Breakdown Poverty Eradication in West Kalimantan: A REM Approach

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ABSTRACT

This study examines the contributions of economic growth (GDP), labour force participation rate, and gender empowerment to poverty eradication in West Kalimantan Province (Indonesia) from 2010 to 2024. The analysis uses panel data to combine time-series and regional data. The approach used is the Random Effects Model (REM), including model selection tests, regression estimation, classical assumption tests, and hypothesis tests. The test implies that economic growth responds significantly and positively to poverty. These results show that as economic growth increases, poverty also increases. The labour participation rate also has a positive impact. However, it is less effective at reducing poverty, suggesting that people who get jobs still experience a decline in their quality of life. Gender empowerment has a negative and significant response to poverty, suggesting that female involvement in broader development and society can, in practice, reduce poverty in West Kalimantan. These findings imply that economic growth is not an automatic way to alleviate poverty unless it distributes Development outcomes equitably. Likewise, jobs are not a solution to household poverty if they remain in the informal sector, with low salaries and no job security. Meanwhile, including women in the economy and society can significantly reduce poverty rates. This study advocates increasing women's roles in the economy, culture, and decision-making to help alleviate poverty in real terms.

Keywords: Poverty Reduction, Economic Growth, Labour Participation, Gender Empowerment

JEL Classification: I32, O15, J21, J16, C23

INTRODUCTION

Poverty is a major challenge in almost every country worldwide. Poverty refers to the deprivation of basic needs and reflects inadequate living standards, with income–consumption measures commonly used to estimate it (Rasul & Nepal, 2025). Most countries worldwide prioritize poverty reduction. Based on World Bank data released during the COVID-19 pandemic, approximately 150 million people will fall into poverty. This spike suggests that poverty alleviation policies are essential (S. K. Saha & Qin, 2023). Poverty alleviation is the first of the 17 Sustainable Development Goals (SDGs) of the United Nations (UN). Decades of efforts to alleviate poverty have reduced the global poverty rate from 44% in 1981 to below 8% in 2019. However, poverty eradication remains a significant challenge worldwide (Q. Liu et al., 2023). Economic growth can directly impact poverty alleviation, but its role varies across regions (Yang et al., 2023).

Several countries support each other in poverty alleviation efforts at both the regional and international levels—Coordinating Development between regions with an emphasis on equality. Cooperation between areas, with assistance from developed regions, to alleviate poverty in disadvantaged and poor areas will reduce regional gaps, achieve shared prosperity, and support complementary development from a Pareto perspective (Ji et al., 2024). The current stage of poverty alleviation, aimed at achieving comprehensive victory, promotes high-quality economic Development by consolidating and expanding poverty-alleviation achievements, seizing opportunities for shared prosperity, and implementing rural revitalization strategies as a starting point (Li et al., 2025). Local

governments experiencing poverty formulate regional Development goals aligned with the principles of regional Development. The government no longer uses traditional Development strategies that prioritize economic growth alone; instead, it expands the industrial chain and diversifies the value of financial structures (He et al., 2024).

Economic growth plays an essential role in improving welfare and reducing poverty. Achieving inclusive economic growth requires simultaneously reducing inequality and advancing the country's economic Development (Kwilinski et al., 2023). In the economic Development literature, overcoming both poverty and income inequality is achieved by accelerating economic growth, which can improve the standard of living of low-income people (Agussalim et al., 2024). Economists advance the idea of "essential institutions," arguing that institutional reform drives economic growth and social progress (Chinoda & Kapingura, 2024). Economic growth is not solely a function of using natural resources to improve the economy (Farooq et al., 2025).

Inclusive employment opportunities that absorb and increase labour force participation can reduce poverty. This encourages economic growth, especially in developing regions, by directly increasing economic output through job creation (Yoo et al., 2024). Eliminating sectoral dualism between urban and rural contexts will ensure that villagers have employment opportunities without leaving their hometowns (Yang et al., 2023). The growing contribution of agriculture to value-added products and the expansion of rural access to labour markets indicate progress in Development (S. Saha et al., 2025). Established local agricultural industry chains, wider employment opportunities, and cross-border migration prevention (Zhang et al., 2025). Migration from the village to the city can improve quality of life, expand labour market opportunities, and support economic progress (Seker et al., 2025).

