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THE IMPACT OF ROAD INFRASTRUCTURE DEVELOPMENT POLICIES ON COMMUNITY QUALITY OF LIFE IN BATAM CITY

Abstract. Road infrastructure development plays a critical role in fostering economic growth and enhancing the quality of life within communities. This study focuses on the impact of road infrastructure policies in Batam City, an industrial and trade hub in Indonesia with strategic geographic significance. Employing a quantitative descriptive method, the research examines the effects of these policies on local economic performance, social welfare, and environmental sustainability. Data were collected from secondary sources such as government reports, statistical publications, and academic studies to analyze the relationship between infrastructure improvements and quality of life indicators. The findings demonstrate that improvements in road infrastructure significantly enhance accessibility and mobility, creating greater economic opportunities and better access to essential public services such as healthcare and education. Additionally, these developments support environmental sustainability by alleviating traffic congestion and reducing carbon emissions. However, the research identifies several challenges, including land acquisition disputes, funding limitations, and inefficiencies in project management, which can hinder policy effectiveness. By addressing these barriers, the potential benefits of road infrastructure development can be maximized, contributing to sustainable urbanization and regional competitiveness. This study provides valuable recommendations for policymakers, emphasizing the importance of inclusive planning, robust governance, and community engagement in infrastructure development. The outcomes are expected to serve as a reference for similar urban regions undergoing rapid development.

Keywords: road infrastructure, quality of life, economic growth, urban development, sustainability.

INTRODUCTION

Infrastructure development serves as a crucial driver of economic and social progress. In Indonesia, road infrastructure has become a priority in government policies to enhance regional connectivity, accelerate the distribution of goods and services, and improve national competitiveness (Samosir & Rajagukguk, 2020; Verico & Qibthiyyah, 2023). Among Indonesian cities, Batam stands out due to its strategic location and rapid urbanization. As an industrial and trade hub, Batam has experienced significant population growth, necessitating efficient road networks to address mobility challenges and ensure equitable access to essential services (Ma'rifah, 2022).

Several theoretical perspectives support road infrastructure development. Public Infrastructure Theory highlights the link between infrastructure investment and economic productivity, asserting that well-planned infrastructure enhances efficiency by reducing transaction costs and facilitating the movement of goods and labour (Aschauer, 1989). Similarly, the Accessibility and Mobility Theory emphasizes that road infrastructure improves access to essential services, fostering social inclusion and quality of life (Litman, 2003). Sustainable Development Theory further advocates integrating economic, social, and environmental considerations into infrastructure planning, promoting green technologies and participatory approaches to ensure long-term sustainability (Yang et al., 2015). Investments in road networks, as the backbone of urban development, are critical for lowering transportation costs, enhancing regional integration, and expanding market access (Kalenyuk et al., 2023).

Improved infrastructure significantly enhances access to healthcare, education, and employment opportunities, contributing to a higher quality of life (Siekierski et al., 2018). Studies have shown strong correlations between transportation infrastructure, urban development, and well-being, highlighting the transformative impact of proper planning and investment (Choi, 2024). Despite these benefits, road infrastructure projects face challenges, including land acquisition disputes, environmental sustainability concerns, and funding limitations (Siekierski et al., 2018). Addressing these barriers requires strategic planning and effective governance frameworks to maximize the benefits of infrastructure investments while minimizing adverse impacts (Yang et al., 2015).

This research evaluates the impact of road infrastructure policies on the quality of life in Batam City. It examines the economic benefits of road investments, particularly in enhancing industrial productivity and reducing logistics costs. Additionally, it explores the social implications of road development, such as improved accessibility to public services and more significant social equity (Angelo et al., 2023). Environmental challenges associated with road projects are also addressed, along with sustainable practices to mitigate their effects. The research proposes policy recommendations for optimizing road infrastructure in Batam through innovative financing, participatory approaches, and the integration of green technologies.

Batam provides a unique case study due to its strategic position near international trade routes and critical role in Indonesia's economic development strategy. However, rapid urbanization and industrial growth have strained its infrastructure, particularly road networks. Effective investments and coordinated policies are essential to address these challenges (Mudi et al., 2015; Schmale et al., 2015). The Indonesian government, through the Master Plan for Acceleration and Expansion of Indonesia's Economic

Development, has prioritized infrastructure as a tool to drive economic growth and reduce regional disparities (Samosir & Rajagukguk, 2020). In Batam, road development supports industrial zones, improves public services, and fosters tourism growth.

