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THE ROLE OF EDUCATION AND ECONOMIC ACTIVITY IN POVERTY REDUCTION IN CENTRAL JAVA PROVINCE

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ABSTRACT

In the development of regions, poverty remains a persistent challenge, particularly in Central Java Province, from 2020 to 2024, reflecting the changes associated with recovery from the pandemic. This study aims to explore how education, the LFPR, and the GRDP influence poverty levels. It utilizes data from 35 districts and cities over a five-year period (2020–2024), employing a quantitative approach, which yields 175 data points. The information was sourced from BPS and analyzed using panel data regression, with the fixed effects model chosen for the analysis. The results indicate that education does not have a significant impact on poverty levels. Conversely, the LFPR and GRDP have a significant negative relationship with poverty, indicating that increased workforce involvement and improved economic performance in the region contribute to reducing poverty. These results suggest that efforts to lessen poverty in Central Java rely more on job market trends and economic growth rather than solely on formal education. Therefore, government programs should focus on creating jobs, improving access to the job market, and encouraging comprehensive economic development.

Keywords: Poverty, Education, LFPR, GDRP

INTRODUCTION

Despite numerous initiatives by the government aimed at alleviating poverty, the uneven welfare distribution across different regions in Indonesia continues to pose a major challenge. Poverty encompasses more than just economic concerns; it is a complex issue shaped by various structural, social, and economic factors (Pramesti & Utomo, 2023). In developing nations like Indonesia, ongoing poverty can severely impede economic advancement and reduce the efficacy of development programs.

Central Java Province is among the areas that still grapple with relatively elevated poverty rates when compared to other provinces on Java Island. As reported by the BPS, by mid-2024, the number of impoverished individuals in Central Java was around 3,4 million, which represents 9,58% of the total population. Although there has been a gradual decrease in the poverty rate over the years, inequalities in educational access, job prospects, and income distribution persist as significant issues that need to be addressed.

From a theoretical standpoint, poverty is closely tied to constraints on

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resource access, the quality of human capital, and the availability of economic opportunities. People with limited access to education and productive resources typically experience lower income and productivity. This situation is often illustrated by the concept of the vicious cycle of poverty, where insufficient income results in minimal savings and restricted investment, effectively trapping individuals in ongoing poverty (Utomo, 2023).

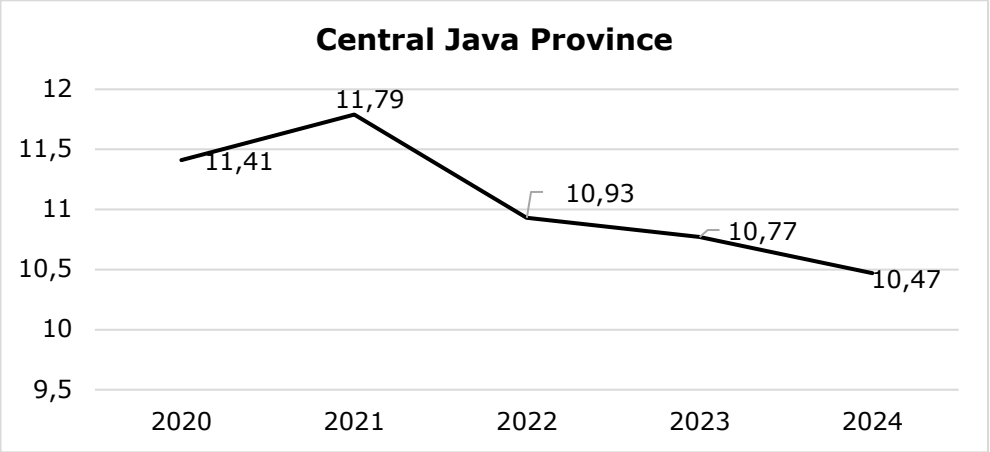

Figure 1. Poverty Rate in Central Java Province 2020-2024 (Percent)
Source: BPS Central Java Province, 2025

According to Figure 1, the pattern of poverty in Central Java from 2020 to 2024 reflects changing economic circumstances, particularly due to the impacts of the COVID-19 pandemic and the subsequent recovery. In 2020, there was a significant increase in poverty levels because of reduced economic activities and restrictions on social and economic interactions. Although there was a slight increase in poverty in 2021, the following years indicated a consistent decline, which suggests a gradual economic recovery characterized by improved production, employment, and income. This pattern highlights the importance of understanding the key factors influencing poverty reduction amid economic fluctuations.

