Uncovering the Map of Poverty in the South Coast Region of East Java: A New Perspective from Spatial Analysis

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10.24269/ekuilibrium.v20i2.2025.pp354-375%20

ARTICLE INFO

Article history
Received:
26-06-2025
Revised:
27-08-2025
Accepted:
29-08-2025

Keywords
Spatial Dependence
Poverty
Sustainable development goals (SDGs)
South Coast Region

ABSTRACT

Poverty alleviation remains a global challenge and a key pillar of the sustainable development agenda. Unlike previous studies that generally examine poverty in aggregate or without considering spatial linkages, through the incorporation of socioeconomic and environmental dimensions into the Spatial Durbin Model (SDM), this research introduces a novel approach to investigating spatial interdependencies of poverty across the South Coast of East Java Province. The analysis using Spatial Weighting Matrix, Moran Index Analysis, Terting the significance of Spatial Parameters, Spatial Panel Model and Goodness of Fit Criteria that poverty in one locality is substantially shaped by the socioeconomic conditions prevailing in adjacent areas. The results show that economic growth and natural resource exploitation has a positive significant on poverty. This suggests that growth and resource exploitation do not necessarily reduce poverty. Conversely, accessibility has a negative and significant effect, confirming that increased connectivity can reduce poverty disparities between regions. Education, unemployment, and health factors show weaker or insignificant effects, although their spatial interactions remain important. The synthesis of these findings confirms that poverty in coastal areas is not merely a local issue, but a spatially contagious phenomenon. The practical implication of this research highlights the necessity of spatial-based policies that fast prioritize inclusive growth, equitable resource allocation, and the development of strategic infrastructure in order to break the cycle of poberty while maximizing positive splillover effects. Thus, this research not only enriches the literature on spatial economics but also provides concrete policy direction for accelerating poverty alleviation in line with sustainable development goals.

1. Introduction

Eradicating poverty as a central objective of development plays a crucial role in advancing the Sustainable Development Goals (SDGs), with particular emphasis on addressing poverty and hunger as global challenges while promoting the continuity of inclusive and equitable economic progress. Both the Sustainable Development Goals (SDGs) and the Millennium Development Goals (MDGs) place poverty alleviation at the core of their agendas (Wan, Hu, and Liu 2021).

The 2030 Sustainable Development Goals (SDGs) are interconnected within a complex cycle. These goals emphasize five overarching pillars, namely people, planet, prosperity, peace, and partnership (Kassa, Teferi, and Delelegn 2018). Eliminating all forms of poverty worldwide is the SDG's first goal. This indicates that alleviating extreme poverty serves as a fundamental basis for achieving sustainable development (Wang et al. 2022). So that, the problem of poverty is important because it is the primary goal of sustainable development.

The poverty phenomenon can lead to the design of more targeted policies, the encouragement of cross-sector collaboration, and the creation of inclusive development innovations to improve the community's quality of life. Poverty is a multidimensional phenomenon that extends beyond insufficient income, encompassing various aspects such as health, education, quality of living conditions, and participation in social life (Acconcia et al. 2020); (Mikalauskiene et al. 2018).

According to data released in 2021 by the Central Statistics Agency and TNP2K of East Java Province, the region contributed 16.59% to Indonesia's total poor population, a figure that exceeds the national poverty rate, which stood at 10.14%. This data indicates that East Java Province contributes to high poverty in Indonesia, so it must be a priority area for poverty alleviation in Indonesia. There is a gap issue, namely the existence of regional disparities in the northern and southern regions of East Java Province. Infrastructure in the southern region is still relatively limited, especially in accessibility, and the economic potential in the southern region of East Java is quite large and diverse, but it has not been utilized optimally.

Regional disparities are caused by large differences in productivity between regions, and the growth gap is widening with policy reforms. A large number of countries exhibit pronounced regional inequalities in terms of economic achievement and quality of life, which are evident through variations in income levels, educational attainment, and health conditions (Rachman 2018).

The southern coastal region, hereafter referred to as the South Coast, is composed of eight regencies: Pacitan, Trenggalek, Tulungagung, Blitar, Malang, Lumajang, Jember, and Banyuwangi (Sukandar et al. 2016).

The condition of regional disparity will undoubtedly have an impact on each region. Areas rich in natural resources and economic potential will be more advanced, and less developed areas will be left behind. Structurally, the South Coast region depends on conventional agriculture, fisheries, and mining businesses. In addition, there are differences regarding accessibility and infrastructure, and the South Coast may face more limited accessibility and infrastructure challenges, especially in rural or remote areas.

The South Coast area depends on specific natural resources such as agriculture, fisheries, or mining, but there are still many pockets of poverty in the South Coast area. For

ISSN (print) 1858-165X | ISSN (online) 2528-7672

several decades, scholars have noted that the abundance of natural resources does not automatically guarantee economic prosperity for nations whose development strategies rely heavily on them. On the contrary, populations in such countries often remain trapped in conditions of low per capita income and poor quality of life, as reflected in multiple development indicators. This paradoxical situation is commonly referred to as the "natural resource curse" (Badeeb, Lean, and Clark 2017). Countries that depend on natural resources tend to develop profitable industries but face problems in economic recovery. A country rich in natural resources is a country that is slow in developing the economy in its region, so it will cause various economic problems such as poverty.

The persistence of poverty pockets along the southern coastal region of East Java Province reflects the presence of social disparities and highlights the considerable obstacles in achieving an equitable distribution of development outcomes. This condition is illustrated by the average poverty data from 2017 to 2021, which shows that Malang Regency and Jember Regency recorded the highest numbers of impoverished residents, amounting to approximately 268.24 thousand and 248.39 thousand individuals, respectively (BPS Provinsi Jatim 2024).

Multiple determinants contribute to poverty, and among them, spatial aspects play a crucial role; spatial dimensions of poverty are particularly evident in the southern coastal region of East Java Province shows the existence of geographical gaps that hinder the distribution of resources and worsen social inequality.

A number of previous investigations have examined the linkage between regional poverty and geographical characteristics across various areas. Nevertheless, recent scholarly attention is directed more toward temporal dynamics, aiming to identify recurring patterns and uncover the underlying determinants of spatial poverty within a certain period (Liu et al. 2022). Regional poverty demonstrates considerable spatial interdependence across multiple scales, where the degree of dependency tends to intensify at higher tiers of administrative and geographical units, which include primary, secondary, and tertiary geographical components, mainly affecting poverty distribution across regions (Liu et al. 2023). A poor area tends to form a poverty cluster, impacting adjacent areas. This aligns with the research presented by Deffinika et al. (2025), which states that poor and non-poor neighbouring villages tend to form clusters because of their spatial structure. The same is true as stated by Cahyadi et al (2020), Listyaningsih, Satiti, and Kurniawidi (2021), Wang et al (2021). Poverty points are concentrated in adjacent sub-districts and can be located throughout neighbouring districts. However, this is different from Mussagy and Dambudzo (2015) statement which states that each region does not have a concentration of poverty compared to other regions, poverty in one region is not caused by poverty in other regions.

According to Booth poverty is driven by five main factors. The first dimension is the economic aspect, which encompasses limited access to capital and the use of inadequate technological resources. Second are socio-cultural factors, consisting of low skills and education, limited employment opportunities, and the existence of poor culture. The third determinant relates to geographical and environmental conditions, which include regional isolation, widespread disease, and low land productivity. The fourth factor is associated with individual and biological characteristics, such as age, gender, and overall health status. The fifth pertains to restricted accessibility to essential resources, including market goods, public services, and financial or credit facilities.

ISSN (print) 1858-165X | ISSN (online) 2528-7672

Economic dimensions, particularly economic growth, play a pivotal role in reducing poverty levels. Numerous empirical studies have demonstrated a significant association between growth and poverty reduction. For instance, Adeleye et al (2020) and Wan et al (2021) emphasize that economic expansion contributes to poverty alleviation, while Marrero and Servén (2022) highlight the negative relationship between the two variables. Conversely, some scholars present different perspectives; Dollar et al (2015) argue that no direct linkage exists between economic growth and poverty incidence, whereas Chen et al (2016) contend that economic growth alone is insufficient to address poverty in rural areas.