The economic benefits of road infrastructure are substantial. Improved road access facilitates supply chain management, reduces logistics costs, and attracts foreign direct investment (Gjevori & Lako, 2024). Well-connected industrial areas see increased productivity and higher investor confidence (O'Born et al., 2016). Road infrastructure also bridges the gap between urban and rural areas, promoting inclusive growth and reducing economic inequality (Olorunfemi et al., 2022). In Batam, enhanced connectivity has diversified the economy and bolstered its status as a trade hub. However, logistical bottlenecks and inequitable access must be addressed for maximum benefit (Bieliatynskyi et al., 2023; Din et al., 2022).

Socially, road infrastructure improves accessibility and equity. Reduced travel time and costs enable better access to healthcare and education, fostering economic participation and social integration, particularly for marginalized communities (Teodorovici et al., 2021). Environmentally, road projects raise concerns, such as increased greenhouse gas emissions, habitat disruption, and noise pollution. Sustainable measures, like green technologies and reforestation, are critical to mitigating these effects (Choi, 2024; Verico & Qibthiyyah, 2023). Participatory approaches involving local communities can enhance project acceptance and long-term success (Kalenyuk et al., 2023; Yang et al., 2015).

Challenges in road development include legal and social conflicts in land acquisition, funding constraints, and environmental sustainability. Public-private partnerships (PPP) are a viable solution, leveraging private resources to complement government investments. Transparent financial management is essential to attract investments and build trust (Choi, 2024; Mudi et al., 2015; Samosir & Rajagukguk, 2020).

Technological innovations, such as real-time traffic management systems and predictive maintenance, also offer opportunities to optimize road infrastructure and reduce environmental impacts (Alfredo M. Pereira & Jorge M. Andraz, 2013). Strategic road infrastructure investments in Batam demonstrate significant potential to enhance connectivity, economic opportunities, and access to services. Addressing land acquisition, funding, and sustainability challenges is crucial to realizing long-term benefits. Future policies should emphasize participatory planning, innovative financing, and green technologies to ensure inclusive and sustainable progress, setting a benchmark for other rapidly urbanizing regions.

RESEARCH METHODOLOGY

This study employs an explanatory quantitative research design to investigate causal relationships between variables, focusing on testing theories and hypotheses for validation or refutation. As outlined by Sugiyono (2022), this approach, rooted in positivist philosophy, relies on structured data collection and statistical analysis to ensure measurable and reliable findings. The independent variable is road infrastructure policy, and the dependent variable is the quality of life in Batam City.

Data were collected from both primary and secondary sources. Primary data came from surveys and structured questionnaires distributed to Batam residents,

capturing their perceptions of road infrastructure and quality of life. Secondary data were obtained from government reports, policy documents, and publications by institutions such as Statistics Indonesia. A combined analysis of these sources offers a comprehensive understanding of the research problem.

The study uses Partial Least Squares-Structural Equation Modeling (PLS-SEM) to analyze complex hypotheses involving latent constructs. According to Ghozali (2008), Hair et al. (2014) and Purnomo et al. (2022), PLS-SEM is suitable for evaluating models with intricate structural relationships. Analysis includes two stages: evaluating the measurement model (validity and reliability) and the structural model (relationships between variables). Hypotheses were tested using a bootstrapping procedure in Smart-PLS 3.9 software, with significance determined by a t-value above 1.96 and a p-value below 0.05 (Purnomo, 2019). These rigorous methods provide robust evidence for understanding how road infrastructure policies influence quality of life in Batam City.

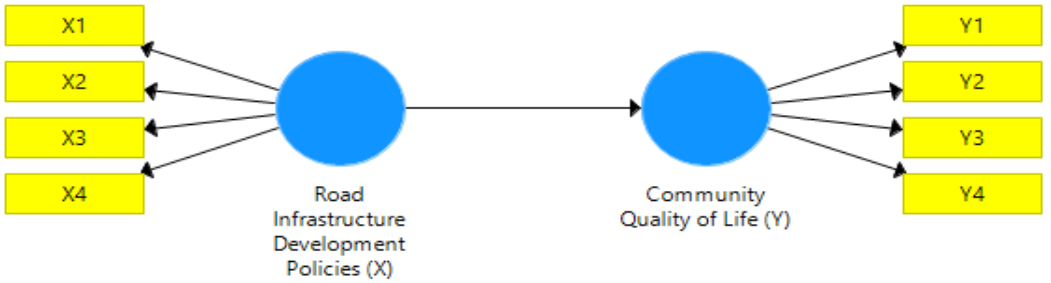

Figure 1. Conceptual framework

RESULTS AND DISCUSSION

RESULTS

Measurement Model (Outer Model)

The measurement model evaluates the validity and reliability of the indicators used to measure latent variables (Purnomo, 2019). This step is critical to ensure that the constructs in the study are accurately captured by their respective indicators. The evaluation focuses on three primary aspects: convergent validity, discriminant validity, and reliability.

