



PLANNING MALAYSIA:

Journal of the Malaysian Institute of Planners

VOLUME 24 ISSUE 4 (2026), Page 372 – 385

PERCEIVED ECONOMIC IMPACTS OF KLUANG RAILWAY STATION: A STAKEHOLDER ANALYSIS

**Nor Amaleena Mazlan^{1*}, Rosilawati Zainol², Noor Hashimah Hashim Lim³,
Syafiqah Nazurah Mukhtar⁴, Angel Chang⁵**

*^{1,2,3,5}Faculty of Built Environment,
UNIVERSITI MALAYA*

*^{1,2,3,5}Centre for Sustainable Urban Planning and Real Estate (SUPRE),
Faculty of Built Environment,
UNIVERSITI MALAYA*

*⁴School of Housing, Building and Planning,
UNIVERSITI SAINS MALAYSIA*

Abstract

Railway station upgrades are widely promoted as drivers of local economic development, yet stakeholders' perceptions of these impacts remain insufficiently examined in secondary city contexts. This paper investigates whether stakeholders perceive positive economic impacts from the Kluang Railway Station in Johor, Malaysia, and whether perceptions differ between train users and economic operators. Six economic indicators were measured: visitor increase, customer flow, business attraction, employment opportunities, property value increase and local competitiveness. Based on the survey data from respondents within a 400-meter station catchment area, the study employs Binomial tests to show the statistical significance of stakeholder agreement and Chi-Square tests to identify whether perceived benefits differ between train users and economic operators. The results show that positive responses significantly exceed fifty percent for all six indicators, with rates ranging from eighty to ninety percent. The highest rates are observed for visitor increase and business attraction, while property value increase shows the lowest rate at eighty percent. The Chi-Square tests reveal no significant differences between train users and economic operators across any indicator, indicating strong stakeholders' alignment. The paper concludes that the railway station is perceived as generating substantial economic benefits by all stakeholder groups, with no perception gap between business operators and transport users.

Keywords: Economic impacts, railway station, stakeholder perception, secondary city, Kluang

¹ Corresponding author. Email: noramaleenamazlan@um.edu.my

INTRODUCTION

The modernisation of rail infrastructure in secondary cities is increasingly promoted as a means of fostering regional economic development. In Malaysia, the introduction of the Electric Train Service (ETS) has extended high-quality rail connectivity beyond metropolitan Kuala Lumpur to secondary towns such as Kluang, Johor. The new Kluang Railway Station, which opened in 2025, represents a significant public investment aimed at improving intercity mobility and stimulating local economic activity (KTMB, 2023). Currently, the station is fully operational. Consequently, respondents were asked to evaluate the actual, observable economic impacts currently occurring in the area, rather than expected future outcomes. This station replaces an older colonial-era facility and is part of the larger Electrified Double Tracking Project from Gemas to Johor Bahru, highlighting the critical need to evaluate TOD integration and pedestrian connectivity around early built transit nodes (Abdullah et al., 2023).

The anticipated benefits of such rail upgrades are well documented in transport economics literature. Improved connectivity is expected to reduce travel times, increase service frequency, and enhance passenger comfort, thereby attracting more users to rail transport. For a town like Kluang, which has historically relied on agriculture and small-scale manufacturing, the arrival of the ETS presents an opportunity to diversify the local economy through increased tourism, retail activity, and business investment. However, the realisation of these benefits is not automatic. Studies have shown that rail investments can produce limited or uneven economic outcomes when not integrated with complementary policies such as land-use planning, feeder transport services, and pedestrian infrastructure improvements (World Bank, 2019; Litman, 2015).

While many studies have examined the economic impacts of railway stations in metropolitan contexts such as Kuala Lumpur and Johor Bahru, less attention has been given to stakeholder perceptions in secondary cities (Sharma & Dehalwar, 2025). Understanding whether different stakeholder groups share similar perceptions is critical for transport planning and public acceptance (Litman, 2022). Stakeholders include train users who benefit from mobility, and economic operators such as business owners and employees who rely on customer footfall generated by the station. If these two groups hold divergent views, transport planners may need to adopt differentiated engagement strategies. Conversely, if their perceptions align, a more unified approach to station-area development may be appropriate. By exploring these dynamics, this paper links empirical findings directly to station-area planning and transit-oriented development. Ultimately, it seeks to strengthen the planning contribution regarding pedestrian connectivity, local economic development, and secondary-city regeneration.

