very strong linear relationship. If the correlation coefficient between independent variables is >0.9, the model is experiencing multicollinearity. Conversely, if the correlation coefficient between independent variables is >0.9, the model is experiencing multicollinearity (Nahor & Eka Dewi Anggraini, 2024). In addition to comparing the correlation coefficients of the independent variables, the tolerance and variance inflation factor (VIF) values can also be used. According to Ghozali (2016), the decision-making criteria for multicollinearity testing using the VIF test are that if the VIF value is <10 or the tolerance value is >0.01, multicollinearity is declared absent. Conversely, if the VIF value is >10 or the tolerance value is <0.01, multicollinearity is declared present. Based on Table 4.6 above, the results of the multicollinearity test using the VIF test show a VIF value <10, thus indicating no symptoms of multicollinearity in this study.

International Journal of Current Economics & Business Ventures, 5 (2) 2025, 597-622
International Journal of Current Economics & Business Ventures
https://scholarsnetwork.org/journal/index.php/ijeb

Heteroskedasticity Test

Variabel	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.424480	21.29014	-0.066908	0.9468
IPTIK	-1.027087	1.228452	-0.836082	0.4058
PMA	3.96E-07	4.03E-07	0.981141	0.3297
IPM	0.158177	0.360305	0.439010	0.6619

FIGURE 10 HETEROSKEDASTISITY TEST

This test aims to examine the regression model to determine whether there are differences in residual variance from one observation to another. If the probability value is less than 0.05, heteroscedasticity occurs. If the probability value is greater than 0.05, heteroscedasticity is absent (Rodliyah, 2023). Based on the results of the heteroscedasticity test, the probability for the information and communication technology development index variable (0.4058), the foreign investment variable (0.3297), and the human development index variable (0.6619) are greater than 0.05. This indicates that there is insufficient statistical evidence to reject the null hypothesis (H0) which states that the residual variance is homoscedastic. In other words, it can be concluded that there is no heteroscedasticity problem in this regression model.

Multiple Linear Regression Analysis

Based on the results of the regression estimation test, the Fixed Effect Model (FEM) is used to determine the effect of the information and communication technology development index, foreign investment, and human development index on poverty in Java. The following are the results of the panel data regression estimation using the fixed effect model (FEM):

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	24.34301	4.254696	5.721444	0.0000
IPTIK	-4.07E-08	9.73E-08	-0.418537	0.6769
PMA	-0.905198	0.144043	-6.284221	0.0000
IPM	-0.129168	0.062658	-2.061462	0.0430
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.955120	Mean dependent var		9.183077
Adjustud R-squared	0.949917	S.D. dependent var		3.572183
S.E. of regression	0.799430	Akaike info criterion		2.498333
Sum squared resid	44.09715	Schwarz criterion		2.770261
Log likehood	-88.43497	Hannan-Quinn criter.		2.607190
F-statistic	183.5544	Durbin-Watson stat		0.845539
Prob (F-statistic)	0.000000			

FIGURE 11 MULTIPLE LINEAR REGRESSION ANALYSIS

In relation to the table above, the panel data regression equation obtained is as follows:

Y = 24.34301 - 4.07289*X1 - 0.9051980*X2 - 0.129168*X3 + [CX=F]

The explanation is as follows:

1. The constant value of 24.34301 means that without the variables of the information and communication technology development index (X1), foreign investment (X2), and human development index (X3), variable Y would increase by 24.34%.
2. The coefficient value of the information and communication technology development index (X1) of -4.07289 indicates that if the other independent variables remain constant

and the information and communication technology development index increases by one per year, poverty will decrease by 4.07289.

3. The coefficient value of the foreign investment variable (X2) of -0.9051980 indicates that if the other independent variables remain constant and the foreign investment variable increases by one per year, poverty will decrease by 0.9051980.
4. The coefficient value of the human development index variable (X3) of -0.129168 indicates that if other independent variables remain constant and the human development index variable increases by one in one year, poverty will decrease by 0.129168.