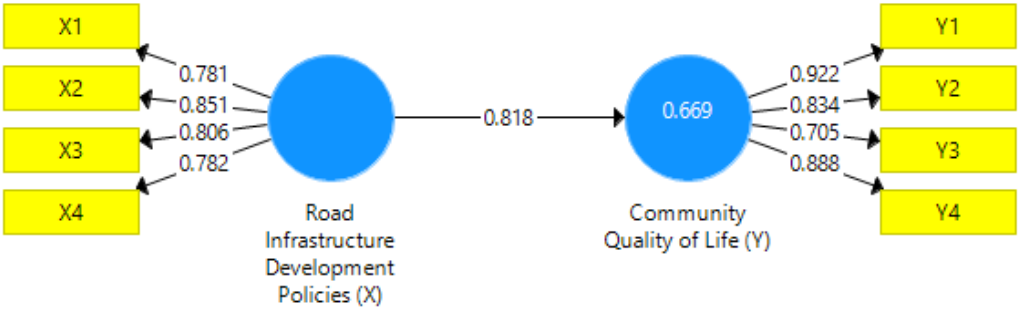

Figure 2. Processed output from Smart-PLS 3.9

Convergent Validity

Convergent validity assesses whether the indicators of a construct share a high proportion of variance. It is tested using the loading factor values of each indicator. As presented in Table 1, the results indicate that all indicators have loading factor values more significant than the threshold of 0.70. This satisfies the validity criteria and demonstrates that the indicators effectively represent their respective constructs.

Table 1: **Loading Factor Results**

Indicator	Loading Factor	Conclusion
X1	0.781	Valid
X2	0.851	Valid
X3	0.806	Valid
X4	0.782	Valid
Y1	0.922	Valid
Y2	0.834	Valid
Y3	0.705	Valid
Y4	0.888	Valid

Source: Processed output from Smart-PLS 3.9

The high loading factor values indicate that the items or indicators used in the measurement model strongly correlate with their respective latent constructs. For instance, the values for "Road Infrastructure Policy" indicators range from 0.781 to 0.851, while those for "Quality of Life" indicators range from 0.705 to 0.922. These results confirm that the selected indicators are appropriate and valid representations of the measured constructs. This level of validity is essential to establish confidence in the measurement instruments used in the study.

Reliability

Reliability is a test of internal consistency, where constructs were tested to ensure indicators that measure a latent variable give consistent results. This was done through Cronbach's Alpha and Composite Reliability and rho_A testing of the constructs. According to Table 2, Cronbach's Alpha and Composite Reliability scores are above the threshold set at 0.70, confirming all constructs to be reliable.

Table 2: **Reliability Test Results**

Variable	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	Conclusion
Road Infrastructure Policy (X)	0.820	0.827	0.881	0.649	Reliable
Quality of Life (Y)	0.860	0.882	0.906	0.708	Reliable

Source: Processed output from Smart-PLS 3.9

The Cronbach's Alpha values of 0.820 and 0.860 demonstrate that “Road Infrastructure Policy” and “Quality of Life” have high internal consistencies. Besides, the Composite Reliability values of 0.881 and 0.906 also confirm the high reliability of the constructs. The AVE values of 0.649 and 0.708, which have exceeded the acceptable threshold of 0.50, further support the convergent validity of these constructs.

These findings present evidence of the robustness of results regarding the measurement model of the present study. Adequate results on validity and reliability properties promise representation of the underlying concepts, represented by each latent construct according to their measures. After the assurance of these features, it may confirm appropriate bases that build upon subsequent analysis and enable a practical interpretation that accounts for the nature existing within relationships among latent variables in the structural model. By establishing the appropriateness of the measurement instruments this research has conducted its data collection, it ascertains that its findings ensure appropriate reliability and validity, with conclusions and recommendations included appropriately.

Structural Model (Inner Model)

The structural model tests the relationships among latent variables and the extent of the influence of the independent variable on the dependent one. This, on general grounds, emphasizes two types of parameters: first, one of the significant key-value parameters, which usually is R-Square, and also Q^2 Predictive Relevance, as a measurement and an indicator of model predictive power and accuracy.