This paper addresses these considerations by analysing survey data collected from 100 respondents within a 400-meter radius of the Kluang Railway Station. The study focuses on six economic indicators: visitor increase, customer flow increase, business and investment attraction, employment opportunities, property value increase, and local competitiveness. These indicators were selected as they capture both immediate and observable effects as well as longer-term indirect effects of transport infrastructure. By examining stakeholder perceptions across these indicators, the paper aims to provide empirical evidence on whether the Kluang Railway Station is viewed as an economic asset by the local community, and whether perceptions differ between train users and business operators.

LITERATURE REVIEW

Railway Stations and Urban Economic Impact

Transport infrastructure is widely recognised as a driver of urban economic development, enhancing productivity, market accessibility, and regional integration (World Bank, 2022). Rail investments, in particular, have been shown to generate productivity gains, expand urban labour markets, and stimulate urban regeneration (Knowles & Ferbrache, 2016). The mechanisms through which these urban economic benefits occur include improved access to jobs and services, increased connectivity between firms and markets, enhanced attractiveness for investment, and the creation of agglomeration economies where businesses cluster near transport nodes (Litman, 2022). Investments in modern rail networks act as a fundamental catalyst for local economic enhancement. By drastically reducing spatial friction, rail infrastructure lowers transaction costs and expands the catchment area for local labour and retail markets. This enhanced accessibility directly contributes to economic vitality by stimulating agglomeration economies, where businesses benefit from proximity to heightened pedestrian flows and improved supply chain linkages (Credit

The theoretical foundation for this study draws on two main frameworks from urban economics and planning (Calthorpe, 1993; Perroux, 1950). The Transit-Oriented Development theory highlights that concentrating commercial, residential, and leisure activities within walking distance of a transit hub creates sustainable urban growth patterns (Calthorpe, 1993). The pedestrian catchment area of 400 to 800 meters represents the zone where this conversion from transport infrastructure to urban economic activity is most likely to occur (Purba et al., 2019). TOD has been shown to generate urban economic benefits including increased property values, enhanced commercial activity, and improved quality of life for urban residents (Sharma & Dehalwar, 2025).

Additionally, the Growth Pole Theory suggests that economic growth originates at distinct poles of intensity within an urban system, with a modernised

railway station acting as a propulsive unit that attracts investment and infrastructure (Perroux, 1950). In the context of urban economics, a railway station can serve as a growth pole around which commercial, residential, and service activities cluster, creating multiplier effects that benefit the broader urban economy. These theories together justify the spatial delimitation of the study to the 400-meter station catchment area and the focus on the station as an urban economic catalyst (Calthorpe, 1993).

The literature on transport infrastructure impacts has identified several moderating factors that influence the magnitude and distribution of benefits (Banister & Berechman, 2001; Litman, 2021). These include the existing level of accessibility in the region, the quality of complementary infrastructure, the regulatory environment, and the capacity of local institutions to plan and implement station-area development (World Bank, 2019). In secondary city contexts, stakeholder perception research is particularly important because urban economic structures, and the resiliency of local economic operators, often differ significantly from metropolitan patterns (Mazlan et al., 2022)

The Transit-Oriented Development (TOD) literature has provided important insights into how rail infrastructure can shape urban economic outcomes (Calthorpe, 1993). The benefits of TOD include reduced car dependence, improved air quality, increased physical activity, enhanced social interaction, and economic benefits such as increased property values and commercial activity (Sharma & Dehalwar, 2025; Bong & Rosdi, 2024).

In the Malaysian context, research on TOD has identified both opportunities and challenges. Studies have shown that TOD can improve accessibility, promote healthier urban lifestyles, and enhance economic prospects, particularly around major transit hubs such as KL Sentral and Bandar Sunway (Zain et al., 2025). However, limitations in stakeholder commitment, urban design frameworks, and community participation are cited as persistent challenges that can weaken the potential benefits of TOD (Yip et al., 2024). These studies emphasise that while TOD can provide social, environmental, and economic benefits, its realisation is contingent upon strong governance frameworks and supportive policy environments.