Hypothesis Test

T-test

Variabel	Coefficient	Std. Error	t-Statistic	Prob.
C	24.34301	4.254696	5.721444	0.0000
IPTIK	-0.129168	0.062658	-2.061462	0.0430
PMA	-4.07E-08	9.73E-08	-0.418537	0.6769
IPM	-0.905198	0.144043	-6.284221	0.0000

FIGURE 12 T-TEST

The T-test aims to measure the significance level of each independent variable on the dependent variable in a linear regression model. The conclusion is drawn by examining the t-statistic. If the T-statistic value is less than the $\alpha = 0.05$ (5%), then H0 is rejected, indicating a significant partial effect between the independent variable and the dependent variable. Conversely, if the T-statistic value is greater than the $\alpha = 0.05$ (5%), then H0 is accepted, indicating no significant partial effect between the independent variable and the dependent variable. Based on the table above, the following explanations are obtained regarding the independent variables:

a. The information and communication technology development index variable has a coefficient of -0.129168, with a calculated t-value of -2.061462 > the t-table of 1.99167 and a probability of 0.0430. A probability of less than 0.05 indicates that the information and communication technology development index has a significant effect on poverty. This negative coefficient indicates that any increase in the information and communication technology development index will reduce poverty.
b. The foreign investment variable has a coefficient of -4.07E-08, with a calculated t-value of -0.418537 < the t-table of 1.99167 and a probability of 0.6769. A probability of greater than 0.05 indicates that foreign investment does not have a significant effect on poverty. This negative coefficient indicates that any increase in foreign investment will reduce poverty.
c. The human development index variable has a coefficient of -0.905198, with a calculated t-value of -6.284221 > the t-value of 1.99167 and a probability of 0.0000. A probability value less than 0.05 indicates that the human development index has a significant effect on poverty. This negative coefficient indicates that every increase in the human development index will reduce poverty.

F-test

The F test was conducted to determine the effect of independent variables simultaneously on the dependent variable and to show that the model used in the study was suitable for further testing. This test was conducted by comparing the calculated F value with the F table. If the p-value is smaller or less than 5% alpha, this is proven significant and vice versa. The F table value is determined by the F distribution table with df1 = 3 and df2 (78-3-1) = 74. Then the F table value was found to be 2.72828.

F-statistic	182.5544
Prob(F-statistic)	0.000000

FIGURE 13 F-TEST

Based on the results of the F-test, the F-statistic value obtained is 182.5544 with a Prob(F-statistic) of 0.000000. This probability is smaller than the 5% significance level (0.05), so the regression model used is proven to be significant. In addition, the F-statistic value (182.5544) is much larger than the F-table value (2.72828) calculated based on the degrees of freedom df1 = 3 and df2 = 74. These results indicate that the independent variables (information and communication technology development index, foreign investment, and human development index together have a significant influence on the dependent variable (poverty).

Determination Coefficient Test (R2)

The R-squared value ranges between 0 and 1. An R-squared value close to 1 indicates that the regression model has excellent ability to explain variation in the dependent variable. This means that the independent variables provide almost all the information needed to predict the dependent variable. Conversely, an R-squared value close to 0 indicates that the regression model has poor ability to explain variation in the dependent variable.

R-squared	0.955120
Adjusted R-squared	0.949917

FIGURE 14 DETERMINATION COEFFICIENT TEST (R2)

Based on the analysis results, the R-squared value of 0.955120 indicates that approximately 95.51% of the variation in the dependent variable (poverty) can be explained by the independent variables (information and communication technology development index, foreign investment, and human development index) in the regression model. The remaining 4.49% is explained by other factors outside the model or by residual error.