R-Square Analysis

The R-squared refers to the proportion of variance in the dependent variable presented by the independent variable. This study relates that the R-square value of the dependent variable, Quality of Life or Y, is 0.669. Thus, it can be shown herein that the road infrastructure policy variable explains 66.9% of the dispersion in the quality of life. The results are portrayed in Table 3 as follows:

Table 3: **R-Square Results**

Variable	R^2	Conclusion
Quality of Life (Y)	0.669	Strong

Source: Processed output from Smart-PLS 3.9

Ghozali (2008) expressed that the R-square value over 0.67 is categorized as strong, showing significant development in people's lives due to road infrastructure policy. Centrally, the immense R-square value represents not only a strong model but, most importantly, supports the important role of infrastructural policy in building one's perceived well-being outcome.

Q^2 Predictive Relevance

The Q^2 Predictive Relevance value measures the model's predictive accuracy, assessing how well the independent variables predict the dependent variable. It is calculated using the following formula:

$$Q^2 = 1 - \left(\sqrt{1 - R^2}\right)$$

Q^2 = 1 - (1 - 0.669^2)

Q^2 = 1 - 552

Q^2 = 0.448

The Q^2 value of 0.448 confirms the model's strong predictive relevance. A Q^2 value greater than 0 indicates adequate predictive power, while values approaching 1 suggest excellent accuracy. In this case, the Q^2 value underscores the robustness of the structural model in predicting quality of life-based on road infrastructure policies.

The findings from the structural model reveal a strong and significant relationship between road infrastructure policies and quality of life. The high R-Square value highlights the pivotal role these policies play in enhancing the well-being of Batam's residents. Furthermore, the Q^2 Predictive Relevance supports the model's predictive capability, ensuring the reliability and accuracy of the results. These findings emphasize the critical importance of well-crafted infrastructure policies in promoting sustainable urban development and improving quality of life.

Table 4: **Bootstrapping test results**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Road Infrastructure Development Policies → Community Quality of Life	0.818	0.822	0.036	22.772	0.000

Source: Smart-PLS 3.9 test results

Table 4 presents the results of the bootstrapping analysis conducted using Smart-PLS 3.9 software to evaluate the relationship between road infrastructure development policies and the quality of life in the community. The first column, Original Sample (O), represents the initial estimate of the relationship, with a value of 0.818, indicating a strong and positive impact. The Sample Mean (M) column reflects the average value of the bootstrap sample results, which is 0.822, demonstrating consistency with the initial estimate.

The Standard Deviation (STDEV) column provides a measure of variability with a value of 0.036. This low value suggests that the estimated relationship is stable. The T Statistics column reports a value of 22.772, significantly exceeding the critical threshold of 1.96 for a 5% significance level. This result provides robust evidence of the statistical significance of the relationship.

Lastly, the P Values column shows a probability value 0.000, indicating that the relationship is highly significant at the 99% confidence level. These findings provide compelling empirical evidence that road infrastructure development policies have a meaningful and positive impact on improving people's quality of life. The data supports the hypothesis that effective infrastructure policies can tangibly enhance community welfare.

Hypothesis

The findings of this study offer compelling empirical evidence that road infrastructure development policies significantly enhance the quality of life in Batam City. Through bootstrapping analysis using Smart-PLS 3.9 software, an Original Sample (O) value of 0.818 demonstrates these policies' substantial and positive impact on the community's well-being. This result underscores how effective implementation

of road infrastructure policies can meaningfully contribute to improving community welfare.

The reliability of this result is further reinforced by the Sample Mean (M) value of 0.822, which closely aligns with the initial estimate. Additionally, the low Standard Deviation (STDEV) value of 0.036 reflects the stability of the relationship between road infrastructure policies and quality of life, with minimal variability in the data. A T Statistics value of 22.772, far exceeding the critical threshold of 1.96 at a 5% significance level, confirms the statistical significance of this relationship.

Moreover, the probability value (P Values) of 0.000 indicates that the effect is significant at a 99% confidence level, providing strong assurance that road infrastructure development policies positively impact community welfare. These results validate the hypothesis that such policies are vital for enhancing the quality of life, especially in Batam City.

In conclusion, the findings highlight the critical role of strategic investment and management in road infrastructure as a cornerstone of sustainable urban development. Well-crafted policies not only improve mobility and accessibility but also directly contribute to enhancing people's lives. This study offers valuable recommendations for policymakers to prioritize road infrastructure development to foster a higher quality of life for residents.