In addition to economic dimensions, socio-cultural aspects also hold substantial influence in efforts to reduce poverty, which is evident in issues such as low educational attainment and high unemployment rates. Education, in particular, is recognized as a fundamental driver in alleviating poverty. Hidalgo and Kortajarene (2014) emphasize that government spending in the education sector has a direct impact on poverty levels, while Mihai, Ţiţan, and Manea (2015) similarly argue that education serves as a key instrument for poverty reduction by enhancing the quality of human capital. Hofmarcher (2021) noted the significant economic impact of education on poverty reduction. This applies to several objective poverty measures, both absolute and relative, as well as subjective poverty measures. Garza-Rodriguez et al (2021) state that higher education levels beyond primary school are one of the reasons for the decline in household poverty. Several other studies state different things. Suripto and Subayil (2020) stated that there is no influence between the level of education on poverty. Zhang (2014) emphasized that low- and middle-income households with better-educated parents often choose to undertake educational investments beyond their financial capacity, driven by the expectation of long-term returns from education.

Besides education, unemployment plays a crucial role in poverty reduction. Its influence on poverty has increased significantly over time, particularly as measured by unemployment Liu et al (2022). It is believed that employment reduces the risk of poverty (Faridi et al. 2016). However, Quy (2016) contends that unemployment exerts an adverse influence on poverty levels.

Another set of determinants affecting poverty is related to geographical and environmental conditions. Within this framework, geography and the environment are often associated with natural resources, which serve as a crucial element connecting the core objectives of sustainable development, human welfare, and ecological preservation (Schleicher et al. 2018). Natural resources represent a vital determinant, as regions endowed with fertile and productive land are more likely to enhance economic performance, particularly through increased agricultural production (Chen et al. 2016) highlight the importance of wetlands and agricultural land in several sub-districts; without them, the region will become impoverished. Moreover, Ge, Ren, and Fu (2021) assert that the proportion of irrigated fertile land constitutes a key determinant in explaining the spatial distribution of poverty.

Individual and physical aspects are generally linked to health conditions, which can serve as a potential pathway for poverty alleviation. If the quality of public health improves, it is believed that poverty levels can decrease Bintang and Woyanti (2018). Similarly, Weziak-Bialowolska (2016) emphasizes the strong interconnection between health and poverty. In contrast, Wan et al (2021) present a different view, asserting that health status does not significantly contribute to poverty reduction.

ISSN (print) 1858-165X | ISSN (online) 2528-7672

Accessibility has a considerable impact on the heterogeneity of spatial poverty stratification, with economic, market, and transportation accessibility identified as the primary driving forces (Liang et al. 2022). In addition, Martens and Bastiaanssen (2019) contend that urban areas play a significant role in poverty patterns that arise due to accessibility issues. Access to infrastructure, particularly road networks, also demonstrates a clear relationship with poverty levels: the greater the distance from such services, the higher the likelihood of poverty occurrence (Cahyadi et al. 2020)and (Amaliah and Ulimaz 2021).

The distinct contribution of this study is reflected in its application of a spatial perspective to examine poverty conditions in the southern coastal region of East Java. Most previous studies have focused on economic and social factors in isolation, without examining the spatial interconnections between regions, which can exacerbate or improve poverty. However, poverty is characterized by spatial dependency, where the poverty level of a region is influenced not only by internal factors but also by the conditions of the surrounding areas. This creates a research gap: the lack of comprehensive studies integrating economic, social, environmental, and accessibility factors within a spatial analysis framework.

Based on these research gaps, the following research questions are proposed: Does the distribution of poverty across the southern coastal region of East Java exhibit spatial dependence?, In what ways do growth dynamics, educational attainment, unemployment, natural resource endowments, health status, and accessibility collectively shape poverty levels in the southern coastal region of East Java when examined through a spatial lens?

2.Literature Review

Spatial Poverty Theory

According to Addae-korankye (2019) this theory can be viewed from three different perspectives. The conceptual foundations that account for the spatial concentration of poverty are drawn from three major approaches: agglomeration economics, central place theory, and the notion of selective out-migration. In the present study, the economic agglomeration framework is applied, which demonstrates that the clustering or proximity of similar industries attracts complementary services and markets, thereby facilitating the emergence of additional enterprises. On the contrary, in areas characterized by poverty, such conditions tend to perpetuate and even intensify poverty in nearby or neighboring regions.

Spatial poverty refers to a condition in which an area possesses limited geographical capital—covering physical, natural, social, political, and human dimensions—while simultaneously experiencing high poverty levels, partly due to inherent geographical disadvantages (Bird 2019). Such spatial poverty traps tend to occur in regions with weak geographical capital, marked by low ecological, economic, and social resilience, and a high proportion of poor populations (Arif, Muta'ali, and Rijanta 2025). In essence, spatial poverty emerges from inadequate geographical conditions, whether in terms of natural resources, physical infrastructure, socio-political structures, or human capital, which in turn exacerbates poverty and transmits its effects to surrounding areas.

The Effect of Between Economic Growth and Poverty

The effectiveness of economic growth in alleviating poverty over time is evident, as our analysis indicates that poverty levels decline alongside economic expansion, regardless of the degree of inequality present (Škare and Družeta 2016).

ISSN (print) 1858-165X | ISSN (online) 2528-7672

According to Kuznets, the connection between economic growth and poverty reflects a negative correlation, meaning that higher growth tends to reduce poverty. Conversely, the link between economic growth and income inequality is positive, indicating that growth often coincides with rising inequality. Economic expansion alone, without being supported by equitable income distribution, is insufficient to lower poverty levels. Therefore, achieving greater societal welfare requires not only accelerating economic growth but also ensuring that such growth is accompanied by improved income equality (Mdingi and Ho 2021).

The Effect of Between Education and Poverty

Education, as a deliberate and systematic endeavor, represents a conscious and intellectually driven process. Consequently, educational practices must be designed and executed in a structured manner across all stages—ranging from elementary, secondary, to higher education—at various administrative levels, including national, provincial, and municipal, as well as at the institutional or school level, and within classroom teaching and learning activities. "In my view, education in its various forms constitutes a pivotal element in disrupting the vicious cycle of poverty that is transmitted across generations" (Mihai et al. 2015)

Education plays a crucial role in enhancing labor productivity, which in turn raises income levels and contributes to poverty alleviation. While education is acknowledged as an important instrument for reducing poverty, the full potential of its benefits is often not achieved in certain countries due to the low quality of education systems (Abaidoo 2021). In other words, increasing the level of education can reduce poverty rates compared to the lowest level of education.

The Effect of Between Unemployment and Poverty

Research on poverty outcomes indicates that unemployed individuals face a greater likelihood of falling into poverty and experiencing material deprivation, primarily as a consequence of income loss and the absence of work-related benefits (Renahy et al. 2018). An increase in overall unemployment rates heightens the probability of individuals becoming unemployed. An indirect effect arises when rising unemployment weakens workers' bargaining power, particularly in jobs with higher levels of risk. In such contexts, employees are more vulnerable to dismissal or reduced wages, as intensified competition accompanies an increase in regional aggregate unemployment rates.

The existence of a proportionate relationship between poverty and unemployment, denoting the presence of possible causality between the pairs. As such while educational status acts an increasing function of poverty in the state, income level act as a decreasing function of poverty (Mohammad and David 2019). Naturally, a decline in individual wealth resulting from unemployment tends to push people into poverty, as their income levels become insufficient. When a nation experiences persistently high unemployment rates, it often triggers political and social instability, which in turn undermines societal well-being and hampers the prospects for sustainable economic growth.

The Effect of Between Natural Resources and Poverty

In broad terms, a community's economic decline or its limited prospects for development is frequently linked to the quantity and accessibility of natural resources within a given area. Even today, some argue that poverty in a nation arises from the inadequacy of its

ISSN (print) 1858-165X | ISSN (online) 2528-7672

natural resource endowment. Indeed, the low level of production in many developing countries is partly attributable to the scarcity of natural resources, both in terms of volume and diversity. Without a basic threshold of resource availability, the prospects for achieving sustainable economic development remain highly constrained (Suparmoko 2016).

