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Community Perception as a Mediating Factor in Infrastructure Development: The Impact of Yogyakarta Southern Cross Road on Community Empowerment in Sanden District, Bantul Regency

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Abstract: This study aims to evaluate the extent to which public perception of the construction of the Southern Cross Road (SCR) influences community empowerment in Sanden District, Bantul Regency. Using a quantitative explanatory approach, the study involved 100 respondents selected using the Slovin formula and purposive sampling technique. Data collected through Likert-scale questionnaires and observations were analysed using paired sample t-tests and multiple linear regression. The findings indicate that residents responded very positively to the SCR project (mean 4.61). A difference test confirmed a significant increase in community empowerment post-development. Furthermore, perceptual variables, including accessibility, economic opportunities, and new identities, were shown to significantly influence community empowerment, both partially and simultaneously. This study concludes that positive community perception is a key element in achieving independence as a result of national infrastructure development.

Keywords: Community Perception, Community Empowerment, Infrastructure, Southern Cross Road Development.

Introduction

Infrastructure development is widely recognised as a fundamental driver of economic growth, spatial connectivity, and the reduction of regional disparities. Transport infrastructure, particularly road networks, plays a strategic role in enhancing accessibility, reducing logistics costs, and facilitating the efficient movement of goods and services. In developing countries, investment in this sector not only contributes to increased economic productivity but also fosters social transformation through improved mobility and expanded economic opportunities (Edy et al., 2019) (Rahayu, 2025).

In line with the national development agenda, the Indonesian government has initiated various strategic infrastructure projects to strengthen regional connectivity. One of the most prominent initiatives is the development of Yogyakarta Southern Cross Road (SCR) on the island of Java. This project is designed to improve accessibility in the southern coastal regions, which have historically lagged the northern corridor, and is expected to stimulate new centres of economic growth based on local potential.

A growing body of empirical studies has demonstrated that road infrastructure development significantly contributes to increased economic activity, the emergence of new growth centres, and enhanced mobility. Moreover, infrastructure expansion has been shown to induce shifts in socio-economic structures, including changes in livelihoods and land-use dynamics (Fathori, 2023). However, recent literature indicates that such impacts are often unevenly distributed and highly dependent on local institutional capacity and social readiness. Empirical studies in the Indonesian context further confirm that infrastructure development outcomes are closely associated with community participation, local governance quality, and institutional support systems (Sanggoro et al., 2022) (Yee & Li, 2018).

Beyond its economic and physical dimensions, development fundamentally depends on the capacity of local communities to actively engage in and benefit from the processes it generates. In this regard, community empowerment serves as a crucial foundation for ensuring that development outcomes are not only growth oriented but also inclusive and sustainable. Contemporary studies emphasise that empowerment is not merely an outcome, but a dynamic process shaped by participation, institutional engagement, and local capacity building. Research on community-based development programs in Indonesia shows that participatory approaches significantly enhance the effectiveness of empowerment initiatives, particularly when supported by strong local institutions and social capital (Das, 2015) (Frinaldi et al., 2025).

The role of community empowerment becomes particularly significant in the context of large-scale infrastructure projects such as the Southern Cross Road (SCR), where rapid spatial and economic transformations occur. While improved accessibility can generate new economic opportunities, the extent to which these opportunities are utilised depends largely on the readiness and capacity of local communities. As highlighted by Rachmawatie (2019), community empowerment is a multidimensional process encompassing economic resilience, social participation, and institutional strengthening, all of which are essential for translating development inputs into meaningful welfare improvements. This is further supported by empirical findings indicating that empowerment-based approaches contribute significantly to strengthening adaptive capacity and local economic resilience in rural development contexts (Barcus & Trail-Johnson, 2025) (El-Amin et al., 2025).

Furthermore, empowered communities are more likely to develop adaptive strategies in response to development-induced changes, including shifts in livelihoods, land-use patterns, and socio-cultural structures. However, empirical evidence also reveals a persistent paradox: while infrastructure development creates opportunities, it can simultaneously generate vulnerabilities, particularly when communities lack the capacity to respond effectively. In such cases, development may lead to marginalisation, unequal access to resources, and socio-spatial inequalities rather than empowerment.