Interpretation of Findings

The results of this study highlight the substantial influence of road infrastructure policies on the quality of life in Batam City. Enhancements in road infrastructure have significantly improved accessibility for residents, enabling them to access vital services such as healthcare, education, and employment centres more efficiently. This improved accessibility has also lowered transportation costs for individuals and businesses in the region, promoting economic growth and stability. Furthermore, the upgraded infrastructure has bolstered the delivery of public services, allowing government agencies to reach underserved communities more effectively. Collectively, these advancements contribute to the population's overall well-being, underscoring the critical role of infrastructure in urban development.

The robust relationship between road infrastructure policies and quality of life is further supported by the high R-Square value (0.669) reported in this study. This strong correlation emphasizes the importance of strategic infrastructure planning and investment as a catalyst for enhancing living standards and addressing the challenges posed by urbanization in rapidly expanding regions like Batam. Additionally, these findings align with existing research that highlights the multifaceted benefits of infrastructure development, particularly in boosting economic productivity, promoting social equity, and expanding access to opportunities.

DISCUSSION

Road infrastructure development in Batam City significantly influences the quality of life, affecting economic, social, and environmental dimensions. Properly designed road networks foster economic growth, improve social welfare, and support ecological sustainability when approached thoughtfully. Economically, road development expands opportunities by facilitating trade and connectivity, boosting local economic activities, and creating employment. Studies have shown that improved

road access alleviates poverty, particularly in rural areas, by enhancing access to markets and essential resources, thereby increasing local economic prospects (Pattiselanno & Krockenberger, 2021). In Batam, expanding road networks invigorates local businesses and attracts new investments, creating a ripple effect on the city's economy (Khanani et al., 2021).

On a social level, road infrastructure development significantly impacts accessibility and equity. Enhanced road networks reduce travel time and costs, improving mobility and enabling better access to public services like education and healthcare (Teodorovici et al., 2021). However, these changes can also lead to gentrification, where infrastructure improvements displace lower-income residents as wealthier groups move in (Khanani et al., 2021). This phenomenon, if not managed well, could disrupt the social fabric of Batam's communities, necessitating careful policy interventions to ensure equitable benefits (Kambu et al., 2022). Involving local communities in planning and implementing infrastructure projects ensures that developments address their needs and fairly distribute benefits (Johar, 2017).

Environmental challenges accompanying road development cannot be overlooked. Poorly planned projects risk habitat destruction, increased pollution, and ecosystem degradation, which negatively affect public health and well-being (Sudmeier-Rieux et al., 2019). Land clearing often leads to deforestation and soil degradation, exacerbating the risk of natural disasters like floods and landslides. Increased traffic from new roads also contributes to air and noise pollution, creating unhealthy living conditions (Bekele & Ferede, 2016; Jedwab & Moradi, 2016; Johar, 2017; Liu, 2024; Wong & Guggenheim, 2018) Sustainable practices, such as using recycled materials, low-emission asphalt, and green energy, can mitigate these impacts. Preservation of green areas and reforestation are crucial steps to minimize environmental damage and ensure ecological balance (Jedwab & Moradi, 2016).

Economic benefits

Road infrastructure development plays a pivotal role in Batam’s economic growth. It enhances logistics efficiency, reduces transport costs, and supports manufacturing productivity. Improved road access facilitates the efficient movement of goods and services, lowering logistics costs by up to 20% (Khanani et al., 2021). This is particularly important for Batam's manufacturing sector, which depends on reliable transportation networks to acquire raw materials and deliver finished products (Pattiselanno & Krockenberger, 2021) Beyond industrial benefits, road development attracts domestic and foreign investment by improving operational efficiency, further driving local economic growth (Kambu et al., 2022). Additionally, improved road infrastructure benefits small and medium-sized enterprises (SMEs) and the informal sector, enabling them to access broader markets and increase household incomes (Sudmeier-rieux et al., 2019).

Environmental challenges and sustainable solutions

While road development supports economic and social progress, it poses environmental challenges. Habitat destruction, ecosystem disruption, and carbon emissions threaten biodiversity and public health. Land clearing for road construction exacerbates environmental degradation and increases disaster risks. These challenges underscore the importance of adopting sustainable practices in infrastructure projects. Utilizing recyclable materials, low-emission asphalt, and green energy can significantly

reduce environmental impacts (Forman & Alexander, 1998). Comprehensive environmental impact assessments (EIAs) at every project stage are essential to ensure sustainability standards are met. Community participation in planning can also enhance environmental preservation efforts, aligning development goals with local priorities.