In general, it is often argued that the downturn of an economy or the limited opportunities for community development are reflected in the availability of natural resources within a region. Even today, there remains a perspective that poverty in a country arises from insufficient natural resource endowments. However, evidence from research suggests that poverty, social jealousy, and conflict may emerge not merely from resource scarcity, but from the mismanagement of resource wealth when it is not accompanied by fair income distribution (Hajad et al. 2023). For several decades, scholars have noted that the mere abundance of natural resources does not automatically guarantee economic prosperity for nations relying heavily on them as the foundation of development. On the contrary, populations in such countries often remain trapped in conditions of low per capita income and poor quality of life as reflected in various development indicators. This paradoxical situation is widely recognized as the "natural resource curse."(Badeeb et al. 2017).

The Effect of Between Health and Poverty

Poverty has been closely linked to declining health outcomes, primarily as a consequence of detrimental lifestyle practices such as unhealthy dietary patterns, smoking habits, and insufficient physical activity. Prolonged exposure to poverty conditions appears to exert an even more severe impact on individual health-related behaviors (Aue, Roosen, and Jensen 2016). Health constitutes a fundamental prerequisite for overall well-being, while education serves as a key foundation for leading a meaningful and fulfilling life. Together, these two dimensions play a pivotal role in enhancing human capabilities, which represent the central essence of genuine development.

From a health perspective, which is closely linked to poverty and was particularly evident during the economic crisis, community responses demonstrated diverse patterns. Individuals from low-income groups often avoided outpatient services, postponed hospital visits, refrained from utilizing costly specialist care, shortened the duration of hospitalization, or purchased only a fraction of the prescribed medication—half or even a third—to reduce treatment expenses. Many sought alternative local remedies, which in some cases produced adverse outcomes. In addition, childbirth frequently occurred at home under the assistance of traditional birth attendants, thereby heightening maternal and neonatal risks. Furthermore, illnesses were more likely to become chronic since appropriate but expensive medical treatments were often neglected.

The Effect of Between Accessibility and Poverty

Accessibility is a crucial way to overcome geographical restrictions and provides an essential path for alleviating regional poverty (Liang et al. 2022). Access to infrastructure services, particularly roads, demonstrates that the greater the distance a person must travel to reach such services, the higher the likelihood of experiencing poverty (Amaliah and Ulimaz 2021); (Cahyadi et al. 2020). This indicates that improved access to physical infrastructure plays a crucial role in strengthening individuals' capacity to overcome poverty. Similarly, (Martens and Bastiaanssen 2019) emphasize that efforts to reduce poverty are strongly

ISSN (print) 1858-165X | ISSN (online) 2528-7672

associated with enhanced accessibility, particularly through the development of road infrastructure.

Research Model

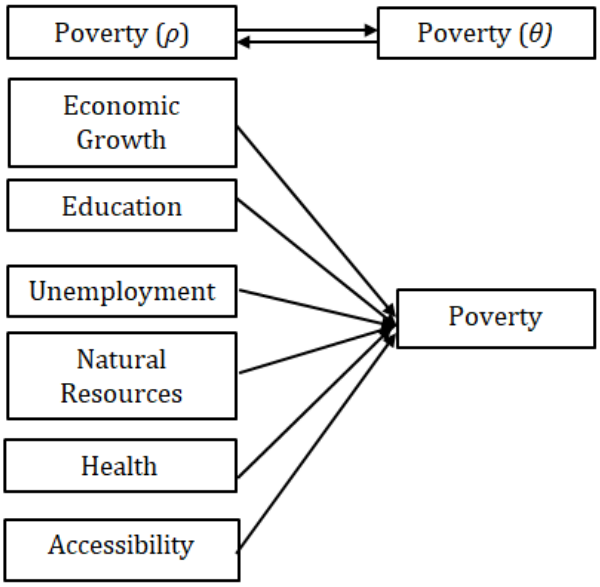

Figure 1 : Research Model

3. Research Method

Population is the number of elements that meet the researcher's specific criteria for being the research subject. The population in this study is the Regency and City of East Java Province. The area included in the South Coast area consists of 8 regencies and cities with observation years 2012-2022, namely Banyuwangi Regency, Jember Regency, Lumajang Regency, Malang Regency, Blitar Regency, Tulungggung Regency, Trenggalek Regency and Pacitan Regency.

Table 1: Measurement of Research Variables

Variable	Variable Measurement	Scale of Measurement
Poverty (Y)	Percentage of poor population $P_0 = \frac{1}{n}\sum_{i-1}^{q}\left[\frac{z - y_i}{z}\right]^0$	Ratio
Economic Growth (X1)	PDRB $PDRB = \frac{PDRB_t - PDRB_{t-1}}{PDRB_{t-1}} \times 100\%$	Ratio
Education (X2)	Last completed education (PT)	Ratio
Unemployment (X3)	Open Unemployment Rate (TPT) $TPT = \frac{PP}{PAK} \times 100\%$	Ratio
Natural resources (X4)	Share of Agricultural Sector to GRDP $\frac{\text{PDRB Agricultural Sector}}{\text{PDRB}} \times 100\%$	Ratio
Heath (X5)	Morbidity Rate	Ratio
Accessibility (X6)	Road Network Utilization (Road Length according to Good Road Condition Per Population) Indeks Accessibility = $\frac{\text{Road Length (road condition is good)(Km)}}{\text{Population (People)}}$	Ratio

Source : Badan Pusat Statistik Jawa Timur, 2022

ISSN (print) 1858-165X | ISSN (online) 2528-7672

Analysis Method

Spatial Weighting Matrix

The initial stage is to create a spatial weighting matrix, a structure that represents the proximity relationships between regions (e.g., directly adjacent or based on distance). This matrix is used to detect spatial dependencies between data.

Moran's Index Analysis

After the spatial weights are created, the Moran's I test is performed to measure the presence of spatial autocorrelation. This test helps determine whether the data exhibits a spatial pattern (clustering, dispersion, or randomness).

Testing the Significance of Spatial Parameters

If spatial autocorrelation is present, the next stage is to test the significance of the spatial parameters. This test determines whether the spatial variables in the model have a significant influence on the dependent variable.

Spatial Panel Model (SAR, SEM, SDM)

Based on the results of the significance test, the appropriate spatial panel model is selected:

a. SAR (Spatial Autoregressive Model): considers the influence of the dependent variable across regions.
b. Spatial Error Model: considers the effect of autocorrelation on the error.
c. Spatial Durbin Model: a combination of SAR and the influence of independent variables from surrounding regions.

Model Goodness of Fit Criteria

The final stage is evaluating the model using goodness of fit criteria, such as the Akaike Information Criterion (AIC),Log-likelihood or R^2. The results are used to determine the best model that represents the spatial relationships in the panel data.

The following are the stages of data analysis :

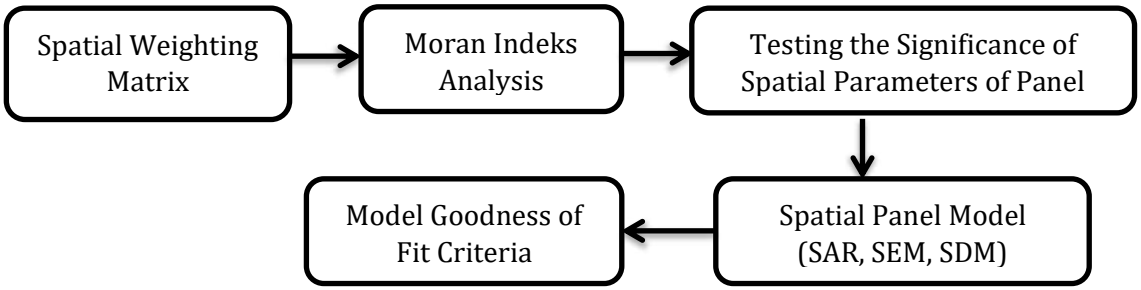

Figure 2 : analysis method
Source : Elhorst et al (2014)

4. Results and Discussion

Results

Spatial Weighting Matrix

In contrast to spatial distribution of poverty in the South Coast region in 2012, as illustrated in Figure 3, areas with poverty rates exceeding 10.79% (highlighted in red) are primarily found in Jember Regency, Lumajang Regency, Malang Regency, Pacitan Regency, and Trenggalek Regency. Areas such as Jember Regency, Lumajang Regency, Malang Regency. These areas have diverse economic structures, and although several regencies have

ISSN (print) 1858-165X | ISSN (online) 2528-7672

developing economic sectors, most of the population still works in the informal sector or agriculture with low incomes. Meanwhile, the geographical and topographic conditions of Pacitan Regency and Trenggalek Regency can impact poverty levels because these areas consist of rural areas, mountains, or areas that are difficult to access in terms of infrastructure. Lack of infrastructure, including transportation networks and health facilities, can make it difficult for people to obtain essential services and economic opportunities.