Stakeholder Perceptions of Urban Economic Benefits

Stakeholder perceptions play a critical role in urban transport infrastructure evaluation (Banister, 2018). Understanding whether different groups share similar perceptions of urban economic benefits is essential for policy legitimacy and public acceptance (Litman, 2022). Disparities between stakeholder groups can indicate information asymmetries, differential benefit distributions, or planning inadequacies (World Bank, 2019). Research on multimodal integration highlights that failures in linking rail to local urban transport networks and

providing adequate pedestrian infrastructure are common causes of under-utilisation and reduced urban economic benefits (Bhouri et al., 2025).

In secondary city contexts, stakeholder perception research is particularly important because urban economic structures may differ from metropolitan patterns. Business operators and transport users may have different exposure to station impacts and therefore different perceptions of urban economic benefit magnitude (Sharma & Dehalwar, 2025). Within the context of transit development, these stakeholders must be clearly identified to fully understand the distribution of economic benefits. Key stakeholders in this ecosystem primarily include: (1) economic operators, comprising local business owners, retail managers, property investors, and employees whose livelihoods depend on commercial activity; and (2) transport users, encompassing daily commuters, occasional tourists, and local residents who utilize the station for mobility.

Recent literature emphasises that evaluating the perceptions of these specific groups is vital, as their distinct economic priorities such as profitability and footfall for operators, versus affordability and accessibility for users that shape the ultimate success of station-area regeneration. For example, business owners may be more sensitive to changes in customer footfall and urban foot traffic patterns, while train users may prioritise service frequency and fare affordability over broader urban economic considerations (Dell'Olio et al., 2011). Understanding these potential differences is crucial for effective stakeholder engagement in urban planning processes.

Studies of secondary towns such as Kluang emphasise that railway station accessibility affects both train usage and visitation to urban commercial areas (Department of Statistics Malaysia, 2025). The food and beverage sector, in particular, has been identified as highly responsive to station-generated footfall due to short visit durations and impulse spending patterns (Dell'Olio et al., 2011). Retail and tourism sectors also benefit from improved urban accessibility, though potentially with different time profiles and customer segments (Cohen, 2022). These sectoral differences have important implications for urban economic development strategies focused on station-area planning (Sharma & Dehalwar, 2025).

The relationship between transport infrastructure and urban economic development is bidirectional (Banister & Berechman, 2001; Litman, 2022). Improved transport access can stimulate urban economic activity, but urban economic growth also generates demand for transport improvements (Vickerman, 2018). This virtuous cycle suggests that investments in rail infrastructure and complementary urban development policies can reinforce each other, creating sustained urban economic benefits (Sun & Cui, 2018). However, breaking into this cycle requires coordinated planning across transport and urban

development agencies, which is often challenging in secondary city contexts where institutional capacity may be limited (Lee et al., 2024).

RESEARCH METHODOLOGY

The study focuses on the 400-meter radius surrounding Kluang Railway Station, Johor, Malaysia. This boundary was selected based on Transit-Oriented Development theory, which defines the pedestrian catchment area as a radius of approximately 400 to 800 meters, representing a comfortable five-to-ten-minute walk (Calthorpe, 1993). This specific boundary allows the research to isolate the core station precinct where commuter traffic converts into urban economic transactions for local businesses.

The study area comprises a mix of traditional shophouses, food and beverage outlets, retail establishments, and service businesses. This commercial density creates an agglomeration effect where businesses cluster to capitalise on transit user volume. Key commercial clusters within the 400-meter radius include food and beverage outlets along the main thoroughfares, retail shops selling daily necessities and souvenirs, and service establishments such as convenience stores and mobile phone retailers. By focusing on this 400-meter radius illustrated in Figure 1, the research ensures that stakeholder perceptions are specifically tied to the station's immediate urban economic influence rather than broader town-wide trends.