Education is generally regarded as a vital factor in combating poverty. The research conducted by (Rahman, 2024) examined the human capital theory proposed by Gary Becker in 1962. Becker contends that education and training significantly influence future earnings since education equips individuals with the essential skills to navigate economic challenges. Attaining higher education is believed to improve job prospects and earning potential, thereby reducing the likelihood of individuals falling into poverty. However, in many developing regions, progress in formal education does not consistently correlate with better job outcomes due to a gap between the skills acquired and the employment opportunities available.

Along with education, the LFPR is a vital measure of economic involvement that can affect poverty levels. A higher LFPR shows that more people of working

age are engaging in economic activities, which can boost income and enhance family well-being. Past research has indicated that increased participation in the labor force is linked to lower poverty rates since more individuals are able to earn money and satisfy their basic needs, according to (Desmawan et al., 2023).

Additionally, a region's overall economic performance is reflected by its GRDP. Increased GRDP indicates increased economic activity, which can lead to more jobs, higher incomes, and improved access to vital services. As a result, a drop in poverty rates is often associated with economic expansion. However, the impact of GRDP on poverty can vary depending on how inclusive economic development is and how its advantages are shared across society (Suhadi & Setyowati, 2022).

Although previous studies have examined the determinants of poverty, most of them tend to analyze these variables separately. For example, some studies focus only on education or economic growth without cosidering the interaction between labor market participation and regional economic performance. This fragmented approach limits a comprehensive understanding of how these variables simultaneously influence poverty, particularly at the regional level.

Therefore, the aim of this study is to fill this void by simultaneously investigating the influence of education, LFPR, and GRDP on poverty levels in Central Java Province. By utilizing crime statistics from 35 districts and cities collected between 2020 and 2024, this research highlights the economic trends in the area as it rebounds from the pandemic.

It is anticipated that this study will add to the current literature by offering recent empirical data on the causes of poverty at the regional level and by making policy recommendations for better and more focused poverty reduction initiatives.

MATERIAL AND METHODS

This research utilizes a quantitative method to examine what factors contribute to poverty in Central Java Province. The poverty rate serves as the dependent variable, with independent variables including education levels, LFPR, and GRDP at consistent prices.

Average years of schooling are used to quantify education, GRDP is adjusted to 2010, and LFPR is expressed as the proportion of the total labor force (people aged 15 and older who are employed or seeking employment) to the entire working-age population. transformed into logarithmic form to lessen variations in scale and improve model accuracy, as well as constant pricing.

The information used is panel data, which combines time series and cross-sectional data. The time-series aspect spans the years 2020 through 2024, for a total of 175 data points, while the cross-sectional component comprises 35 cities and districts in the province of Central Java. The official statistical agency in Indonesia, BPS, provides all the data.

Panel data regression is performed using three different models: the CEM, FEM, and REM. Model selection is carried out through the Chow Test and the

Hausman Test, with the FEM identified as the most suitable option. To assess the model, this research employs: F-test to check the overall importance of the variables; t-test to evaluate individual effects.

The economic model is defined as:

$$POV_{it} = \beta_0 + \beta_1 EDU_{it} + \beta_2 LFPR_{It} + \beta_3 LOG(GRDP)_{it} + \epsilon_{it}$$

Where:

POV : Poverty rate in region i at time t
EDU : Education level
$LFPR$: LFPR
$LOG(GRDP)$: Logarithm of GRDP
β_0 : Constant
β_1, β_2, β_3 : Regression coeffiecient
ϵ : Error term
it : 35 districts/cities in Central Java Province
it : Time period (2020-2024)

RESULTS AND DISCUSSION

The findings from the estimation of the panel data model are shown in Table 1.

Table 1
CEM, FEM, and REM Regression Results

Variables	Regression Coefficient		
	CEM	**FEM**	**BRAKE**
C	40,61560	67.93231	43,16487
EDU	-1.827077	0.060298	-0.951487
LFPR	-0.132284	-0.025076	-0.050504
LOG(GRDP)	-0.560789	-5.547739	-2.096752
R2	0.496	0,992	0.561
F-statistic prob	0,000	0,000	0,000
Chow Test *Cross-section F*(34, 137) = 255.288533; Prob.*F*= 0.000 Hausman test *Random cross-section*χ^2(3) = 31.827529; Probχ^2=0,000			

Source: Processed secondary data (2025)

The Cross-section F probability of 0.000 < α (0.05) is shown in Table 1. Consequently, since H0 is rejected, FEM is the best model for predicting panel data. According to the Hausman test results, the χ^2 probability is 0.000 < α (0.5), indicating that FEM is a superior model to utilize and that H0 is rejected.