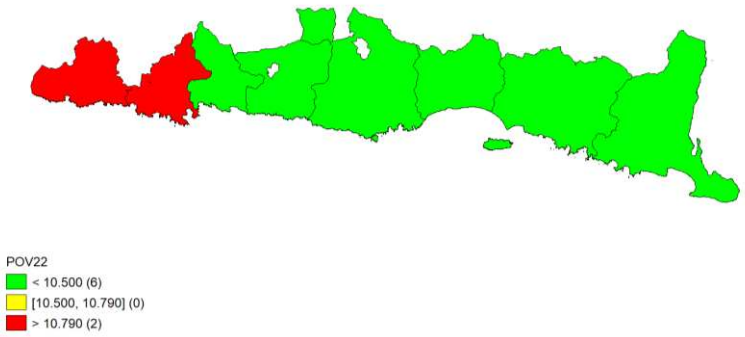

figure 3: The Spatial Pattern of Poverty in the South Coast Region in 2022
Source: BPS, data is processed using Geoda

Spatial distribution is also seen in the South Coast area in 2022, with the poverty percentage at 10.79% (red area) in Pacitan and Trenggalek Regencies. Geographically, Pacitan and Trenggalek Regencies are located in remote areas, affecting the ease of access connected to major economic centres, making it difficult to improve people's welfare and grow local economic potential. The absence of fundamental infrastructure—including roads, electricity, clean water, and proper sanitation—can hinder residents of Pacitan Regency from enhancing their quality of life and accessing essential services.

In 2022, there were no areas in the South Coast region with poverty rates ranging between 10.50% and 10.79% (indicated in yellow). Meanwhile, areas with poverty rates below 10.50% (shown in green) are found in Banyuwangi Regency, Blitar Regency, Jember Regency, Lumajang Regency, Malang Regency, and Tulungagung Regency. These districts have effectively developed basic infrastructure, including roads, electricity, clean water, and adequate sanitation. Such well-established infrastructure enhances economic accessibility and efficiency, while also boosting regional competitiveness in attracting investment and promoting economic growth.

Moran Indeks Analysis

To assess the presence of spatial dependencies across different areas in the South Coast region, the Moran's I index can be examined, where values between $0 < I \leq 1$ indicate a positive spatial autocorrelation. The results of Moran's I, are presented below.

Table 2: Global Value of Moran Poverty Statistical Index for the South Coast Region

Poverty	i value	z Value	p Value	E(I)	Information
2012	0.3316	1.5135	0.08200	-0.1429	Spatial Autocorrelation +
2013	0.2952	1.4532	0.08700	-0.1429	Spatial Autocorrelation +
2014	0.2861	1.4392	0.08400	-0.1429	Spatial Autocorrelation +
2015	0.3109	1.5081	0.08200	-0.1429	Spatial Autocorrelation +
2016	0.2925	1.3402	0.10900	-0.1429	Spatial Autocorrelation +

ISSN (print) 1858-165X | ISSN (online) 2528-7672

2017	0.1933	1.1627	0.14700	-0.1429	Spatial Autocorrelation +
2018	0.2264	1.1407	0.14900	-0.1429	Spatial Autocorrelation +
2019	0.2376	1.2548	0.12100	-0.1429	Spatial Autocorrelation +
2020	0.2327	1.2583	0.12100	-0.1429	Spatial Autocorrelation +
2021	0.2340	1.2388	0.12400	-0.1429	Spatial Autocorrelation +
2022	0.2360	1.2686	0.11400	-0.1429	Spatial Autocorrelation +

Source: Geoda processed, 2023

Testing the Significance of Spatial Parameters of Panel

Table 3: Hausman Test Results

chi2(6)	=	(b-B)'[(V_b-V_B)^(-1)](b-B)
	=	0.22
Prob > chi2	=	0.9998

Source: Stata 17

As shown in Table 3, the Hausman test yielded a chi-square probability value of 0.9989, which exceeds the significance level of 0.05 (0.9989 > 0.05). Consequently, the alternative hypothesis (Ha) is rejected, and the null hypothesis (H0) is accepted. This indicates that the random effects model is the most appropriate for analysis. Therefore, based on the results of the Hausman test, the random effects model should be employed to analyze the Pansela area.

Spatial Panel Model (SAR, SEM, SDM)

Table 4: Spatial Panel Regression Estimation Results

	SOUTH COAST		
	SAR	SEM	SDM
Main	0.07118 ns	-0.014764 ns	0.1568512**
LNPDRB	0.00298 ns	0.0172136 ns	0.014381 ns
EDUC	0.00298 ns	0.0006161 ns	0.0324634 ns
UNEM	0.19906**	0.330611**	0.1235037**
NAT	-0.00609 ns	-0.007988 ns	-0.009129 ns
HEALTH	-0.09923 ns	-0.061107 ns	-0.352282**
ACCES	-0.161531	2.286711	-2.631572
_cons			
Wx			0.3853828**
GROWTH			0.3853828 ns
EDUC			-0.052244 ns
UNEM			0.0388748 ns
NAT			-0.007955 ns
HEALTH			0.3079451**
ACCESS			
Spatial	0.450409**	0.4789553**	0.3448685**
Rho			
Lambda			
R^2	0.0593	0.0314	0.1142
Log-likelihood	-55.5015	-60.9530	-43.7977
AIC	131.0029	141.9059	119.5954

**Significant at α = 5% ns= Not significant at α = 5%

Source: Results of Stata 17

Based on Table 4 above, it is known that each spatial regression model in the South Coast area can be known through the three models, namely the SAR, SEM and SDM models, which will then be selected as the best model of the three models.

ISSN (print) 1858-165X | ISSN (online) 2528-7672

Model Goodness of Fit Criteria

Tabel 5 : Model Goodness of Fit Criteria

Indicator	AIC	Log Likehood	R-square
SAR	131.0029	-55.5015	0.0593
SEM	141.9059	-60.9530	0.0314
SDM	-119.5954	-43.7977	0.1142

Source: Stata 17 Processing Results

The estimation outcomes for the three indicators: R-squared, log likelihood, and AIC (Akaike Information Criteria) within the South Coast region indicate that the Spatial Durbin Model (SDM) exhibits the lowest AIC value, recorded at -119.5954. The SDM model has the largest R-squared value, at 0.1142, and the SDM model has the largest log-likelihood value, at -43.7977. Therefore, the SDM model is the best model to use in the south coast region. The spatial panel regression of the SDM model in this study can be written as follows:

$$\begin{aligned} POV_{it} = {} & 0.344\sum_{j=1}^{8} w_{ij} POV_{jt} + 0.156 GROWTH_{it} + 0.014 EDUC_{it} \\ & + 0.385\sum_{j=1}^{8} w_{ij} GROWTH + 0.385\sum_{j=1}^{8} w_{ij} EDUC_{jt} - 0.052\sum_{j=1}^{8} w_{ij} UNEM_{jt} \\ & + 0.032 UNEM_{it} + 0.123 NAT_{it} - 0.091 HEALTH_{it} - 0.352 ACCESS_{it} \\ & + 0.038\sum_{j=1}^{8} w_{ij} NATU_{jt} - 0.007\sum_{j=1}^{8} w_{ij} HEALTH_{jt} + 0.307\sum_{j=1}^{8} w_{ij} ACCESS_{jt} \\ & + \mu_i + e_i \end{aligned}$$

In the SDM model above, poverty in location i depends on the surrounding poverty. It results from the effects of endogenous interactions between dependent variables, also known as spatial lag. Based on the model, the results of the analysis of the SDM model of this study show that the spatial lag coefficient value of 0.344 indicates that the poverty value in the South Coast area will be affected by 0.344 times the average poverty of neighbouring areas or directly intersecting with it, assuming that other variables are fixed. The spatial interaction between poverty variables in the South Coast region is indicated by a spatial p-value of 0.000>0.05.