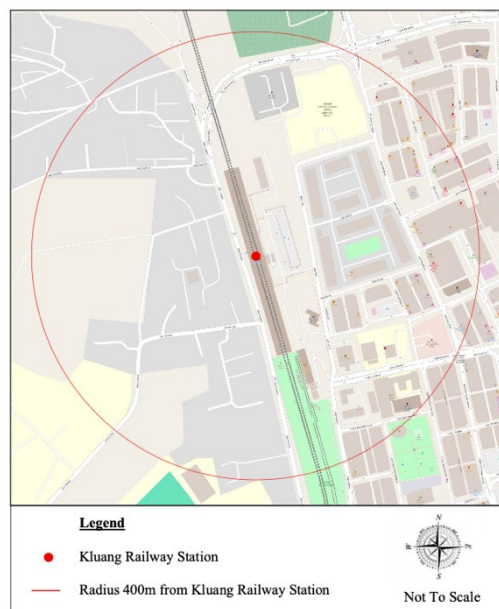


Figure 1: Kluang Railway Station

Sampling and Data Collection

A structured questionnaire was administered to 100 respondents using purposive sampling. Respondents were directly approached in person within the 400-metre catchment area. Economic operators were surveyed door-to-door at their commercial establishments, while train users were intercepted along the main pedestrian thoroughfares connecting the station to the town center. Purposive sampling was selected because the study requires insights from stakeholders who directly interact with or are economically impacted by the railway station. The sampling frame was divided into two primary strata: train users (including daily commuters and tourists) and economic operators (comprising business owners, managers, and employees within the 400-meter catchment).

A total of 136 questionnaires were initially administered. Following data collection, responses underwent a manual audit for completeness and eligibility. The filtering process involved three criteria: removal of incomplete surveys where key sections were left blank, exclusion of straight-lined responses indicating lack of genuine engagement, and verification of respondent location or usage frequency to ensure they fell within the purposive criteria. Consequently, 36 questionnaires were discarded, resulting in a final sample of 100 valid responses comprising 50 train users and 50 economic operators. This exact even split was intentionally maintained during the final sample selection to ensure equal weighting and a balanced comparative analysis for the subsequent Chi-Square tests.

The questionnaire captured responses for six economic impact indicators: visitor increase, customer flow increase, business and investment attraction, employment opportunities, property value increase, and Kluang competitiveness. The questionnaire development process was grounded in the core economic indicators identified in the Transit-Oriented Development. An initial draft of the survey was reviewed to ensure construct validity. Following the feedback, the instrument was pilot-tested with a small subset of local respondents to verify clarity and respondent comprehension before the final data collection. Binary responses were selected because they provide clear, unambiguous measures of stakeholder perception that are suitable for non-parametric statistical tests. While binary (yes/no) questions may oversimplify nuanced perceptions of economic impact, they were utilised to ensure rapid survey completion in a fast-paced transit environment.

Data Analysis

The data analysis employed two non-parametric statistical tests. The Binomial test was conducted for each economic indicator to determine whether the proportion of positive responses significantly exceeds fifty percent. The null hypothesis was that the true proportion equals 0.5, meaning that positive and

negative responses are equally likely. A significant result ($p < 0.05$) indicates that respondents systematically agree on the positive economic impact rather than responding randomly.

The Chi-Square test of independence was conducted to compare responses between economic operators and train users for each economic indicator. The null hypothesis was that respondent group and perception are independent, as that train users and economic operators have the same underlying probability of responding positively. A significant result ($p < 0.05$) would indicate that the two groups differ in their perceptions.

RESULTS AND DISCUSSION

Stakeholder Agreement on Urban Economic Benefits

Binomial tests were conducted to determine whether the proportion of positive responses for each urban economic indicator significantly exceeds fifty percent. The results are presented in Table 1.

Table 1: Binomial Test

Urban Economic Indicator	Percentage Yes (%)	Binomial Significance (p-value)
Visitors Increased	93%	$p < 0.001$
Customer Flow Increased	91%	$p < 0.001$
Business and Investment Attraction	93%	$p < 0.001$
Employment Opportunities	91%	$p < 0.001$
Property Value Increased	89%	$p < 0.001$
Local Competitiveness	91%	$p < 0.001$

**Binomial test comparing proportion to 50 percent; $n=100$ for all indicators. Source: Field Study (2025)*

For all six urban economic indicators, the proportion of positive responses significantly exceeds fifty percent, with all tests showing strong statistical significance at $p < 0.001$. This indicates strong statistical consensus that stakeholders perceive the Kluang Railway Station as generating positive urban economic impacts; however, it is important to note this measures subjective stakeholder perception rather than actual economic performance.