Despite the growing body of literature, a critical research gap remains. First, most studies continue to focus on macro-level outcomes, such as economic growth and spatial connectivity, while neglecting micro-level social processes that determine how communities interpret and respond to development. Second, although community empowerment has been widely discussed, it is often treated as a dependent outcome rather than an interactive

process shaped by perception, cognition, and behavioural responses. Third, existing studies tend to analyse infrastructure development, community perception, and empowerment separately, resulting in a fragmented understanding of development dynamics. More importantly, the role of community perception as a mediating variable remains underexplored in empirical research, particularly in the Indonesian context where socio-cultural diversity and institutional variation are highly pronounced.

Therefore, this study addresses these gaps by proposing an integrative analytical framework that links infrastructure development, community perception, and community empowerment within a single empirical model. By positioning perception as a mediating factor, this research offers a novel perspective on how development outcomes are socially constructed and operationalised at the community level. Focusing on SCR development in Sanden District, Bantul Regency, this study provides empirical evidence on how perception-based mechanisms influence empowerment trajectories, thereby bridging the divide between physical development and social transformation.

This study contributes to the literature in several important ways. First, it advances the theoretical understanding of infrastructure-led development by integrating community perception into the empowerment framework, thereby extending conventional models that primarily emphasise economic and physical indicators. Second, it provides empirical evidence from a local context in Indonesia, enriching the limited body of literature that examines infrastructure development through a micro-social lens. Third, by employing a perception-based analytical approach, this study offers a more nuanced explanation of how development outcomes are mediated by cognitive and social factors, rather than being solely determined by structural variables.

In terms of novelty, this research introduces a conceptual shift by explicitly positioning community perception as a mediating mechanism that connects infrastructure development and empowerment outcomes. Unlike prior studies that treat perception as a peripheral or descriptive variable, this study operationalises it as a central explanatory construct within a quantitative model. Additionally, the focus on the JJLS development provides a unique empirical setting characterised by rapid spatial transformation and socio-economic change, allowing for a deeper exploration of the dynamic interaction between infrastructure, perception, and empowerment. This integrative approach not only fills an important gap in the literature but also offers practical insights for designing more inclusive and socially responsive infrastructure policies.

Methodology

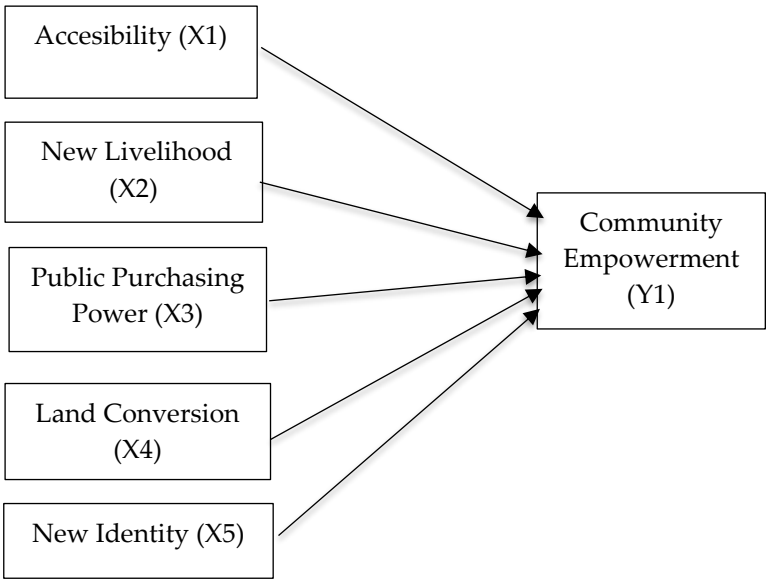

Figure 1. Research model framework

This study employed a quantitative approach with an explanatory research design to examine the causal relationship between community perceptions of infrastructure development and the level of community empowerment. An explanatory design is appropriate for identifying and testing causal linkages among variables through statistical analysis (Cuganesan & Floris, 2020) (Ryder et al., 2023).

The study was conducted in Sanden District, Bantul Regency, Indonesia, an area directly affected by the development of Yogyakarta Southern Cross Road (SCR). The target population comprised all residents of Sanden District. A sample of 100 respondents was determined using the Slovin formula to ensure representativeness, combined with purposive sampling techniques. The inclusion criteria required respondents to reside within a 100–300-meter radius of the SCR, ensuring that participants had direct exposure to the impacts of the infrastructure development.