Gender empowerment by increasing women's access to productive resources can accelerate poverty alleviation. Gender empowerment with male and female decision-making dominance (Zheng et al., 2025). It enables unique study patterns and complex interactions, such as those among female beneficiaries. It separates the factors that contribute to specific gender empowerment outcomes (Miles et al., 2024). The participation of all genders in economic and social affairs is essential to gender empowerment (Tesfaye et al., 2023). Achieving gender equality in the workplace will lead to higher income, enabling better human Development (Bangun et al., 2024). The gender gap hinders economic expansion. Therefore, progress in addressing gender inequality, women's empowerment, and the protection of women's rights is crucial (Ganda, 2024).

Poverty remains unsolved in many countries, both developed and developing. The World Bank's Poverty Reduction Strategy Paper (PRSP) and the Millennium Development Goals (MDGs) emphasize the critical role of a balanced mix of policies in breaking long-term poverty traps (Spada et al., 2024). Changes in economic structure can increase economic growth and reduce poverty (Erumban & de Vries, 2024). Despite significant global progress in poverty alleviation over the past three decades, extreme poverty remains in most rural areas of developing countries (Rammohan & Tohari, 2023). Governments should maintain consistent economic Development to alleviate poverty. Adapting the poverty alleviation framework involves improving policies through repeated implementation and refinement (Zhu & Zhu, 2025).

Poverty persists despite many poverty alleviation programs. Poverty and poverty alleviation have always been long-term challenges. Poverty alleviation policies emerged in 2016, following earlier measures. The shift from direct cash assistance to poverty alleviation through economic development represents progress in policymaking (Chai et al., 2025). Targeted Poverty Alleviation (TPA) strategies mobilizing large-scale resource investment enable poverty alleviation (M. Liu & Ge, 2025). China has alleviated poverty through the *Jingzhunfupin* approach. This approach begins with identifying poverty, providing full support, managing appropriately, and conducting accurate reciprocity (Nzasabayezu et al., 2024).

High economic growth has not alleviated poverty. Measuring economic growth with real GDP reflects a country's capacity to increase output and living standards. Growth theory states that capital accumulation, technological advancements, and financial system efficiency drive long-term expansion (Awad et al., 2025). As a framework, understanding economic growth theory helps identify the factors driving economic growth and develop poverty-alleviation public policies (Tangpatthamachart & Amornkitvikai, 2025). Economic growth supported by natural

resources can alleviate poverty. Available natural resources will accelerate economic growth. Despite abundant natural resources, many countries still lack economic prosperity (Farooq et al., 2025). Some developing and underdeveloped countries undertake high-cost activities to boost economic growth that ultimately fail to reduce poverty (Tabash et al., 2023). Poverty alleviation policies include, but are not limited to, education development, green energy use, agricultural productivity growth, access to nutritious food, demographic change, increasing the working age, wealth redistribution, structural change, industrialization, and climate mitigation. However, these drivers have not yet produced the desired outcomes. Efforts to increase global economic prosperity can also harm the environment, including through increased GHG emissions, declining land quality, and species loss. The government can implement strict policies to alleviate poverty by promoting environmental conservation and renewable energy alternatives (Q. Liu et al., 2023).

Job opportunities that absorb much of the workforce have not yet solved poverty. A dynamic and prosperous industry can nevertheless create job opportunities, even as it faces many challenges (Ahmadi Zahrani et al., 2025). Some studies indicate that about a fifth of individuals are economically inactive and do not participate in the labour market because they lack employment opportunities (Shair et al., 2024). People working in agri-based activities and in industrial and service industries can contribute to economic expansion through their income (Kuldasheva & Ahmad, 2025). To improve the quality and quantity of employment opportunities in developing countries, focus on increasing revenue and employment by attracting companies to villages and implementing strategic planning for rural socioeconomic Development (Do, 2023). Social factors that affect educational attainment, academic progress, and access to health care can increase achievement and employment opportunities (Senaratne et al., 2025).

There are still many economic opportunities that are not well managed due to gender inequality in society. Reducing gender inequality in access to economic activities is essential to ending poverty (Balasubramanian et al., 2024). Gender inequality is one obstacle to human Development, severely limiting women's involvement in education and the economy and hindering the achievement of equitable and sustainable Development through balanced employment opportunities (Behera & Sahoo, 2025).

This research is necessary because poverty is a structural problem with wide-reaching impacts, and poverty alleviation has become a global commitment. This study offers an integrative approach that combines macro, micro, and spatial factors by including gender empowerment variables. This paper aims to provide an overview of the main characteristics of poverty eradication.