Optimization policies and strategies

Achieving sustainable road infrastructure development in Batam requires a holistic approach encompassing innovative financing, community participation, and environmentally friendly technologies. Public-private partnerships (PPP) offer a viable solution to funding constraints, reducing the government's financial burden while improving efficiency and innovation Samosir & Rajagukguk (2020) and Verico & Qibthiyyah (2023). In Batam, adopting PPP models can attract private investment to accelerate the construction of quality road networks. Meaningful community participation is equally critical, as it ensures that infrastructure projects address local needs and foster a sense of ownership among residents World Bank (2019), Using ecological technologies like recycled asphalt, local materials, and green energy further enhances sustainability and reduces costs (O'Born et al., 2016).

Research limitations

This study has several limitations that must be considered in interpreting the results. First, the geographical focus on Batam City limits the generalizability of findings to other regions with different characteristics. Second, while the study addresses economic, social, and environmental dimensions of road infrastructure development, it does not delve deeply into political, legal, or project management aspects that may also influence outcomes. Third, the research assumes consistent government implementation of road infrastructure policies. However, dynamic political priorities and budget constraints could affect policy execution. Periodic evaluations are necessary to ensure the relevance of recommendations in evolving contexts. These limitations highlight opportunities for future research to explore broader aspects and ensure a more comprehensive understanding of road infrastructure development.

CONCLUSIONS

This research highlights the critical role of road infrastructure development in supporting economic growth and improving the quality of life in Batam City. Good road infrastructure significantly enhances accessibility, boosts economic activities, and improves public services like education and health. By increasing connectivity, rural areas can benefit equally as urban counterparts, reducing social inequalities and promoting inclusion. Improved logistics efficiency and reduced transportation costs bolster the manufacturing sector's productivity, while adequate road networks attract domestic and foreign investment, further contributing to local economic growth and supporting the formal and informal sectors.

The study also addresses environmental challenges accompanying road construction, such as habitat disruption, increased carbon emissions, and ecosystem degradation. Implementing sustainable practices, including environmentally friendly technologies, green energy, and preservation of green spaces, can mitigate these adverse impacts. Integrating sustainability into infrastructure projects ensures that road construction aligns with nature conservation while meeting developmental goals.

Community participation is emphasized as a crucial element in planning and implementing road infrastructure projects. Engaging the community not only legitimizes projects but also ensures that diverse needs are addressed. Combining inclusive policies, sustainable technologies, and innovative financing strategies, such as public-private partnerships, can drive Batam's road infrastructure development toward long-term sustainability. This holistic approach, encompassing economic, social, and environmental dimensions, provides a strategic pathway for improving the quality of life while promoting sustainable socio-economic progress in Batam City.

Declaration of Generative AI and AI-Assisted Technology in the Writing Process

At the stage of work on this textbook, the author partially used Grammarly software (https://app.grammarly.com/) to improve the accuracy and clarity of English. After applying this tool, the author has made careful revisions and edits for quality and accepts full responsibility for releasing this publication.

REFERENCES

Alfredo M. Pereira, & Jorge M. Andraz. (2013). on the Economic Effects of Public Infrastructure Investment: a Survey of the International Evidence. *Journal of Economic Development*, *38*(4), 1–37. https://doi.org/10.35866/caujed.2013.38.4.001

Angelo, A. A., Sasai, K., & Kaito, K. (2023). Assessing Critical Road Sections: A Decision Matrix Approach Considering Safety and Pavement Condition. *Sustainability (Switzerland)*, *15*(9). https://doi.org/10.3390/su15097244

Aschauer, D. A. (1989). Is public expenditure productive? *Journal of Monetary Economics*, *23*(2), 177–200. https://doi.org/10.1016/0304-3932(89)90047-0

Bekele, S., & Ferede, T. (2016). Economy-wide Impact of Investment in Road Infrastructure in Ethiopia: A Recursive Dynamic CGE Approach. *Ethiopian Journal of Business and Economics (The)*, *5*(2), 187. https://doi.org/10.4314/ejbe.v5i2.2

Bieliatynskyi, A., Yang, S., Pershakov, V., Shao, M., & Ta, M. (2023). State of the roadside environment from repair works using various materials. *Materialwissenschaft Und Werkstofftechnik*, *54*(6), 717–724. https://doi.org/https://doi.org/10.1002/mawe.202200244

Choi, H. S. (2024). Reinventing Sustainable Neighborhood Planning: A Case Study of Le Rheu, France. *Buildings*, *14*(2). https://doi.org/10.3390/buildings14020536

Din, A. U., Ming, J., Vega-Muñoz, A., Salazar Sepúlveda, G., & Contreras-Barraza, N. (2022). Population Density: An Underlying Mechanism Between Road Transportation and Environmental Quality. *Frontiers in Environmental Science*, *10*(June), 1–12. https://doi.org/10.3389/fenvs.2022.940911

Forman, R. T. T., & Alexander, L. E. (1998). Roads and their major ecological effects. *Annual Review of Ecology and Systematics*, *29*(1), 207–231. https://doi.org/10.1146/annurev.ecolsys.29.1.207

Ghozali, I. (2008). *Structural Equation Modeling: Metode Alternatif dengan Partial Least Square PLS*. Badan Penerbit – UNDIP.