Poverty in the South Coast region, which is the subject of the study, is positively influenced by economic growth. The value of the variable economic growth coefficient of 0.156 evidences this. This finding explains that if the economic growth variable increases by 1%, the poverty value on average will increase by 0.156%, assuming the other independent variables are constant. Meanwhile, the probability value (p-value) of 0.033 < 0.05 shows a positive and significant influence.

The education variable has a positive but insignificant effect on poverty in the South Coast area, and this is evidenced by the p-value of > 0.05, which is 0.739>0.05 and the value of the education variable coefficient of 0.014, which shows that if the education variable increases by 1%, the poverty value will increase by 0.014% assuming that the other independent variables are constant. The same thing happened with the unemployment variable with a p-value of > 0.05, namely 0.452 >0.05 and a coefficient value of 0.032, meaning that unemployment has a positive but insignificant effect on poverty in the South Coast region. Meanwhile, the value of the unemployment variable coefficient is 0.032, which means that if the unemployment variable increases by 1%, the poverty value will also increase by

0.032%, assuming that the other independent variables are constant. The results of spatial regression analysis were also seen in natural resource variables, which showed a positive and significant influence on poverty that.

Discussion

spatial dependency of poverty

The model estimation results demonstrate the presence of spatial interactions among regions in the South Coast area, manifested through both endogenous and exogenous relationships between poverty-related variables. It can be interpreted that increasing regional poverty will affect increasing poverty in adjacent regions (neighbours). This can be interpreted as a region's high poverty rate causing poverty in adjacent regions, and vice versa; if a region's poverty rate is low, it will be followed by other adjacent regions with low poverty rates.

The types of beaches on the southern coast of East Java (Indian Ocean) consist of two types: coral beaches, rocky beaches, and sandy beaches (bay areas) (Pemerintah Provinsi 2017). The regencies in this area have similarities in geographical conditions, such as soil type, climate, and topography, which can affect the grouping pattern. In addition, the South Coast is famous for its natural beauty, such as beaches, mountains, and tropical forests. Several sectors on the South Coast have strong economic ties, such as agriculture, fisheries, and agricultural processing industries. The regencies in this area have similar economic clustering patterns because they are interconnected in the supply chain or trade network, so regencies with poverty problems tend to form the same cluster.

The findings from multiple studies conducted by David et al (2018) reveal that, using both global and local measures of spatial autocorrelation, there is a significant positive spatial dependence and evident clustering in regional development indicators. In addition, in most countries, poverty is concentrated in a few areas; different geographical factors and their influence on rural poverty can help explain the clustered spatial patterns. Álvarez-Gamboa, Cabrera-Barona, and Jácome-Estrella (2021); Deffinika et al (2025); Liu et al (2021). Cahyadi et al (2020) also stated that access to facilities (health, education, and economy) correlates significantly with poverty clustering and is spatially concentrated.

On the other hand, an increase in poverty levels in a region can lead to an increase in adjacent regions. This can be explained by the fact that when poverty levels in a region increase, economic activity in the region is hampered and not developed. This is indicated by low interaction between regions and surrounding areas, decreased trade and labour mobility, increasing difficulty for people to access markets and find work in surrounding areas, and increasing numbers of workers employed outside the region (Rustiadi 2018). This will also hinder interaction between regions. Ultimately, poverty in a region spreads to its surrounding areas.

The effect of economic growth on poverty

The results of the analysis in the South Coast region show that high economic growth will be followed by high poverty; this indicates that even income distribution does not always follow economic growth. If economic growth only benefits certain parts of society, income differences can increase, and the gap between the rich and the poor can increase, increasing income inequality. According to Suparmoko (2016), Economic growth without being

ISSN (print) 1858-165X | ISSN (online) 2528-7672

accompanied by income equality will not be able to reduce the number of poor people. Therefore, there needs to be increased economic growth accompanied by income equality to improve society's welfare. The results of this study are not in line with research Wan et al (2021), which states that economic growth can reduce poverty.

The South Coast region shows that high economic growth will be followed by high poverty. This indicates that even income distribution does not always follow economic growth. Based on data from the Central Statistics Agency of East Java Province, in 2023, it was recorded that the Gini Ratio for the South Coast Region in 2021-2023 increased by around 2%, such as Lumajang Regency in 2021 was recorded at 0.309%, in 2022 it was recorded at 0.349%, in 2023 it was recorded at 0.391%. However, the economic growth rate tends to increase positively, around 9.67% in 2022, but it is not always evenly distributed in all regions. Economic growth that develops faster in some areas, such as urban or industrial, than in rural or remote areas can increase the economic disparity between affluent and less affluent areas, increasing poverty rates in less affluent areas.

In the structuralist paradigm, growth can be unequal; it only benefits certain groups (capital owners, the modern sector), while the traditional sector and the poor are left behind. The Kuznets hypothesis posits that in the early stages of economic growth, inequality generally rises, yet at more advanced income levels it gradually declines. The challenge, however, is that numerous countries remain trapped in the initial stage, characterized by persistently high inequality without subsequent reduction. The reason is that growth is more concentrated in urban areas, industrial sectors, or certain areas, so that rural and poor communities do not get direct benefits. Economic growth alone is not enough. More important is inclusive growth that creates jobs, reduces inequality, strengthens human resources, and ensures access for the poor to the benefits of development.

The effect of education on poverty

The analysis results in the South Coast Region show that high education is followed by high poverty. This indicates that higher education causes poverty, especially in the South Coast Region, which is in line with the research presented Suripto and Subayil (2020), which states that the impact of education cannot directly reduce poverty and can even cause high poverty.

Education has a positive but insignificant impact on reducing poverty in the South Coast region. According to data from the East Java Provincial Education Statistics, in 2023, the average of the highest education completed (Higher Education) in the South Coast Region will reach 4.52%, far below the average of the highest education completed (Higher Education) in East Java Province, which will reach 6.21%. Low higher education graduates cause a lack of mastery of the skills needed to enter the job market; besides, the lack of government policy support in providing educational facilities can limit the impact of education on poverty reduction. This is not in line with several researchers, namely Garza-Rodriguez et al (2021); Hofmarcher (2021), who stated that the level of education is one of the main determinants of poverty.

On the other hand, the South Coast area, located in the southern region of the East Java coast, has a lower quality of education, so high education does not impact poverty reduction. Low education can hinder skills and knowledge in entering the job market. The low quality of education can hinder a person from economic opportunities. Additionally, college graduates

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can find it challenging to get out of poverty due to things like wage inequality, the ever-increasing cost of living, and economic instability.

The effect of unemployment on poverty

Based on the analysis using the Durbin Spatial Model (SDM), it is known that high unemployment will be followed by high poverty in the South Coast Region, but the impact is not significant. This is in line with the theory put forward by Keynes, which states that unemployment occurs due to low aggregate demand. So, economic growth is hampered not by low production but by low consumption.

Unemployment is a decrease in people's income, reducing the wealth a person achieves. This study's results align with several studies, namely research Liu et al. (2022), which argue that unemployment increases the risk of poverty. In line with Faridi et al (2016) argues that regional unemployment rates can have a direct relationship with poverty. The direct effect of higher poverty is an increase in the likelihood of individual unemployment.

However, this does not follow Quy (2016), which states that unemployment hurts poverty, meaning that high unemployment reduces poverty. Unemployment can increase the risk of poverty; when the unemployment rate rises, the poverty rate will be relatively higher. This is because most South Coast regions still depend on primary sectors such as agriculture, fisheries, and mining. People will face the risk of increased unemployment and poverty if there is a decline in these sectors, either due to economic changes such as declining commodity prices or natural factors such as drought or floods.

The effect of natural resources on poverty

The analysis results using the Spatial Durbin Model (SDM) indicate that the presence of natural resources can stimulate an increase in poverty within the South Coast region; this is in line with the resource curse theory Auty (1995) who argue that a country rich in natural resources is a country that is slow in developing the economy in its territory so that it will cause various economic problems such as poverty. According to the Paradox of Plenty's Theory, also known as the "resource curse", a country or region rich in natural resources often experiences slower economic growth, higher levels of corruption, political conflicts, and lower living standards compared to countries with fewer natural resources.

However, the resource curse referred to in the findings of this study originates from the agricultural sector. A phenomenon where a country rich in natural resources, especially in the agricultural sector, actually experiences a slowdown in economic growth and affects state income (Kalle Hirvonen, Elia Machado 2024).