METHOD

This study uses a quantitative research method. The population is regencies/cities in West Kalimantan. It uses annual data for 15 years (2010-2024) on four variables. The instruments used are secondary data from relevant agencies on poverty, economic growth, labour, and gender. We will conduct a statistical analysis to identify the relationships among economic growth, labour, and gender in reducing poverty.

RESULT

The results of the study illustrate statistical equations for understanding poverty alleviation in West Kalimantan with the following formula:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \mu + \varepsilon \quad (1)$$

Where:

Y: Poor Population/Poverty

β: Coefficient

X1: Growth Rate/GRDP

X2: Labour Force Participation Rate

X3: Gender Empowerment Index

μ: Unit-specific random effects

ε: Idiosyncratic error

Estimation Model Data Panel

Table 1. Test for Redundant Cross-Section Fixed Effects

	Statistic	**df**	**p-value**
Cross-section F	160.700	(13, 193)	<0.001
Cross-section Chi-square	518.734	13	<0.001

The model-testing criterion in the Test for Redundant Cross-Section Fixed Effects is that if the p-value is greater than 5%, then the Common Effects Model (CEM) is chosen. Meanwhile, if the p-value is below 0.05, choose the Fixed Effects Model (FEM) as the regression estimation model. From the Chow test results above, the p-value is 0.0000, which is less than 0.05, so the chosen model is the Fixed Effects Model (FEM).

Table 2. Hausman Test for Panel Model Selection

Test	**Chi-square Statistic**	**df**	**p-value**
Cross-section random effects	3.0169	3	0.3890

The model-testing criterion in the Hausman Test for Panel Model Selection is that the RE Model is chosen if the p-value exceeds 5%. Meanwhile, if the p-value is inferior to 5%, the model chosen is the Fixed Effects Model (FEM). Based on the Hausman test, the p-value of 0.3890 exceeds the 5% significance level, leading to rejection of the null hypothesis and the use of the Random-Effects Model (REM).

Table 3. Breusch–Pagan Lagrange Multiplier Test

Test Hypothesis	**LM Statistic**	**p-value**	**Decision**
Cross-section effects	1,064.678	<0.001	Reject H_0
Time effects	2.654	0.103	Do not reject H_0
Cross-section and time effects	1,067.331	<0.001	Reject H_0

The criterion for the Breusch–Pagan Lagrange Multiplier Test is that when the p-value is greater than 0.05, then the Common Effects Model (CEM) is chosen. Meanwhile, if the p-value is below 5%, the chosen model is the Random-Effects Model because the LM test p-value is less than 0.05; the Random Effects Model (REM) is selected as a feasible and valid model for assessing the impact of the independent variables on the dependent variable.

Table 4. Random Effects Model Estimation

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**p-value**
Constant	10.14863	1.651709	6.1443	<0.001
X1	0.070654	0.027025	2.6144	0.0096
X2	0.030580	0.017633	1.7343	0.0844
X3	−0.076579	0.009252	−8.2767	<0.001

Dependent variable: Y

Model specification: Cross-section Random Effects

Panel structure: Balanced panel, 14 cross-sectional units × 15 periods

Total observations: 210

Estimation method: Panel EGLS (Swamy and Arora estimator)

Table 4 shows the model estimates using the random-effects panel model (REM). This model estimates and explains the dynamic impact of independent variables on the dependent variable. This article investigates poverty as a dependent variable. The independent variables are the economic growth rate, labour force participation rate, and gender empowerment.

Test of Classical Assumptions

Table 5. Pairwise Correlation Matrix

Variables	X1	X2	X3
X1	1.000	−0.0099	−0.2253
X2	−0.0099	1.000	−0.1049
X3	−0.2253	−0.1049	1.000

The Pairwise Correlation Matrix test for multicollinearity indicated that the overall correlation between independent variables was below 0.80. This criterion uses the pairwise correlation method, with a maximum of 0.80. Because all correlation coefficients among the independent variables are below 0.80, the model shows no signs of multicollinearity.

Table 6. Heteroskedasticity Test Based on Absolute Residuals

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	1.639752	1.438258	1.1401	0.2556
X1	0.034108	0.025591	1.3328	0.1841
X2	0.013333	0.016371	0.8144	0.4164
X3	−0.008587	0.008700	−0.9871	0.3248

Model: Cross-section Random Effects

Estimation method: Panel EGLS (Swamy–Arora estimator)

Observations: 210

Cross-sectional units: 14

Periods: 15

Dependent variable: Absolute residuals (ABSRES)

The following model diagnostic is the Glejser heteroscedasticity test, with the criterion that heteroscedasticity is absent if the p-value is above 0.05. Meanwhile, if the p-value is below 0.05, heteroscedasticity is present in the research model. From the heteroscedasticity test results in Table 6, the p-value for the independent variable is above 5%, indicating no heteroscedasticity in the model that employs the EGLS panel method (cross-section random effects).