Gjevori, S., & Lako, A. (2024). Road Maintenance Planning of the Fier-Vlore Road Axis, based on the Assessment and Forecast of AADT and Los Service Level. *Qubahan Academic Journal*, *4*(1), 127–136. https://doi.org/10.58429/qaj.v4n1a269

Hair, J. F. J., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2014). *Multivariate data analysis: Global edition* (Ed. 7th). Pearson Education Inc.

Jedwab, R., & Moradi, A. (2016). The Permanent Effects of Transportation Revolutions in Poor Countries: Evidence from Africa. *The Review of Economics and Statistics*, *98*(2), 268–284. https://doi.org/10.1162/REST_a_00540

Johar, N. (2017). Community participation: A cementing process, theorizing various dimensions and approaches. *Journal of Construction in Developing Countries*, *22*(November), 47–61. https://doi.org/10.21315/jcdc2017.22.supp1.3

Kalenyuk, I., Bohun, M., & Djakona, V. (2023). Investing in Intelligent Smart City Technologies. *Baltic Journal of Economic Studies*, *9*(3), 41–48. https://doi.org/10.30525/2256-0742/2023-9-3-41-48

Kambu, Z., Jinca, M. Y., Pallu, M. S., & Ramli, M. I. (2022). Meta Synthesis of Community Participation Model on Trans-Papua Road Development. *Civil Engineering Journal (Iran)*, *8*(11), 2476–2489. https://doi.org/10.28991/CEJ-2022-08-11-08

Khanani, R. S., Adugbila, E. J., Martinez, J. A., & Pfeffer, K. (2021). The Impact of Road Infrastructure Development Projects on Local Communities in Peri-Urban Areas: the Case of Kisumu, Kenya and Accra, Ghana. *International Journal of Community Well-Being*, *4*(1), 33–53. https://doi.org/10.1007/s42413-020-00077-4

Litman, T. A. (2003). Economic Value of Walkability. *Transportation Research Record*, *10*(1828), 3–11. https://doi.org/10.3141/1828-01

Liu, L. (2024). *The Impact of Public Infrastructure on Regional Social Welfare——An Analysis Based on the Spatial Durbin Model*.

Ma'rifah, A. (2022). The Effect of Infrastructure Development on Economic Growth. *Efficient: Indonesian Journal of Development Economics*, *5*(3), 230–241. https://doi.org/10.15294/efficient.v5i3.54394

Mudi, A., Lowe, J., & Manase, D. (2015). Public-Private Financed Road Infrastructure Development in North-Central Region of Nigeria. *Journal of Management and Sustainability*, *5*(4), 58. https://doi.org/10.5539/jms.v5n4p58

O'Born, R., Brattebø, H., Kålas Iversen, O. M., Miliutenko, S., & Potting, J. (2016). Quantifying energy demand and greenhouse gas emissions of road infrastructure projects: An LCA case study of the Oslo fjord crossing in Norway. *European Journal of Transport and Infrastructure Research*, *16*(3), 445–466. https://doi.org/10.18757/ejtir.2016.16.3.3152

Olorunfemi, S. O., Akanmu, A. A., & Salisu, U. O. (2022). Government Investment on Road Infrastructure in Kogi State, Nigeria: the Impact on Urban Mobility. *Journal of Social Sciences*, *5*(3), 88–104. https://doi.org/10.52326/jss.utm.2022.5(3).07

Pattiselanno, F., & Krockenberger, A. (2021). Road development and indigenous hunting in tanah papua: Connecting the facts for future wildlife conservation agendas. *Forest and Society*, *5*(1), 181–189. https://doi.org/10.24259/fs.v5i1.12528

Purnomo, G. W. (2019). Pengujian UTAUT Model dalam Pemanfaatan Literasi Informasi Perpustakaan Perguruan Tinggi. *Jurnal Ilmiah Administrasi Publik*, *5*(3), 277–284. https://doi.org/10.21776/ub.jiap.2019.005.03.3