Data were collected from both primary and secondary sources. Primary data were obtained through structured questionnaires using a Likert scale, complemented by field observations and unstructured interviews to enrich contextual understanding. Secondary data were gathered from relevant institutional reports and regional statistics. The independent variable, community perception, was operationalized through five indicators: accessibility, emergence of new livelihoods, purchasing power improvement, land-use transformation, and the formation of new socio-spatial identities. The dependent variable was community empowerment.

Data analysis was conducted using SPSS software. The analytical procedures included descriptive statistics to summarize respondent characteristics, normality testing to ensure data distribution assumptions, and inferential statistical analyses. A paired sample t-test was employed to examine differences in community empowerment before and after the JJLS development. Furthermore, multiple linear regression analysis was conducted to assess the

partial and simultaneous effects of community perception variables on community empowerment. Hypothesis testing was performed at a 5% significance level (Asiri & Dirawan, 2015).

Results and Discussion

Respondent Characteristics

To provide a clearer description of the research data, respondent characteristics were classified based on gender, occupation, and length of residence in the study area. The respondents consisted of 100 residents living within a 100–300 meter radius of the Southern Cross Road (SCR/JJLS) development area in Sanden District, Bantul Regency.

Table 1.
Respondent Characteristics

Category	Frequency	Percentage
Male	58	58%
Female	42	42%
Farmer	35	35%
Trader	25	25%
Others	40	40%

In the Results section, summarize the collected data and the analysis performed on those data relevant to the issue that is to follow. The Results should be clear and concise. It should be written objectively and factually, and without expressing personal opinion. It includes numbers, tables, and figures (e.g., charts and graphs). Number tables and figures consecutively in accordance with their appearance in the text.

1. Validity Test

The validity test results indicate that all items measuring the perception variable (X1–X11) have significance values below 0.05, with most items reaching a significance level of 0.01. This demonstrates a strong correlation between each item and the total construct score. Therefore, all indicators of the perception variable are considered **valid** and suitable for further analysis.

Table 2.
Validity Test

Variable	X1 Item	Significance (2-Tailed)
X2	0.01	
X3	0.01	
X4	0.01	
X5	0.01	
X6	0.01	
X7	0.01	
X8	0.01	
X9	0.01	
X10	0.01	
X11	0.01	

Based on the test results, all indicators of variable X, namely X1 to X11, have a significance value ≤ 0.03 and most indicators even show a value of 0.01, which means less than 0.05. This indicates that each statement item in variable X has a significant relationship with the total score of the variable. Thus, it can be concluded that all statement items X1–X11 are declared valid and suitable for use for further analysis.

Community Empowerment Pre and Post Development of Yogyakarta Southern Cross Road (SCR)

Table 3.
The Results of Pre and Post Development of Yogyakarta Southern Cross Road (SCR)

Varriable	Item Questions	Sig (2-tailed)
Pre – Development of Yogyakarta Southern Cross Road (SCR)	P1	0,03
	P2	0,01
	P3	0,01
	P4	0,01
	P5	0,01
	P6	0,01
	P7	0,01
Post – Development of Yogyakarta Southern Cross Road (SCR)	Q1	0,01
	Q2	0,01
	Q3	0,01
	Q4	0,01
	Q5	0,01
	Q6	0,01
	Q7	0,01

Based on the data analysis results, all indicators of variable Y with codes P1–P7 exhibit significance values ranging from 0.01 to 0.03, which are below the significance threshold of 0.05. This indicates that each item within variable Y (P1–P7) is significantly correlated with the total score of the construct.

Furthermore, the test results show that all indicators Q1–Q7 have a significance value of 0.01, which is also below the 0.05 threshold. This confirms that each item is significantly correlated with the total variable score. Therefore, all items Q1–Q7 are considered valid and can be utilised in subsequent analyses, such as reliability testing and hypothesis testing.

2. Reliability Test

1) Cronbach's Alpha

Table 4.
Cronbach Alpha Value

CRonbach's Alpha	N
0,705	11

Based on the data processing results, Cronbach's Alpha value was 0.705 for 11 items. This value is greater than the minimum limit of 0.70, indicating that the research instrument has a good level of reliability. Therefore, it can be concluded that all statement items in variable X are reliable and consistent for use as measuring instruments in research.