Countries that rely on natural resource exports can experience high economic dependence on this sector, leading to economic imbalances and macroeconomic instability when commodity prices fluctuate. This is also in line with several empirical studies conducted by Schleicher et al (2018), who said that there is a positive correlation between natural resources and the incidence of poverty so that each country rich in natural resources is trapped in poverty because it has not been able to process natural resources properly.

However, this does not align with the theory Ge et al (2021); Kassa et al (2018) that natural resources are the engine of economic growth. Although the South Coast region has abundant natural resources, such as fertile agriculture, marine commodities and forest products, poverty reduction has not been achieved. This is based on the natural resource trap

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theory, which states that a country rich in natural resources will be trapped in economic and social problems such as poverty compared to a country with minimal natural resources.

The lack of optimization of value-added products (*value added*) of natural resources can increase poverty; this is necessary for sustainable management of natural resources and providing economic benefits for the community through strengthening technology, product diversification, sustainable management, access to markets, added value and product supply chains.

Based on data from the Central Statistics Agency, 2012-2022, the agricultural sector's share of GDP in the South Coast Region has decreased. The South Coast Region decreased by 6.5% from 29.68% in 2012 to 23.14% in 2022. This indicates an economic transformation from the agricultural sector to the industrial sector, causing a shift in the economic structure and a shift in the workforce working in the agricultural sector to the modern industrial sector due to urbanization. The decline in the share of the agricultural sector has led to various social problems, such as poverty and income disparity between regions that depend on the agricultural sector (rural) and regions that depend on the industrial sector (urban).

This is a novelty in this study, where the wealth of natural resources does not guarantee that an area can escape poverty; the South Coast area has a good agricultural and fishery sector but has been unable to escape poverty.

The effect of health on poverty

The analysis results using the Spatial Durbin Model (SDM) for both regions, specifically the South Coast area, indicate that health (as measured by the morbidity rate) exerts a negative, yet statistically insignificant, effect on poverty. Health is a fundamental development goal and is the core of the true meaning of development: alleviating poverty. These findings are consistent with several previous studies, including the research by Christie and Ratzan (2019), which found that health status does not have a significant effect on poverty reduction. Conversely, this result contrasts with other studies that report poor health conditions as a factor contributing to higher poverty rates.

In the South Coast Region of East Java, health exerts a negative influence on poverty; however, this effect is not statistically significant, as health alone is not the sole determinant of poverty; for example, lack of job opportunities, poor education, and lack of proper infrastructure, besides that some people have access to good health services but still experience poverty for other reasons such as social conditions, certain economic or political factors that are beyond the control of society cause them to remain in poverty. In the South Coast Region of East Java, health exhibits a negative effect on poverty; however, this impact is not statistically significant. This is because health is not the sole determinant of poverty. Other contributing factors include limited employment opportunities, inadequate education, and insufficient infrastructure. Moreover, some individuals may have access to quality health services yet continue to experience poverty due to other influences, such as social circumstances or certain economic and political factors beyond the community's control.

According to BPS data, East Java in 2023 related to the distribution of residents who have experienced complaints of illness over the past month and do not take treatment because they do not have the cost of treatment is around 0.42% in 2021 and increased by 0.54% in 2022. This indicates that the poor group, when experiencing illness, tend to delay medical treatment because they are worried about expensive treatment costs, which, of

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course, affect their income and cause a financial burden for the family, so that the number of illnesses will not have an impact on increasing poverty. In contrast to a group of high-income people, when they are sick, they tend to take time off and choose to do reasonable and adequate health care; besides, because of their high income, high-income workers have more flexible jobs and can adjust their work schedules when sick. They may also pay for household services or additional assistance to help them complete household chores during recovery.

Another reason health influences poverty is that its effects are not always immediately reflected in poverty statistics. While poor health can contribute to poverty, the magnitude of its impact is not consistently captured in official poverty measurements.

The effect of accessibility on poverty

Accessibility variables can reduce poverty in the South Coast Region. This suggests that improved access to physical infrastructure significantly facilitates an individual's capacity to break free from poverty. The study results are also in line with those presented by Martens and Bastiaanssen (2019), who argue that poverty alleviation is closely linked to improved accessibility, particularly in relation to road networks. Similarly, Liang et al (2022) highlight that accessibility plays a significant role in influencing poverty levels within a region.

However, the results of the study are not in line with the theory put forward by Amaliah and Ulimaz (2021); Cahyadi et al (2020), which argue that greater distances to infrastructure facilities such as road access are positively associates with higher level of poverty.

Regional accessibility plays a crucial role in reducing poverty in the South Coast Region of East Java. Regional characterized by strong accessibility are more likely to obtain reliable helath services, quality education, clean water, and other fundamental infrastructure, which collectively enhance living standards and educational attainment, thereby facilitating the reduction of poverty.

Regions with high accessibility enable stronger economic linkages that facilitate trade and the exchange of goods and services, thereby expanding business opportunities, enhancing market access, and supporting local entrepreneurs in improving their income. Furthermore, adequate accessibility can stimulate regional economic growth by attracting investment, fostering infrastructure development, and advancing the tourism industry, all of which generate economic opportunities that contribute to poverty reduction. Improved accessibility also promotes greater population mobility, allowing residents to seek employment, pursue higher-quality education, and obtain better health services outside their locality. This condition, in turn, creates opportunities for communities in less accessible areas to fulfill essential needs

5.Conclusion

In the South Coast area, spatial dependence emerges through endogenous as well as exogenous linkages between independent variables. This phenomenon can be interpreted as a rise in poverty in one area contributing to increased poverty in neighboring regions. It can be interpreted that if poverty in a region is high, it will cause poverty in other adjacent areas, and vice versa; if an area has a low poverty rate, it will be followed by other areas adjacent to the poverty rate that is also low.

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Economic growth has a positive and significant effect on poverty in the South Coast region, and this is due to economic disparities because high economic growth is often uneven, with most of the benefits enjoyed by specific sectors or individuals. If growth is concentrated in certain sectors, while other sectors or specific groups of society do not feel the impact, economic inequality can increase. This gap can also be seen from the spatial side, which is more focused on urban areas or economic centres outside the South Coast area; this can certainly cause an economic gap between the South Coast area and other regions that are experiencing rapid growth, such as Surabaya Regency and Lumajang Regency which has a significant economic gap.

In the South Coast Region, education has a positive but not significant effect; low education can hinder skills and knowledge when entering the job market. The low quality of education can hinder a person from economic opportunities. Additionally, college graduates can find it challenging to get out of poverty due to things like wage inequality, the ever-increasing cost of living, and economic instability.

Unemployment has a positive but insignificant effect on South Coast Region's poverty. Unemployment can increase the risk of poverty; when the unemployment rate rises, the poverty rate will be relatively higher. The South Coast area is still largely dependent on primary sectors such as agriculture, fisheries, or mining. People will face the risk of increased unemployment and poverty if there is a decline in these sectors, either due to economic changes such as declining commodity prices or natural factors such as drought or floods.

Natural resources have a positive and significant effect on poverty in the South Coast Region; although the South Coast region has an abundance of natural resources, such as fertile agriculture land, mineral deposits, marine resources and forest products, this wealth has not succeeded in alleviating poverty, this is according to the resource curse theory, which states that a country rich in natural resources will be trapped in economic and social problems such as poverty compared to a country with minimal natural resources. The lack of optimization of the value added of natural resources can increase poverty, in addition to the economic transformation from the agricultural sector to the industrial sector so that there is a shift in the economic structure and a shift in the workforce working in the agricultural sector to the modern industrial sector due to the effect of urbanization. Land and natural resources are important factors in the country's economic development process (Suparmoko 2016).

Health negatively but not significantly affects poverty in the South Coast region. According to BPS data, East Java in 2023 is related to the distribution of residents who have experienced sick complaints over the past month and do not take treatment because they do not have the cost of treatment is around 0.42% in 2021 and increased by 0.54% in 2022. This indicates that the poor group, when experiencing illness, tend to delay medical treatment because they are worried about expensive treatment costs, which, of course, affect their income and cause a financial burden for the family, so that the number of illnesses will not have an impact on increasing poverty. In contrast to a group of high-income people, when they are sick, they tend to take time off and choose to do reasonable and adequate health care; besides, because of their high income, high-income workers have more flexible jobs and can adjust their work schedules when sick. They may also pay for household services or additional assistance to help them complete household chores during recovery.