The highest level of agreement was observed for visitor increase and business and investment attraction, each with 93% of respondents agreeing that the railway station has increased the number of visitors and attracted new businesses. This robust consensus empirically validates the Growth Pole Theory (Perroux, 1950) within a secondary city context, demonstrating that the modernised Kluang Railway Station successfully functions as a propulsive unit attracting localized commercial activity. Furthermore, these results align closely with Knowles and

Ferbrache (2016), who assert that rail investments rapidly stimulate urban regeneration through immediate, consumption-based economic uplifts.

Similarly, the 91% agreement regarding increased customer flow confirms Dell'Olio et al.'s (2011) observation that local retail and food sectors are highly responsive to station-generated footfall. However, the slightly lower agreement on property value increases (89%) provides a critical contrast to metropolitan-focused TOD studies (such as Zain et al., 2025; Sharma & Dehalwar, 2025). In metropolitan hubs, real estate appreciation is often the most immediate and pronounced benefit of transit integration. In contrast, this study reveals that in a secondary town like Kluang, asset-based effects appreciate at a slower, more organic pace than direct retail consumption, likely due to less speculative elasticity in the local property market. Customer flow increase, employment opportunities, and local competitiveness each showed ninety-one percent agreement. The finding that 91% of respondents agreed that customer flow to local urban businesses has increased is particularly important because customer flow represents the direct mechanism through which station-generated footfall translates into urban business revenue. The slightly lower percentage compared to visitor increase indicate that not all visitors become customers, possibly due to the last-mile barrier where unsafe crossings and poor lighting deter walking from the station to urban commercial areas. This barrier highlights a critical gap in station-area design. Without investments in walkability, traffic-calming measures, reliable feeder transport, and safe pedestrian infrastructure, the conversion of transit footfall into actual local economic development will remain constrained. Employment opportunities represent the labour market effects of urban economic growth, while local competitiveness reflects the station's role in positioning Kluang favourably within the regional urban system.

Property value increase showed the lowest agreement at 89%, though this still represents a substantial majority. The slightly lower agreement shows that property values tend to respond more slowly to transport improvements than visitor numbers or business activity, as they depend on sustained demand and market confidence.

Comparing Stakeholder Perceptions of Urban Economic Benefits

Chi-Square tests of independence were conducted to determine whether perceptions of urban economic benefits differ significantly between economic operators and train users. The results are presented in Table 2.

Table 2: Chi-Square Test

Urban Economic Indicator	Economic Operators % Yes	Train Users % Yes	Pearson Chi-Square	Asymptotic Significance
Visitors Increased	88%	98%	0.154	p=0.695
Customer Flow Increased	90%	92%	0.122	p=0.727
Business and Investment Attraction	92%	94%	0.154	p=0.695
Employment Opportunities	90%	92%	0.122	p=0.727
Property Value Increased	84%	94%	0.102	p=0.749
Local Competitiveness	86%	96%	0.122	p=0.727

*Chi-Square test of independence; degrees of freedom = 1 for all tests; critical value at $\alpha = 0.05$ is 3.84.

Source: Field Study (2025)

For all six urban economic indicators, the Pearson Chi-Square values range from 0.102 to 0.154. All values are substantially less than the critical value of 3.84 required for statistical significance at the 0.05 level. The asymptotic significance (p-values) range from 0.695 to 0.749, all far exceeding the significance threshold of 0.05.

For visitors increased, economic operators showed 88% agreement while train users showed 98% agreement. While the raw percentages differ by ten percentage points, the Chi-Square test indicates that this difference is not statistically significant, with a p-value of 0.695. For customer flow increased, economic operators showed 90% agreement while train users showed 92% agreement. The difference of two percentage points is even smaller, and the p-value of 0.727 confirms non-significance. For business and investment attraction, economic operators showed 92% agreement while train users showed 94% agreement, with no significant difference ($p = 0.695$).