2) Cronbach Alpha Value Pre and Post Development of Yogyakarta Southern Cross Road (SCR)

Table 5.
Cronbach Alpha Value Pre and Post Development of Yogyakarta Southern Cross Road (SCR)

Variable	*CRonbach's Alpha*	N
Pre – Development of JJLS	0,704	7
Post – Development of JJLS	0,873	7

Based on the test results, the Cronbach's Alpha values (pre and post) development of Yogyakarta SCRR are 0.704 and 0.873, respectively, with a total of seven items. These values exceed the recommended reliability threshold (≥ 0.70), indicating that the research instrument demonstrates satisfactory internal consistency. Therefore, all seven items of variable Y are considered consistent and suitable for use as measurement instruments in this study.

3) Paired Sample T-Test (Pre and Post Differences)

Table 6.
The Results of Paired Sample T-Test

Indicator	Mean Difference	t-Value	Conclusion
Q1 – P1	-1.410	-13.129	Most significant decrease
Q2 – P2	**-1.380**	**-13.493**	**Highly significant decrease**
Q3 – P3	**-1.370**	**-13.411**	**Highly significant decrease**
Q4 – P4	-1.430	-14.192	Most dominant decrease
Q5 – P5	-1.260	-12.106	Strong significant decrease
Q6 – P6	-0.990	-9.350	Lowest significant decrease
Q7 – P7	-1.110	-11.056	Significant decrease

Based on the mean difference and the obtained t-values, the (Q4–P4) indicator exhibits the largest decline compared to the other indicators, with a mean difference of -1.430 and a t-value of -14.192. This finding indicates that, following the SCR development, one of the economic indicators experienced the most substantial negative impact on community empowerment. Therefore, this economic indicator represents the primary contributing factor to the overall decline in community empowerment post development of SCR.

a. Regression Test

a) Pre – Development of Yogyakarta Southern Cross Road (SCR)

Table 7.
The Result of Standardized Coefficient
(Pre – Development)

Variabel	Standardized Coefficients	Sig.
(Constant)	17,415	0,000
X1	0,068	0,475
X2	0,312	0,034
X3	0,153	0,098
X4	0,245	0,095
X5	-0,047	0,601

The estimated regression model is expressed as follows:

Y=17.415+0.068X1+0.312X2+0.153X3+0.245X4−0.047X5Y = 17.415 + 0.068X_1 + 0.312X_2 + 0.153X_3 + 0.245X_4 - 0.047X_5Y=17.415+0.068X1+0.312X2+0.153X3+0.245X4−0.047X5

The regression results indicate that the constant term is statistically significant ($p < 0.001$), suggesting a baseline level of community empowerment even in the absence of the independent variables.

Among the predictors, only $\mathbf{X_2}$ demonstrates a statistically significant positive effect on community empowerment ($\beta = 0.312$) ($p = 0.034$). This implies that an increase in X_2 is associated with a meaningful improvement in community empowerment, holding other variables constant.

In contrast, $\mathbf{X_1, X_3, and\ X_4}$ exhibit positive coefficients but are not statistically significant ($p > 0.05$), indicating that their contributions to community empowerment are not supported by sufficient empirical evidence in this model. Meanwhile, $\mathbf{X_5}$ shows a negative but non-significant effect ($\beta = -0.047$) ($p = 0.601$), suggesting a weak and statistically insignificant inverse relationship with the dependent variable.

Overall, these findings suggest that prior to the SCR development, community empowerment was influenced primarily by a single significant factor (X_2), while the remaining variables did not demonstrate statistically robust effects.

b) Post – Development of Yogyakarta Southern Cross Road (SCR)

Table 8.
The Result of Standardized Coefficient (Post Development)

Variabel	Standardized Coefficient	Sig.
(Constant)	12,871	0,001
X1	0,128	0,001
X2	0,061	0,017

Variabel	Standardized Coefficient	Sig.
X3	0,051	0,042
X4	-0,502	0,003
X5	0,120	0,012

The regression model Post development of Yogyakarta SCR is expressed as:

Y=12.871+0.128X1+0.061X2+0.051X3−0.502X4+0.120X5Y = 12.871 + 0.128X_1 + 0.061X_2 + 0.051X_3 - 0.502X_4 + 0.120X_5Y=12.871+0.128X1+0.061X2+0.051X3−0.502X4+0.120X5

The results indicate that all independent variables significantly influence community empowerment ($p < 0.05$). The constant value (12.871) suggests the baseline level of community empowerment when all predictors are held constant.