Accessibility negatively and significantly affects poverty in the South Coast Region. Regions with strong accessibility are generally characterized by easier access to vital services,

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including healthcare,education, clean water, and other fundamental infrastructure. It can help people improve access to good quality of life and education to escape poverty. Regional accessibility is also a novelty in this study because there has not been much research on using road networks to reduce poverty.

The novelty of this research confirms that poverty is a regional contagion, not a stand-alone phenomenon, thus requiring a regional-based policy approach rather than a purely sectoral or local one. The practical policy recommendation is a regional and integrated approach, poverty alleviation programs must be based on areas (regional approach), not partially per district.

This study confirms that the resource curse also occurs at the subnational level, where the abundance of natural resources is associated with high levels of poverty due to minimal added value and unequal economic transformation. The practical policy is to encourage downstreaming and local industrialization (for example, agricultural and marine products are processed into value-added products, not just sold raw).

Accessibility is rarely included in studies of spatial poverty. These results confirm that infrastructure and transportation networks are crucial instruments in breaking the chain of spatial dependence on poverty. Practical policies that can be implemented include accelerating the construction of connecting roads between the South Coast regions, so that the distribution of goods/services is smoother.

Acknowledgment

The author expresses his sincere appreciation to the ITB Widya Gama Lumajang for the support and facilities provided during this research process. We are grateful for the opportunity to develop this research as well as the moral and material support that helped in completing this article.

References

Abaidoo, Anthony. 2021. "The Nexus between Education and Poverty Reduction in Ghana from 2013 to 2017." *Cogent Social Sciences* 7(1). doi: 10.1080/23311886.2021.1986933.

Acconcia, Antonio, Maria Carannante, Michelangelo Misuraca, and Germana Scepi. 2020. "Measuring Vulnerability to Poverty with Latent Transition Analysis." *Social Indicators Research* 151(1):1–31. doi: 10.1007/s11205-020-02362-3.

Addae-korankye, Alex. 2019. "Theories of Poverty: A Critical Review." *Journal of Poverty, Investment and Development* (2012):55–62. doi: 10.7176/jpid/48-08.

Adeleye, Bosede Ngozi, Obindah Gershon, Adeyemi Ogundipe, Oluwarotimi Owolabi, Ifeoluwa Ogunrinola, and Oluwasogo Adediran. 2020. "Comparative Investigation of the Growth-Poverty-Inequality Trilemma in Sub-Saharan Africa and Latin American and Caribbean Countries." *Heliyon* 6(12). doi: 10.1016/j.heliyon.2020.e05631.

Álvarez-Gamboa, Javier, Pablo Cabrera-Barona, and Hugo Jácome-Estrella. 2021. "Financial Inclusion and Multidimensional Poverty in Ecuador: A Spatial Approach." *World Development Perspectives* 22(November 2020). doi: 10.1016/j.wdp.2021.100311.

Amaliah, Y., and M. Ulimaz. 2021. "Spatial Modeling on the Influence of Social Network and Infrastructure Accessibility on the Number of Poverty Alleviation Program Recipients in Budaya Pampang Village." *IOP Conference Series: Earth and Environmental Science* 739(1). doi: 10.1088/1755-1315/739/1/012054.

Arif, Muhammad, Lutfi Muta'ali, and R. Rijanta. 2025. "Mapping Poverty Traps in Indonesia: A

Spatial Perspective." *Regional Statistics* 15(2):341–64. doi: 10.15196/rs150207.

Aue, Katja, Jutta Roosen, and Helen H. Jensen. 2016. "Poverty Dynamics in Germany: Evidence on the Relationship between Persistent Poverty and Health Behavior." *Social Science and Medicine* 153:62–70. doi: 10.1016/j.socscimed.2016.01.040.

Auty, Richard M. 1995. "Economic Development and the Resource Curse Thesis." *Economic and Political Reform in Developing Countries* (1992):58–80. doi: 10.1007/978-1-349-13460-1_4.

Badeeb, Ramez Abubakr, Hooi Hooi Lean, and Jeremy Clark. 2017. "The Evolution of the Natural Resource Curse Thesis: A Critical Literature Survey." *Resources Policy* 51(October 2016):123–34. doi: 10.1016/j.resourpol.2016.10.015.

Bintang, Aria Bhaswara Mohammad, and Nenik Woyanti. 2018. "Pengaruh PDRB, Pendidikan, Kesehatan, Dan Pengangguran Terhadap Tingkat Kemiskinan Di Jawa Tengah (2011-2015)." *Media Ekonomi Dan Manajemen* 33(1):20–28. doi: 10.24856/mem.v33i1.563.

Bird, Kate. 2019. "Addressing Spatial Poverty Traps." *Eradicating Rural Poverty to Implement the 2030 Agenda for Sustainable Development* (February):1–17.

BPS Provinsi Jatim. 2024. "Volume 3, 2024." 3.

Cahyadi, N., I. D. Wibisono, E. Syamsulhakim, and A. Setiawan. 2020. "Towards Spatial Poverty Targeting: Identification of Poverty Clustering in Indonesia." (July).

Chen, Jiandong, Yun Wang, Jie Wen, Fuqian Fang, and Malin Song. 2016. "The Influences of Aging Population and Economic Growth on Chinese Rural Poverty." *Journal of Rural Studies* 47:665–76. doi: 10.1016/j.jrurstud.2015.11.002.

Christie, Gillian P., and Scott C. Ratzan. 2019. "Beyond the Bench and Bedside: Health Literacy Is Fundamental to Sustainable Health and Development." *Information Services and Use* 39(1–2):79–92. doi: 10.3233/ISU-180037.

David, Anda, Nathalie Guilbert, Nobuaki Hamaguchi, Yudai Higashi, Hiroyuki Hino, Murray Leibbrandt, and Muna Shifa. 2018. *(Spatial) - Spatial Poverty and Inequality in South Africa: A Municipality Level Analysis*.

Deffinika, Ifan, Singgih Susilo, Budijanto, Muhammad Noval Abdillah, Biffanca Allya Kenedy, Inanditya Widiana Putri, Astrid Tharissa Az Zachra, Swastika Dhesti Anggriani, and Dewi Kumalasari. 2025. "Socio-Spatial Analysis of Poverty: A Comprehensive Study on Integrating Multidimensional Poverty Indices with Geographic Conditions in Krucil District, Probolinggo, Indonesia." *Journal of Population and Social Studies* 33:651–68. doi: 10.25133/JPSSV332025.035.

Dollar et al. 2015. "Growth Still Is Good for the Poor We Would like to Thank, without Implication."

Elhorst, J. Paul, Rodolphe Devillers, Francis Group, Determinantes Del, Turismo Internacional, and Marcio José. 2014. "<Book>Spatial Econometrics From Cross-Sectional Data to Spatial Panels." 16:436–57.

Faridi, Muhammad, Muhammad Chaudhry, Fatima Farooq, and Romaisa Arif. 2016. "Labor Force Participation and Poverty Alleviation in Pakistan: An Empirical Analysis Romaisa Arif." *Pakistan Journal of Social Sciences (PJSS)* 36(2):1251–63.

Garza-Rodriguez, Jorge, Gustavo A. Ayala-Diaz, Gerardo G. Coronado-Saucedo, Eugenio G. Garza-Garza, and Oscar Ovando-Martinez. 2021. "Determinants of Poverty in Mexico: A Quantile Regression Analysis." *Economies* 9(2):1–24. doi: 10.3390/economies9020060.

Ge, Yong, Zhoupeng Ren, and Yangyang Fu. 2021. "Understanding the Relationship between Dominant Geo-Environmental Factors and Rural Poverty in Guizhou, China." *ISPRS International Journal of Geo-Information* 10(5). doi: 10.3390/ijgi10050270.

Hajad, Vellayati, Ikhsan Ikhsan, Herizal Herizal, Ikhwan Rahmatika Latif, and Nodi Marefanda. 2023. "Poverty and the Curse of Natural Resources in Indonesia." *Journal of Contemporary Governance and Public Policy* 4(1):41–58. doi: 10.46507/jcgpp.v4i1.92.