The F-test, which hypothesizes that β1, β2, β3, and β4 are all zero, is used to assess the model's effectiveness. This suggests that poverty is not

affected by the combination of Education, LFPR, and GRDP. When the likelihood of the F-statistic drops below α, the H0 is rejected.

The impact of each independent variable on the dependent variable is then evaluated separately using a t-test. The i-th independent variable has no effect on poverty, according to the H0 hypothesis. On the other hand, the HA claims that the i-th independent variable does have an impact on poverty. If the likelihood associated with the t-statistic is less than α, the H0 is rejected.

Table 2. FEM Regression Results

POVit =67.9323+ 0.0602EDUCit – 0.0250LFPRit*** – 5.5477logGRDPit*
R2 =0.992; F-stat = 469.5012; Prob. F-stat = 0.000

Note: *significant coefficient at α 0.01; **significant coefficient at α 0.05; ***significant coefficient at α 0.1

Source: Processed secondary data (2025)

Since the probability value of the F-statistic is 0. 000 with α set at 0. 05 based on the data in Table 2, we can conclude that the poverty levels in 35 districts and cities across Central Java Province from 2020 to 2024 are collectively affected by Education, LFPR, and GRDP. Therefore, the H0 is not upheld.

The combined factors of Education, LFPR, and GRDP explain 99. 2% of the changes in poverty, as shown by the determination coefficient (R2) of 0. 992. The remaining 0. 8% of the variation is attributed to other factors that are not included in the analyzed model.

Table 3. Results of the t-test

Variables	Coefficient	Prob. t	Conclusion
EDU	0.060298	0.8089	Not significant
LFPR	-0.025076	0.0540	β_2 significant at 0.1α
LOG(GRDP)	-5.547739	0.0000	β_2 significant at 0.01α

Source: Processed secondary data (2025)

According to Table 3, between 2020 and 2024, the factors of GRDP and LFPR greatly affect poverty in 35 districts and cities in Central Java Province. On the other hand, the Education factor did not affect poverty levels in the same 35 districts and cities in Central Java during this time period.

The study shows that the education coefficient is 0. 060298, and the probability is 0. 8089, which is greater than α (0. 05). This indicates that education did not significantly influence poverty in the 35 districts and cities in Central Java from 2020 to 2024.

With a linear relationship between TPAK and poverty and a significance level of 0.0540 < 0.1, the TPAK variable has a regression coefficient of -0.025076,

indicating a negative and statistically significant impact on poverty. This indicates that poverty would decline by 0.025076% for every 1% increase in the TPAK.

With a linear-log relationship between poverty and GRDP, the regression coefficient for the GRDP variable is -5.547739, and the significance level of 0.0000 < 0.01 demonstrates that GRDP has a negative and significant effect on poverty. This suggests that a 0.055477% reduction in poverty will occur with every 1% increase in GRDP.

The Connection Between Poverty and Education

The level of education does not always play a major role in influencing the rate of poverty, as having more formal education doesn't necessarily lead to better skills, job opportunities, or a good match between the skills possessed and the needs of the job market. Research by Giovani (2018) and Fayza et al. (2025) indicates that education does not affect poverty, and this finding aligns with their research outcomes. In certain regions, highly educated individuals still face limited employment opportunities due to constricted economic frameworks, a dominant informal sector, and slow job creation. Therefore, while education remains an essential long-term investment, its effectiveness in reducing poverty may be statistically minimal without broad-based economic growth or an increase in employment options.

However, several studies have shown that poverty is impacted by education. Spada A & Fiore M (2023), Sennuga et al. (2023) and Salong et al. (2024) conducted research that revealed a detrimental impact on education. Income is correlated with education, with the quality of life improving with higher levels of education. Higher quality results in greater productivity, which in turn leads to higher income than that of those with lesser productivity. As a result, raising income might enable people to get out of poverty.