Among the predictors, **X1, X2, X3, and X5** exhibit positive and statistically significant effects on community empowerment, indicating that improvements in accessibility, new livelihood opportunities, purchasing power, and new identity formation contribute to increased empowerment levels. In contrast, **X4 (land-use change)** shows a negative and statistically significant effect ($\beta = -0.502$) ($p < 0.05$), suggesting that increases in land-use change are associated with a substantial decline in community empowerment.

Notably, X4 demonstrates the largest coefficient in absolute terms, indicating that it is the most influential predictor in the model. This finding highlights land-use change as a critical factor that potentially undermines the benefits generated by other positive determinants.

Overall, the results reveal a structural shift in the determinants of community empowerment following Yogyakarta SCR development, where both positive socio-economic improvements and negative environmental or spatial transformations simultaneously shape community outcomes.

b. Hypothesis Testing

a) Pre – Development of Yogyakarta Southern Cross Road (SCR)

Table 9.
Standardized Coefficient (Pre – Development) of Yogyakarta SCR

Variables	Standardized Coefficient	Significance (P-value)
(Constant)	17.415	0.000
X1	0.068	0.475
X2	0.312	0.034
X3	0.153	0.098
X4	0.245	0.095
X5	-0.047	0.601

The results of the t-test indicate that, prior to the SCR development, only the variable representing new livelihood opportunities (X_2) has a statistically significant effect on community empowerment ($p < 0.05$). This finding suggests that the availability of alternative or additional sources of income plays a crucial role in shaping community empowerment under pre-development conditions.

In contrast, accessibility (X_1), purchasing power (X_3), land-use change (X_4), and new identity (X_5) do not exhibit statistically significant effects ($p > 0.05$). The non-significant effect of accessibility implies that improvements in physical access alone may not directly translate into enhanced community empowerment without corresponding economic opportunities. Similarly, the lack of significance in purchasing power suggests that variations in consumption capacity are not sufficient to influence empowerment in a measurable way at this stage.

Furthermore, the absence of a significant effect of land-use change indicates that structural transformations in land utilisation had not yet exerted a measurable impact on community empowerment prior to the SCR development. Likewise, the insignificance of new identity (X_5) suggests that socio-cultural shifts had not yet materialised into tangible empowerment outcomes.

Overall, these findings highlight that, before the SCR development, community empowerment was primarily influenced by economic factors, particularly the emergence of new livelihood opportunitie, while infrastructural, socio-cultural, and spatial factors remained statistically insignificant.

b) Post – Development of Yogyakarta Southern Cross Road Route (SCR)

Table 10.
Unstandardized (Post - Development) of SCR

Variabel	Unstandardized B	Sig.
(Constant)	12,871	0,001
X1	0,128	0,001
X2	0,061	0,017
X3	0,051	0,042
X4	-0,502	0,003
X5	0,120	0,012

The results of the t-test indicate that all independent variables have statistically significant effects on community empowerment following the SCR development ($p < 0.05$). Accessibility (X_1) demonstrates a significant positive effect ($p = 0.001$), suggesting that improved access plays a crucial role in enhancing community empowerment in the post-development context. This finding implies that increased connectivity may facilitate access to economic opportunities, services, and resources, thereby strengthening local capacities.

Similarly, new livelihood opportunities (X_2) are found to have a significant effect ($p = 0.017$), indicating that the emergence of alternative income sources contributes positively to community empowerment. This result highlights the importance of economic diversification in supporting adaptive capacity and resilience within local communities.

The variable of purchasing power (X_3) also shows a statistically significant effect ($p = 0.042$), suggesting that improvements in economic conditions are associated with enhanced empowerment outcomes. This reinforces the notion that financial capacity remains a key determinant in enabling individuals and households to participate more actively in socio-economic activities.

In contrast, land-use change (X_4) exhibits a significant effect (p = 0.003), which, based on prior regression results, is negative in direction. This indicates that although land-use transformation is statistically influential, it may adversely affect community empowerment, potentially due to the loss of productive land or disruptions to traditional livelihoods.

Finally, the emergence of new identity (X_5) is also statistically significant (p = 0.012), suggesting that socio-cultural transformation plays a meaningful role in shaping empowerment dynamics. This may reflect shifts in community perception, adaptation to new socio-economic environments, or changes in social structure following the development.