Hidalgo, Marisa Hidalgo, and Iñigo Iturbe-Ormaetxe Kortajarene. 2014. "Long-Run Effects on Poverty of Public Expenditure in Education." *Working Papers. Serie AD* (April).

Hofmarcher, Thomas. 2021. "The Effect of Education on Poverty: A European Perspective." *Economics of Education Review* 83(April):102124. doi: 10.1016/j.econedurev.2021.102124.

Kalle Hirvonen, Elia Machado, Andrew M. Simons. 2024. "This Document Is Discoverable and Free to Researchers across the Globe Due to the Work of AgEcon Search . Help Ensure Our Sustainability ." *AgEcon Search* 1–26.

Kassa, Getahun, Biruktait Teferi, and Nardos Delelegn. 2018. "The Poverty - Environment Nexus in Developing Countries: Evidence from Ethiopia: A Systematic Review." *Asian Journal of Agricultural Extension, Economics & Sociology* 24(3):1–13. doi: 10.9734/ajaees/2018/39310.

Liang, Yutian, Shangqian Li, Jiaqi Zeng, and Tianbang Wu. 2022. "Examining the Impact of Multidimensional Accessibility on Regional Poverty in Laos." *Applied Geography* 148(February):102789. doi: 10.1016/j.apgeog.2022.102789.

Listyaningsih, U., S. Satiti, and A. S. Kurniawidi. 2021. "Spatial Poverty of Poverty Alleviation in Bantul Districts of Yogyakarta." *IOP Conference Series: Earth and Environmental Science* 738(1). doi: 10.1088/1755-1315/738/1/012046.

Liu, Mengxiao, Yong Ge, Shan Hu, and Haiguang Hao. 2023. "The Spatial Effects of Regional Poverty: Spatial Dependence, Spatial Heterogeneity and Scale Effects." *ISPRS International Journal of Geo-Information* 12(12). doi: 10.3390/ijgi12120501.

Liu, Mengxiao, Yong Ge, Shan Hu, Alfred Stein, and Zhoupeng Ren. 2022. "The Spatial–Temporal Variation of Poverty Determinants." *Spatial Statistics* 50:100631. doi: 10.1016/j.spasta.2022.100631.

Liu, Mengxiao, Shan Hu, Yong Ge, Gerard B. M. Heuvelink, Zhoupeng Ren, and Xiaoran Huang. 2021. "Using Multiple Linear Regression and Random Forests to Identify Spatial Poverty Determinants in Rural China." *Spatial Statistics* 42:100461. doi: 10.1016/j.spasta.2020.100461.

Marrero, Gustavo A., and Luis Servén. 2022. "Growth, Inequality and Poverty: A Robust Relationship?" *Empirical Economics* 63(2):725–91. doi: 10.1007/s00181-021-02152-x.

Martens, Karel, and Jeroen Bastiaanssen. 2019. *An Index to Measure Accessibility Poverty Risk*. Elsevier Inc.

Mdingi, Kholeka, and Sin Yu Ho. 2021. "Literature Review on Income Inequality and Economic Growth." *MethodsX* 8(May):101402. doi: 10.1016/j.mex.2021.101402.

Mihai, Mihaela, Emilia Ţiţan, and Daniela Manea. 2015. "Education and Poverty." *Procedia Economics and Finance* 32(15):855–60. doi: 10.1016/s2212-5671(15)01532-4.

Mikalauskiene, Asta, Raminta Narutaviciute-Cikanauske, Ingrida Sarkiunaite, Dalia Streimikiene, and Rumyana Zlateva. 2018. "Social Aspect of Sustainable Development: Issues of Poverty and Food Shortage." *Montenegrin Journal of Economics* 14(2):59–78. doi: 10.14254/1800-5845/2018.14-2.4.

Mohammad, Umar Faruk, and Joseph David. 2019. "The Relationship between Poverty and Unemployment in Niger State." *Signifikan: Jurnal Ilmu Ekonomi* 8(1):71–78. doi: 10.15408/sjie.v8i1.6725.

Mussagy, Ibraimo Hassane, and Ignatius Isaac Dambudzo. 2015. "A Spatial Analysis Of Poverty

And Roads Network In Sofala Province." *Journal of International Academic Research for Multidisciplinary* 3(7):319–28.

Pemerintah Provinsi, Jawa Timur. 2017. "Dokumen Final Penyusunan RZWP-3-K Provinsi Jawa Timur." 1–585.

Quy, Nguyen Hoang. 2016. "Relationship between Economic Growth, Unemployment and Poverty: Analysis at Provincial Level in Vietnam." *International Journal of Economics and Finance* 8(12):113. doi: 10.5539/ijef.v8n12p113.

Rachman, Tahar. 2018. "How to Acheive Inclusive Growth." *Angewandte Chemie International Edition, 6(11), 951–952.* 720.

Renahy, Emilie, Christiane Mitchell, Agnes Molnar, Carles Muntaner, Edwin Ng, Farihah Ali, and Patricia O'Campo. 2018. "Connections between Unemployment Insurance, Poverty and Health: A Systematic Review." *European Journal of Public Health* 28(2):269–75. doi: 10.1093/eurpub/ckx235.

Rustiadi, E. 2018. *Perencanaan Dan Pengembangan Wilayah*.

Schleicher, Judith, Marije Schaafsma, Neil D. Burgess, Chris Sandbrook, Fiona Danks, Chris Cowie, and Bhaskar Vira. 2018. "Poorer without It? The Neglected Role of the Natural Environment in Poverty and Wellbeing." *Sustainable Development* 26(1):83–98. doi: 10.1002/sd.1692.

Škare, Marinko, and Romina Pržiklas Družeta. 2016. "Poverty and Economic Growth: A Review." *Technological and Economic Development of Economy* 22(1):156–75. doi: 10.3846/20294913.2015.1125965.

Sukandar, Chuldyah J. Harsindhi, Muliawati Handayani, Citra Satriya Utama Dewi, Arsyii Wisuda Maulana, Supriyadi, and Ali Bahroni. 2016. "Profil Desa Pesisir Provinsi Jawa Timur Volume 2 (Selatan Jawa Timur)." *Bidang Kelautan, Pesisir, Dan Pengawasan Dinas Perikanan Dan Kelautan Provinsi Jawa Timur* 2:99.

Suparmoko. 2016. *Peranan Sumber Daya Alam Dan Lingkungan Dalam Pembangunan*. Ekonomi Sumber Daya Alam Dan Lingkungan.

Suripto, Suripto, and Lalu Subayil. 2020. "Pengaruh Tingkat Pendidkan, Pengangguran, Pertumbuhan Dan Indeks Pembangunan Manusia Terhadap Kemiskinan Di D.I.Yogyakarta Periode 2010-2017." *GROWTH: Jurnal Ilmiah Ekonomi Pembangunan* 2(1):127–43.

Wan, Guanghua, Xiaoshan Hu, and Weiqun Liu. 2021. "China's Poverty Reduction Miracle and Relative Poverty: Focusing on the Roles of Growth and Inequality." *China Economic Review* 68(November 2020):101643. doi: 10.1016/j.chieco.2021.101643.

Wang, Yanhui, Shoujie Jia, Wenping Qi, and Chong Huang. 2022. "Examining Poverty Reduction of Poverty-Stricken Farmer Households under Different Development Goals: A Multiobjective Spatio-Temporal Evolution Analysis Method." *International Journal of Environmental Research and Public Health* 19(19). doi: 10.3390/ijerph191912686.

Wang, Yanhui, Yuewen Jiang, Duoduo Yin, Chenxia Liang, and Fuzhou Duan. 2021. "Examining Multilevel Poverty-Causing Factors in Poor Villages: A Hierarchical Spatial Regression Model." *Applied Spatial Analysis and Policy* 14(4):969–98. doi: 10.1007/s12061-021-09388-1.

Weziak-Bialowolska, Dorota. 2016. "Spatial Variation in EU Poverty with Respect to Health, Education and Living Standards." *Social Indicators Research* 125(2):451–79. doi: 10.1007/s11205-014-0848-7.

Zhang, Huafeng. 2014. "The Poverty Trap of Education: Education-Poverty Connections in Western China." *International Journal of Educational Development* 38:47–58. doi: 10.1016/j.ijedudev.2014.05.003.