Purnomo, G. W., Pratiwi, K. Y., & Putri, K. H. (2022). Analysis Usage Behavior for Information System of University Library. *Indonesian Journal of Multidiciplinary …*, *2*(2), 421–428. https://ejournal.upi.edu/index.php/IJOMR/article/view/45965

Samosir, P., & Rajagukguk, W. (2020). Infrastructure Development and Economic Growth in Indonesia: A Province Panel Data Analysis. *International Journal of Innovation, Creativity and Change*, *14*(1), 309–318. www.ijicc.net

Schmale, J., von Schneidemesser, E., & Dörrie, A. (2015). An integrated assessment method for sustainable transport system planning in a middle sized German city. *Sustainability (Switzerland)*, *7*(2), 1329–1354. https://doi.org/10.3390/su7021329

Siekierski, P., Lima, M. C., & Borini, F. M. (2018). International Mobility of Academics: Brain Drain and Brain Gain. *European Management Review*, *15*(3), 329–339. https://doi.org/10.1111/emre.12170

Sudmeier-rieux, K., Mcadoo, B. G., Devkota, S., Chandra, P., Rajbhandari, L., & Howell, J. (2019). Mountain roads in Nepal at a new crossroads. *Natural Hazards and Earth System Sciences*, *19*, 655–660.

Sugiyono. (2022). *Metode Penelitian Kuantitatif, Kualitatif dan R&D* (2 Cet 4). Alfabeta.

Teodorovici, D., Busch, S., Dietz, R., & Hartung, F. (2021). Governance Frameworks towards Sustainable Infrastructure Transformation – Overcoming deadlocks, resistance and uncertainty through multi-level dialogue. *The Evolving Scholar*, *November*, 25–27. https://doi.org/10.24404/6155c5dee9af0a0008c8f906

Verico, K., & Qibthiyyah, R. M. (2023). Indonesia's Infrastructure and Inclusive Economic Growth. *Infrastructure for Inclusive Economic Development Vol.1: Lessons Learnt from Indonesia. Jakarta: ERIA and Ministry of Finance, 1*, 19–51.

Wong, S., & Guggenheim, S. (2018). Community-Driven Development: Myths and Realities. *Community-Driven Development: Myths and Realities*, *May*. https://doi.org/10.1596/1813-9450-8435

World Bank. (2019). *Transforming Transportation 2019*. World Bank Publications.

Yang, J., Yuan, M., Yigitcanlar, T., Newman, P., & Schultmann, F. (2015). Managing knowledge to promote sustainability in Australian transport infrastructure projects. *Sustainability (Switzerland)*, *7*(7), 8132–8150. https://doi.org/10.3390/su7078132

ВПЛИВ ПОЛІТИКИ РОЗВИТКУ ДОРОЖНЬОЇ ІНФРАСТРУКТУРИ НА ЯКІСТЬ ЖИТТЯ ГРОМАДИ У МІСТІ БАТАМ

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Анотація. *Розвиток дорожньої інфраструктури відіграє вирішальну роль у сприянні економічному зростанню та підвищенні якості життя в громадах. Це дослідження зосереджено на впливі політики дорожньої інфраструктури в місті Батам, промисловому та торговому центрі Індонезії, що має стратегічне географічне значення. Використовуючи кількісний описовий метод, дослідження розглядає вплив цієї політики на місцеві економічні показники, соціальне забезпечення та екологічну стійкість. Дані були зібрані з вторинних джерел, таких як урядові звіти, статистичні публікації та академічні дослідження, для аналізу взаємозв'язку між покращенням інфраструктури та показниками якості життя. Результати показують, що покращення дорожньої інфраструктури значно покращує доступність та мобільність, створюючи більші економічні можливості та кращий доступ до основних державних послуг, таких як охорона здоров'я та освіта. Крім того, ці розробки підтримують екологічну стійкість, зменшуючи затори на дорогах та викиди вуглецю. Однак дослідження виявляє кілька проблем, включаючи суперечки щодо придбання землі, обмеження фінансування та неефективність управління проектами, які можуть перешкоджати ефективності політики. Усуваючи ці бар'єри, можна максимізувати потенційні переваги розвитку дорожньої інфраструктури, що сприятиме сталому розвитку урбанізації та регіональній конкурентоспроможності. Це дослідження надає цінні рекомендації для політиків, підкреслюючи важливість інклюзивного планування, надійного управління та залучення громад до розвитку інфраструктури. Очікується, що результати слугуватимуть орієнтиром для аналогічних міських регіонів, які швидко розвиваються.*

Ключові слова: *дорожня інфраструктура, якість життя, економічне зростання, міський розвиток, сталий розвиток.*

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