Overall, these findings indicate that the SCR development has fundamentally altered the determinants of community empowerment, with all examined variables becoming significant in the post-development context. This shift underscores the complex and multidimensional nature of development impacts, where both economic and socio-cultural factors interact in shaping community outcomes.

c. F- Test

a) Pre – Development of Yogyakarta Southern Cross Road (SCR)

Table 11.
F-Test Result of Pre – Development of Yogyakarta Southern Cross Road Route (SCR)

Model	df	F	Sig.
1	**99**	**10,016**	**0,000**

Based on the F-test results presented in the table, the F-value is 10.016 with a significance level of 0.000 (p < 0.05). This indicates that all perception variables simultaneously have a statistically significant effect on community empowerment prior to the JJLS development.

b) Post – Development of Yogyakarta Southern Cross Road Route (SCR)

Table 12.
F-Test Results of Post Development of Yogyakarta Southern Cross Road (SCR)

Model	df	F	Sig.
1	**99**	**151,175**	**0,001**

Based on the F-test results presented in the table, the F-value is 151.175 with a significance level of 0.001 (< 0.05). This indicates that all perception variables collectively have a statistically significant effect on community empowerment post SCR development.

d. Coefficient of Determination

a) Pre – Development of Yogyakarta Southern Cross Road (SCR)

Table 13.
Coefficient of Determination Test (Adjusted R Square) of Pre – Development of Yogyakarta Southern Cross Road Route (SCR)

Model	Adjusted R Square
1	0,313

Based on the results of the coefficient of determination test (Adjusted R Square) presented in the table above, the R^2 value is 0.313 (31.3%). This indicates that the community perception variables prior to the SCR development explain only 31.3% of the variation in community empowerment. The remaining 68.7% is attributed to other factors not included in the research model.

b) Post – Development of Yogyakarta Southern Cross Road Route (SCR)

Table 14.
Coefficient of Determination Test (Adjusted R Square) Post – Development of Yogyakarta Southern Cross Road (SCR)

Model	Adjusted R Square
1	0,313

Based on the results of the coefficient of determination test (Adjusted R Square) presented in the table above, the R^2 value is 0.313 (31.3%). This indicates that the community perception variables prior to SCR development account for only 31.3% of the variation in community empowerment. The remaining 68.7% is explained by other factors not included in the research model.

Discussion

Public Perception of Southern Cross Road (SCR) Development

Public perception plays a strategic role in determining the success of infrastructure development, particularly in relation to increasing community empowerment. Perceptions formed through experience, information, and social interactions will influence how people understand the benefits of development and their willingness to engage and take advantage of available opportunities. Positive perceptions of infrastructure development can foster a sense of ownership, increase trust, and motivate communities to adapt and develop their social and economic potential. Therefore, positive public perception is a crucial foundation for building an independent and empowered community.

The results of the H1 test indicate that public perception of the South Cross Road (SCR) development has a positive and significant impact on community empowerment in Sanden District. This finding confirms a direct relationship between public perception and community empowerment. This indicates that the more positive public perceptions of SCR development, the greater the community's ability to improve economic aspects, strengthen social participation, and adapt to changes arising from infrastructure development. The findings of this study are in line with the results of previous research conducted by

Mastika et al. (2018), Bunga et al. (2024) and Wahyuni & Lanin (2022) which concludes that public perception has a positive and significant influence on the success of development and community empowerment programs. Saudik (2023), also found that infrastructure development perceived positively by the community can create economic opportunities and increase community independence, although it still requires assistance to ensure that the benefits of development are felt equally. Thus, the results of this study further demonstrate

that public perception is a key factor linking infrastructure development to increased community empowerment.

Southern Cross Road (SCR) Development on the Level of Community Empowerment in Sanden District

Road infrastructure development is a strategic step that plays a crucial role in improving community welfare and empowerment. Adequate road infrastructure can improve regional accessibility, create business opportunities, facilitate the distribution of goods and services, and encourage changes in the community's economic structure. In the context of the construction of the Southern Cross Road (SCR), this infrastructure not only provides physical benefits in the form of easier mobility but also has social and economic impacts for the surrounding community.