Drawing on the results of the two classical assumptions mentioned above, namely the multicollinearity test and the heteroscedasticity test, the regression model used in this research can validly explain the dynamics of the relationship between the independent and dependent variables.

Hypothesis Testing

T-test (partial)

Table 7. Random-Effects Regression Results

Dependent variable: Y				
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**p-value**
Constant	10.14863***	1.65171	6.144	<0.001
X1	0.07065***	0.02703	2.614	0.0096
X2	0.03058*	0.01763	1.734	0.0844
X3	−0.07658***	0.00925	−8.277	<0.001

Observations	210
Cross-sectional units	14
Periods	15
Panel structure	Balanced
Estimation method	Panel EGLS
Effects specification	Cross-section random effects
Variance estimator	Swamy–Arora

The panel-data regression model with the Random-Effects approach mentioned above indicates that GDP growth (X1) has a significant positive impact on the number of poor (Y). Labour force participation (X2) affects poverty (Y) with a positive but not significant effect. The gender empowerment variable has a significant negative effect on poverty (Y). The t-test results confirm that the independent variables are partially independent of the dependent variables.

F-test (simultaneous)

Table 8. Random-Effects Regression Results

Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**p-value**
Constant	10.14863	1.65171	6.144	<0.001
X1	0.07065	0.02703	2.614	0.0096
X2	0.03058	0.01763	1.734	0.0844
X3	−0.07658	0.00925	−8.277	<0.001
R^2	0.3472			
Adjusted R^2	0.3377			
F-statistic	36.5215			
Prob. (F-statistic)	<0.001			
Observations	210			

A simultaneous test (F-test) on the panel data regression model with the Random Effect approach yielded an F-statistic of 36.52 with a probability of 0.0000. This result shows that all independent variables, consisting of GDP growth rate (economic growth), labour force participation, and gender empowerment, together and jointly have a significant impact on poverty, so the proposed model is deemed feasible for accounting for the variation in the variable during the study period (2010-2024).

Determination Coefficient (R^2)

With a coefficient of determination (R^2) of 0.3472, the results indicate that the three independent variables explain approximately 34.72% of the variation in the dependent variable, with the remaining 65.28% due to factors outside the model. The adjusted R-squared value of 0.3377 implies the regression model is quite efficient

and does not overfit.

DISCUSSION

Poverty still needs to be addressed; alleviating it requires firm commitment and full support from the government and the private sector. Therefore, it is necessary to identify and leverage the potential of key instruments to combat poverty among marginalised communities in developing countries. Improving the lives of the marginalized poor is often seen as a powerful tool for achieving Development goals such as Goal 1 of the SDG (No Poverty), Goal 5 of the SDG (gender equality), and Goal 10 of the SDG (Reducing Inequality) (Maldonado-Castro et al., 2024)

Poverty is difficult to alleviate because of its structural and multidimensional nature. Increasing income through economic growth is not enough to reduce poverty. In particular, economic growth concentrated in capital-intensive sectors often fails to provide decent, stable employment for workers with low levels of education. This traps many low-income households without social protection in the informal sector.

Low levels of education and unequal recognition for all genders exacerbate the poverty trap. This can persist across generations, forming a perpetual chain. Inequality in access to economic opportunities, labour markets, and gender equality limits inclusive and productive Development. Therefore, alleviating this poverty requires an integrated approach that promotes economic growth, improves workforce quality, provides social protection, and ensures equal opportunities for all genders. The main goal is to distribute the results of Development to all levels of society. Schooling level contributes significantly to poverty; education-related investments can reduce poverty through income equality (Spada et al., 2024).

Poverty persists despite many poverty alleviation programs, requiring the government and all parties to increase the quantity and quality of these programs. Why does this happen? Most poverty-alleviation programs remain partial and fail to address its root causes. Many poverty alleviation programs focus only on short-term goals and meeting consumption needs, without efforts to improve work quality, labour competence, or long-term outcomes.