For employment opportunities, economic operators showed 90% agreement while train users showed 92% agreement ($p = 0.727$). For property value increase, economic operators showed 84% agreement while train users showed 94% agreement. This 10-percentage point difference is the largest observed among the six indicators, with a p-value of 0.749 indicating non-significance. The larger difference for property values reflects that several of the property owners which are the economic operators; are more sensitive to urban property market conditions than train users. For local competitiveness, economic operators showed 86% agreement while train users showed 96% agreement ($p = 0.727$).

Summary of Findings

The analysis yields two principal findings from an urban economic perspective. First, the Binomial tests confirm that stakeholders perceive positive urban economic impacts across all six indicators. The proportion of positive responses ranges from 89% to 93% percent, with visitor increase and business attraction

showing the highest agreement at 93% percent. All Binomial tests are statistically significant at $p < 0.001$. This demonstrates that stakeholder agreement on urban economic benefits is statistically meaningful rather than random. The pattern of results is logically coherent from an urban economic perspective, with more direct consumption-based effects such as visitors and business activity receiving slightly higher agreement, and the longer-term asset-based effect which is the property values showing slightly lower agreement. These findings strongly align with the Growth Pole Theory (Perroux, 1950), confirming that modernised transport nodes effectively act as propulsive units for localized urban economic activity.

The high agreement regarding visitor increases and business attraction mirrors the findings of Knowles and Ferbrache (2016), who observed similar immediate consumption-based economic uplifts in transit corridors. However, the slightly lower agreement on property value increases (89%) provides a unique contrast to metropolitan-focused studies (such as Zain et al., 2025), which often position real estate appreciation as the most immediate and pronounced benefit of TOD. In the secondary city context of Kluang, this contradiction can be theoretically explained by market dynamics; in which secondary town property markets typically lack the speculative elasticity of metropolitan centres. This shows that asset values appreciate at a slower, more organic pace than direct retail footfall.

The absence of a perception gap between train users and economic operators offers a significant contribution to the literature on transport equity and public acceptance. Previous studies (World Bank, 2019; Sharma & Dehalwar, 2025) often caution that disparities between stakeholder groups can arise due to information asymmetries or differential benefit distributions. For instance, business owners typically prioritize commercial footfall, while commuters prioritize mobility (Dell'Olio et al., 2011). However, the statistical alignment found in Kluang contradicts this expectation of divergence. Instead, it supports Litman's (2022) framework, suggesting that when transit infrastructure effectively integrates into the urban fabric, it achieves high policy legitimacy, with both groups mutually recognizing the station's broader role as a catalyst for urban economic vitality.

CONCLUSION

This stakeholder analysis demonstrates that the Kluang Railway Station is perceived as a significant catalyst for local economic development by both transport users and economic operators. The statistical findings confirm that positive responses significantly exceed chance levels across all six urban economic indicators. The strongest consensus was observed for visitor increases and business attraction, representing the most visible consumption-based

economic effects, while property value increases showed slightly lower, yet still substantial, agreement. These results reinforce the station's successful role as a propulsive gateway to Kluang's urban economy.

Crucially, the analysis revealed strong stakeholder alignment, with no statistically significant perception gap between business operators and transport users regarding these economic benefits. While train users consistently exhibited slightly higher levels of agreement than economic operators, these minor variances highlight a shared, unified recognition of the station's value. This alignment provides strong policy legitimacy, indicating that rail infrastructure upgrades are widely supported by the community as vital contributors to urban economic vitality.

To maximize and sustain these economic benefits, a coordinated approach to station-area planning is essential. It is highly recommended that the Kluang local authority, Keretapi Tanah Melayu Berhad (KTMB), and urban planners collaborate closely with local business operators to urgently address last-mile connectivity. Strategic urban design interventions such as specifically enhancing pedestrian walkways, installing adequate lighting, improving traffic-calming measures, and establishing reliable feeder transit links; are necessary to fully convert transit footfall into tangible secondary-city regeneration.