The results of the H_2 test indicate that the construction of the Southern Cross Road (SCR) has an impact on the level of community empowerment in Sanden District. This finding confirms a direct relationship between the construction of the SCR and changes in community empowerment levels. This indicates that the SCR can encourage increased economic activity, create new alternative livelihoods, and improve community mobility, thus contributing to overall community empowerment.

The findings of this study are in line with the results of previous research conducted by Mastika et al. (2018) which concludes that road construction has an impact on increasing economic activity and community mobility. Saudik (2023) also stated that road infrastructure development in coastal areas can drive social and economic change, although the impacts have not been fully felt evenly. Therefore, the results of this study further reinforce previous findings that road infrastructure development plays a crucial role in increasing community empowerment, especially in areas with previously limited access.

Public Perception of Southern Cross Road (SCR) Development on the Level of Community Empowerment in Sanden District

The success of infrastructure development is not only determined by the physical presence of the project itself but is also greatly influenced by how the community perceives it. Positive public perceptions of the JJLS development can encourage active participation, capitalize on economic opportunities, and increase community independence. Conversely, negative perceptions can hinder the utilization of development outcomes, thus suboptimally impacting community empowerment.

The results of H3 testing indicate that public perceptions of the JJLS development have a positive and significant impact on community empowerment in Sanden District. This conclusion demonstrates a strong relationship between how the community perceives the JJLS development and their perceived level of empowerment. These findings indicate that when communities perceive the benefits of the JJLS, they tend to be more adaptable, capitalize on economic opportunities, and increase their participation in social and economic activities.

The findings of this study are in line with the results of previous research conducted by Bunga et al. (2024), Wahyuni & Lanin (2022) which states that community perception has a positive and significant influence on the success of community empowerment programs.

Zainuddin et al. (2023). This study confirms that community perception is a crucial factor in encouraging participation and the effectiveness of empowerment programs, especially when supported by ongoing mentoring and policies. Thus, the results of this study confirm that community perception plays a key role in linking the development of JJLS and increasing empowerment.

Conclusion

This study contributes to the literature on infrastructure development and community empowerment by providing empirical evidence that community perception plays a pivotal role in shaping the effectiveness of road infrastructure development in enhancing local empowerment. The findings reveal that, following the development of the Southern Cross Road (SCR), all perception variables significantly influenced community empowerment ($p < 0.05$). The coefficient of determination test shows that the independent variables explain 31.3% of the variation in community empowerment (Adjusted R Square = 0.313), while the remaining 68.7% is influenced by other factors outside the model. Among the examined variables, land-use change (X4) emerged as the most dominant factor affecting community empowerment after the SCR development, with a regression coefficient of -0.502 and a significance value of 0.003, indicating a strong negative effect. Conversely, accessibility (X1), new livelihood opportunities (X2), purchasing power (X3), and new identity formation (X5) demonstrated positive and significant effects on community empowerment.

Unlike prior studies that predominantly emphasise the physical and economic impacts of infrastructure, this study highlights community perception as a critical mediating factor linking infrastructure development to empowerment outcomes at the local level. The findings demonstrate that infrastructure development does not automatically translate into improved community empowerment without positive perception and active utilisation by the community. In this context, the community functions as a key intermediary between SCR development and empowerment outcomes.

From a practical perspective, the findings suggest that policymakers and local governments should extend their focus beyond physical infrastructure to include non-physical dimensions, particularly the management of community perception. Strategies such as participatory planning, effective communication and socialisation, community assistance, and the strengthening of local economic capacities are essential to ensure that infrastructure development generates sustainable impacts. Furthermore, improving accessibility, supporting the emergence of new livelihood opportunities, and facilitating community adaptation to land-use changes should be systematically integrated into infrastructure development policies.

Despite its contributions, this study has several limitations. First, the use of a cross-sectional design restricts the ability to capture the long-term dynamics of community empowerment. Second, the study is geographically limited to Sanden Subdistrict, Bantul Regency, which may constrain the generalisability of the findings to other regions with different socio-economic contexts. Third, the quantitative approach employed does not fully capture the depth of community experiences, perceptions, and social dynamics.

Future research is therefore recommended to adopt longitudinal designs in order to examine the long-term impacts of infrastructure development on community

empowerment. Expanding the study area through comparative, multi-regional approaches would enhance the generalisability of findings. In addition, integrating quantitative and qualitative methods is expected to provide a more comprehensive understanding of how community perceptions are formed and how empowerment processes unfold within the context of infrastructure development.

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