DISCUSSION

The Influence of the Information and Communication Technology Development Index (X1) on Poverty (Y)

Based on the results of the T test, it can be interpreted that the regression coefficient of the information and communication technology development index variable is -0.905198 with a probability value of 0.0000 < alpha value of 0.05 or t count (-6.284221) > t table (1.99167). This indicates that the information and communication technology development index variable has a significant negative effect on poverty in Java. This can be interpreted that if other independent variables remain constant and the information and communication technology development index increases by one unit, then this will result in poverty decreasing by

0.905198. The results of this study are also relevant to other studies conducted by Dzator et al. (2023) where most indicators of the information and communication technology development index contribute to poverty reduction. Therefore, this information and communication technology needs to be utilized as well as possible to encourage economic welfare, especially in terms of poverty, by doing several things such as creating policies that encourage the availability and affordability of information and communication technology in areas that are still not reached, ensuring equitable income distribution, trickle-down development, and minimizing the cost of credit access.

The Effect of Foreign Direct Investment (X2) on Poverty (Y)

Based on the T-test results, the regression coefficient of the foreign investment variable on poverty is -4.07289, with a probability value of 0.6769 > alpha value of 0.05, or the calculated t (-0.418537) < t table (1.99167). This indicates that foreign investment has an insignificant negative effect on poverty in Java. This means that if the other independent variables remain constant and the foreign investment variable increases by one unit, poverty will decrease by -4.07289. While foreign direct investment may initially lead to higher wages in traditional sectors, this is likely accompanied by more capital-intensive production, leading to higher unemployment rates in these sectors, thus contributing to increased poverty. Therefore, in this case, instead of creating jobs for unskilled workers, foreign direct investment firms recruit highly skilled workers, negatively impacting poverty alleviation. According to Diana Wijayanti (2025) foreign direct investment has an insignificant negative impact on poverty. This may occur because foreign direct investment is more concentrated in capital-intensive sectors that do not require or absorb a large number of low-educated local workers. In developing countries, many foreign firms are capital-intensive, so they do not create many jobs for unskilled workers in their home countries. Foreign direct investment requires new activities with more skills than those already available in the host country, meaning that capital flows to developing countries increase the need for skilled labor, rather than low-skilled unskilled labor. As a result, unskilled workers will be unemployed while the demand for skilled workers increases. In this case, foreign investment does not have a positive impact on poverty alleviation.

The Effect of Human Development Index (X3) on Poverty (Y)

Based on the results of the T test, it can be interpreted that the regression coefficient of the human development index variable is -0.129128 with a probability value of 0.0430 < alpha value of 0.05 or t count (-2.061462) > t table (1.99167). This indicates that the human development index variable has a significant negative effect on poverty in Java. This can be interpreted that if other independent variables remain constant and the human development index increases by one unit, then this will result in a decrease in poverty by 2.061462. There is another study that has the same research results, namely research conducted by Kurniawan & Gunawan (2025) where the HDI variable shows a negative and significant effect on the poverty rate. This shows that the higher the HDI of a province, the lower the poverty rate there. HDI is a composite indicator of three important aspects of development: health, education, and a decent standard of living which together play a key role in reducing poverty levels. Access to good health services increases productivity and reduces the risk of income loss due to illness, thus enabling individuals to become more economically stable. Education expands employment opportunities and improves people's skills, enabling them to secure higher-paying jobs and escape the shackles of vulnerable informal employment. Meanwhile, a decent standard

of living, as reflected in per capita expenditure, indicates a society's ability to meet basic needs and invest in the future, such as education and business.

CONCLUSION

This study shows that the information and communication technology (ICT) development index has a negative and significant impact on poverty in Java, indicating that increased ICT development can help reduce poverty levels. Foreign direct investment (FDI) also has a negative impact on poverty, although not significantly. Therefore, increased foreign investment still has the potential to drive poverty reduction but has not yet had a statistically strong impact. Meanwhile, the human development index (HDI) has been shown to have a negative and significant impact, indicating that the better the quality of education, health, and living standards of the community, the lower the poverty rate. Simultaneously, all three variables ICT, FDI, and HDI have a significant impact on poverty in Java, with an R^2 value reaching 95.51%, indicating that the research model is able to explain almost all of the variation in poverty within the region. These results confirm that technological development, improving human quality, and investment support remain important factors in reducing poverty in Java.

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