Government agencies themselves, when developing poverty alleviation programs, lack communication and coordination among ministries. This condition can lead to overlapping and unsustainable programs. Off-target implementation, limited program coverage, and differing social and regional conditions also make poverty alleviation programs ineffective. In addition, economic shocks, fluctuating inflation rates, and crises often undermine poverty alleviation efforts. Poverty sustainability depends not only on the presence of poverty alleviation programs, but also on their design and integration as policies to overcome structural and multidimensional poverty. Multidimensional poverty is a complex problem that requires a multifaceted strategy. A specific approach is needed to alleviate poverty by considering local community needs. Reducing extreme poverty is a global Development challenge (Rasul & Nepal, 2025).

High economic growth has not been a reliable tool for reducing poverty. Economic growth does not necessarily reduce poverty, especially when the distribution of Development benefits is uneven. In some regions, economic growth can even increase the number of poor people. Economic growth often lacks inclusivity and fails to create productive jobs for low-income workers.

Economic growth in capital-intensive sectors can produce high added value but absorb only a small amount of labour. As a result, the benefits of growth accrue to only a small group of workers. This increases output growth but cannot raise the income of poor households working in the informal sector at low wages. This confirms that without increased employment, economic growth cannot alleviate poverty.

This study shows that GDP growth in West Kalimantan affects the poverty condition. This condition means that every percentage increase in economic growth also increases the poverty level. Inclusive growth patterns have not increased the incomes of low-income groups. Capital-intensive extractive sectors, which absorb less local labour, can still dominate economic growth. The community has not felt the added value of Development results evenly. The increase in regional output also does not improve job quality or wages. This explains why economic

growth in West Kalimantan has not reduced poverty; in some areas, it has even increased the number of poor people.

Job opportunities for the unemployed workforce have not yet solved the poverty problem. A large number of job opportunities is not, by itself, a solution to reducing poverty, given the quality of the work and the low income. The labour force that was previously unemployed when job opportunities arose has not been able to reduce poverty because the jobs obtained are informal and low-paying. Jobs in the informal sector can absorb many workers. However, the informal sector offers low wages, irregular employment status, and no social protection.

The labour force's competencies are also a barrier to accessing high-paying, productive jobs when they do not align with the job market's needs. Thus, poverty alleviation challenges lie not only in the quantity of available jobs but also in increasing poor households' incomes and economic resilience through the quality and sustainability of work.

The results of this examination confirm that the number of poor people in West Kalimantan has increased as employment opportunities expand. Labour force participation in West Kalimantan positively affects poverty levels. Every time job opportunities increase, poverty also decreases.

The existence of gender inequality in society makes it difficult to manage many economic opportunities. Gender inequality, which is already deeply rooted in society, hinders the optimization of resource utilization and financial opportunities. Gender empowerment has a significant effect. It is even more effective than several other variables in reducing poverty. This condition indicates that advancing gender equality, especially women's emancipation across all fields, directly increases household income and contributes to sustainable poverty reduction.

The study's results show that gender parity, achieved through women's participation in economic opportunities and resource use in West Kalimantan Province, can significantly reduce the number of poor people and households. Women's freedom to access economic and social facilities has brought fundamental changes in efforts to improve family finances, enabling families to reduce poverty. Among the variables influencing economic growth and labour force participation rates, gender parity through enhanced female capabilities is most influential in efforts to alleviate poverty sustainably. Overcoming stress and realising the capacity to contribute to society are integral to enhancing women's capabilities. Females can assess self-esteem, participate in decision processes, and promote social change in themselves and society (Wainaina et al., 2025)

CONCLUSION

The goal of the present study is to identify the primary aspect influencing poverty level alleviation in West Kalimantan using a random-effects model. The results revealed that economic growth does not necessarily reduce poverty because the distribution of Development benefits is uneven. The variable describing job opportunities at the labour-participation level also has no real impact on poverty reduction. It can even increase poverty levels because the quality of available work remains low. The income received is not sufficient to meet the community's needs. Gender empowerment through women's emancipation in household economic and social activities has been proven significant and even more potent than other variables in influencing and suppressing poverty.

This study provides an overview of how economic growth (gross regional domestic product, or GDP), employment opportunities (the labour force participation rate), and gender equality (women's equality or emancipation) affect poverty alleviation in West Kalimantan. Gender equality, through the emancipation of women across all fields, especially the economic and social spheres, has a greater impact on alleviating poverty than economic growth and employment opportunities. For this reason, government policies should further expand gender empowerment through women's participation across all fields to sustain this condition.

This evidence makes an empirical contribution to the literature by showing that including all people, both men and women, in economic and social activities can improve the condition of people living in poverty and help alleviate poverty.

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