The need for better alignment between education policies and those related to the economy and jobs is shown by research that reveals education does not affect poverty. This can be achieved by improving the standard of skill-based education, increasing vocational training that meets industry needs, and creating good jobs by expanding the industrial sector and small and medium-sized enterprises. All these actions can help improve well-being and reduce poverty. The study's findings show that the education factor has a coefficient of 0. 060298 with a likelihood of 0. 8089, which is greater than alpha (0. 05). This means that in 35 locations in Central Java Province, Indonesia, the education factor does not significantly influence poverty between the years 2020 and 2024. This is because having more formal education does not always mean better skill quality, better job opportunities, or skills that match what the job market needs. Therefore, the level of education does not always greatly influence poverty levels.

Because of a weak economic system, the prevalence of the informal sector, and a scarcity of chances for creating productive jobs, many highly educated graduates in developing areas, including certain regions of Indonesia, still face restricted employment opportunities. Additionally, education by itself often plays

a less critical role in influencing poverty levels compared to other factors such as location, income disparity, availability of resources, family size, and governmental policies. Consequently, while education is essential as a long-term investment, it may not meaningfully contribute to reducing poverty unless it is accompanied by inclusive economic growth and enhanced job opportunities.

The Connection Between LFPR and Poverty

An increase in economic participation among people of working age accounts for the negative impact of the LFPR on poverty. Family income increases as more people in this age range actively seek and find employment, enabling them to meet basic necessities such as healthcare, education, and food. This results in a reduction in the number of people living in poverty, as their income sources become more stable and dependable. This observation supports the findings of Ashari & Athoillah (2023), who demonstrated that the LFPR had a large and detrimental impact on poverty rates in the Horseshoe area. According to comparable results from Alo & Sukadana (2025), the LFPR had a major detrimental impact on poverty in Papua Province between 1996 and 2021.

A high LFPR also indicates the effective utilization of labor resources in the economy, thus increasing opportunities for income generation. Additionally, having access to good and productive jobs can help alleviate the social and economic challenges often encountered by impoverished groups. Therefore, in general, a high LFPR is associated with lower poverty rates (Paduengo et al., 2025).

However, a contrasting result was found by Erfiana et al. (2025), who indicated that the TPAK did not affect poverty levels in Indonesia from 2004 to 2023. Likewise, a study by Adhim et al. (2024) showed that the LFPR did not influence poverty in Madura during the period of 2019 to 2023. Although a high LFPR suggests that a large number of people are working, it does not guarantee they earn sufficient income or have decent jobs to meet their essential needs.

The Connection between GRDP and Poverty

These findings suggest that GRDP can contribute to reducing poverty rates. This is in line with a study conducted by Sari & Novianti (2024), which indicated that GRDP had a significant negative effect on poverty in West Kalimantan from 2017 to 2022. Similarly, Ritonga & Wulantika (2020) discovered that GRDP negatively influenced poverty levels in Batu Bara Regency, North Sumatra, between 2010 and 2018. Furthermore, studies by Damanik & Sidauruk (2020), Amar & Arkum (2024), and Aini & Islamy (2021) confirmed these results.

Any economic activity that greatly raises GRDP ultimately boosts productivity. This growth is seen through increased buying power and spending, which leads to more production. This situation also helps create jobs and encourages economic growth. When there are more job opportunities, people can earn money that enhances their quality of life. Meeting these basic needs will eventually lead to a decrease in poverty levels, according to (Syahputri & Fisabilillah, 2022).

An alternative result was observed in research carried out by Miftahussalam & Rofiuddin (2021), which determined that GRDP did not impact poverty in Central Java Province. A study yielding similar findings was conducted by Prayoga et al. (2021) in Sidoharjo Regency between 2010 and 2019. This indicates that an increase in GRDP in a region does not automatically influence poverty rates.

CONCLUSION

Using panel data from 35 districts/cities, this research analyzes the causes of poverty in Central Java Province between 2020 and 2024. According to the findings, poverty rates are impacted by a combination of education, LFPR, and GRDP. However, education only shows a limited effect on lessening poverty. This finding indicates that simply improving formal education is not enough unless it is better aligned with what the job market requires. Conversely, the labor force participation rate negatively affects poverty, meaning that when more working-age people engage in jobs, it results in increased earnings and improved family well-being. Similarly, the growth in regional gross domestic product also negatively impacts poverty, indicating that expanding local economies plays a significant role in reducing poverty.

These findings highlight that, in the near term, the reduction of poverty in Central Java relies more on job market dynamics and economic growth rather than solely on education. Therefore, policy efforts should focus on creating jobs, enhancing participation in the labor market, and promoting fair economic development alongside improving access to education to more effectively tackle poverty.

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