Finally, it must be acknowledged that this study's reliance on perception-based analysis presents inherent limitations. Subjectively perceived economic benefits may not entirely reflect actual, quantifiable changes in the local economy. To build upon these findings, future research should incorporate quantitative secondary data, such as business turnover records, structured pedestrian counts, rental rate fluctuations, or property transaction data. Integrating these metrics will help empirically validate stakeholder perceptions and provide a more comprehensive measure of the station's true economic impact over time.

ACKNOWLEDGEMENT

The authors would like to extend their deep appreciation to all the stakeholders in Kluang; specifically, the local economic operators, business owners and train users who generously gave their time to participate in the survey and share their valuable insights.

DISCLOSURE STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES

- Abdullah, Y. A., Zanudin, K., Marzukhi, M. A., Nawawi, F. N., & Jamaluddin, N. B. (2023). TRANSIT ORIENTED DEVELOPMENT (TOD) FOR EARLY-BUILT RAIL-BASED TRANSIT STATIONS: POSSIBLE OR PLAUSIBLE?. *Planning Malaysia*, 21.
- Bhourri, N., Campisi, T., Aron, M., & Mahdavi, S. M. H. (2025). Connectivity, Reliability and Approachability in Public Transport: Some Indicators for Improving Sustainability. *Sustainability*, 17(2), 645. Retrieved from <https://www.mdpi.com/2071-1050/17/2/645>
- Bong, A. Y. C., & Rosdi, I. N. (2024). The Benefits and Solution to the Challenges of Transit-Oriented Development (TOD) from Public Perspectives in KL Sentral: A Review. *Research in Management of Technology and Business*, 5(2), 579-604.
- Calthorpe, P. (1993). *The next American metropolis* (Vol. 23): New York: Princeton Architectural Press.
- Dell'Olio, L., Ibeas, A., & Cecin, P. (2011). The quality of service desired by public transport users. *Transport Policy*, 18(1), 217-227.
- Knowles, R. D., & Ferbrache, F. (2016). Evaluation of wider economic impacts of light rail investment on cities. *Journal of Transport Geography*, 54, 430-439.
- Lee, J., Arts, J., & Vanclay, F. (2024). Investigating institutional barriers and opportunities to an integrated approach for transport and spatial development: Mega urban transport development in a rapidly developing city, Seoul. *Journal of Urban Affairs*, 46(1), 40-62.
- Litman, T. (2015). Rail transit in America: a comprehensive evaluation of benefits.
- Litman, T. M. (2022). Evaluating transportation equity: Guidance for incorporating distributional impacts in transport planning. *Institute of Transportation Engineers. ITE Journal*, 92(4), 43-49.
- Mazlan, N. A., Zainol, R., & Harumain, Y. A. S. (2022). Resiliency of urban informal economic activities in Kuching city. *Planning Malaysia*, 20.
- Perroux, F. (1950). Economic space: theory and applications. *The quarterly journal of economics*, 64(1), 89-104.
- Purba, A., Niken, C., Herianto, D., & Jafri, M. (2019). Success factors of the Asia and Europe high speed rail: lesson learned for Indonesia as the massive strategy services. *International Journal of Civil Engineering and Technology (IJCET)*, 10(4), 126-136.
- Sharma, S. N., & Dehalwar, K. (2025). Examining the Inclusivity of India's National Urban Transport Policy for Senior Citizens. In *Transforming healthcare infrastructure* (pp. 115-134): CRC Press.
- Sun, Y., & Cui, Y. (2018). Analyzing urban infrastructure economic benefit using an integrated approach. *Cities*, 79, 124-133.
- Vickerman, R. (2018). Can high-speed rail have a transformative effect on the economy? *Transport Policy*, 62, 31-37.
- Yip, M. K., Ramezani, S., Meijering, L., Tillema, T., & Arts, J. (2024). Conceptualising justice in transit-oriented development (TOD): towards an analytical framework. *Transport Reviews*, 44(5), 944-971.

Zain, S. N. M., Ismail, W., & Hamzah, A. H. (2025). Evaluating Transit-Oriented Development in Malaysia: A Comprehensive Analysis of Benefits, Drawbacks and Implementation Challenges. *Int. J. Res. Innov. Appl. Sci*, 10, 574-587.

Received: 12th June 2026. Accepted: 14th June 2026