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Perception of Traditional Public Transportation Service in Sub-Urban Area: Case Study Angkutan Kota Pondok Gede - Cililitan Route

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ABSTRACT

Expansion in the global economic sector has caused urbanization in many countries, including Indonesia. The fast-paced and widespread dynamics of urban society are one of the reasons for the development of the transportation system. However, Indonesia is facing a traffic jam problem, especially in Greater Jakarta. One of the main causes is people commuting from Bogor, Depok, Tangerang, and Bekasi to Jakarta to carry out various activities. Public transport is an important alternative to overcome people's dependence on private transportation. In this study, an assessment of the performance of public transport services for the Pondok Gede - Cililitan route was carried out based on user preferences. The method used is a quantitative approach to public transport passengers from Pondok Gede - Cililitan. The research parameters were conducted through the trip's characteristics and service quality. Based on the research, public satisfaction with Pondok Gede-Cililitan public transportation is easy to reach and change modes. On the other hand, the points of comfort, security, waiting time, speed, travel time, and regularity still need to be improved for the quality of service. As a form of management commitment, the results of this research can be used as material for evaluating the quality of public transport performance to re-optimize and increase public interest in using public transportation, especially public transport, to reduce regional congestion levels.

1. Introduction

Economic globalization drives the pace of economic growth in all countries (Patel & Rietveld, 2022). This eventually led to the phenomenon of urbanization in many countries. This urbanization phenomenon occurs in developed and developing countries such as Indonesia, Malaysia, and Thailand. Urbanization is a complex process that transforms rural areas into urban areas (Borhan et al., 2019). Urbanization causes the demand for transportation to support mobility in urban areas to be higher in proportion to the high population (Nazrul et al., 2020). The fast-paced and widespread dynamics of urban society are one of the reasons for the development of the transportation system (Launtu et al., 2022).

The demand for transportation in the ASEAN region is expected to increase by 60% from 2013 to 2040. More than 90% of the transportation sector still depends on oil consumption, accounting for 29% of the total energy consumption in the ASEAN region in 2015. Increased mobility, if it continues to rely on limited public transport infrastructure, is expected to drive annual energy consumption growth of 2.6% in a business-as-usual (BAU) scenario, from 124 million tonnes of oil in 2015 to 238 million tonnes of oil in 2035 (Stefan Baker, 2019).

Indonesia is one of the ASEAN countries currently developing and facing congestion problems, especially in the Greater Jakarta area. In 2017, the total population of Greater Jakarta was 33.17 million people, and the population density was 6.43 thousand people per square kilometer. Jabodetabek

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contributed around IDR 3,166.86 trillion to Indonesia's Gross Domestic Product (GDP), or 23.30 percent of the total GDP in 2017. With only 12.66 percent of Indonesia's total population, the contribution of the Gross Regional Domestic Product (GRDP) from Jabodetabek demonstrates the importance of this area for Indonesia's economic growth (Dertta Irjayanti et al., 2021).

Traffic jams occur almost daily in Great Jakarta, especially on weekdays. One of the leading causes is people commuting from Bogor, Depok, Tangerang, and Bekasi to Jakarta to carry out various activities, including going to school and working. Most people still use private vehicles for daily mobility (Farda & al-Rasyid Lubis, 2018; Rifai & Arifin, 2020). Based on data from the DKI Jakarta Central Statistics Agency, in 2019, it was found that there were 11,839,921 motorized vehicle users, with the growth of motorized vehicles in the last five years reaching 2.94% per year (*Statistik Transportasi DKI Jakarta 2019*, n.d.). This increase will cause traffic jams, impacting the economy and social activities in DKI Jakarta (Handayani et al., 2021).

Public transport plays a very significant role in the progress of a city, where the public transportation system contributes to the effectiveness and efficiency of the city's transportation system as a whole (Launtu et al., 2022). Public transport is an important alternative to overcome people's dependence on private transportation which will cause problems related to the environment and quality of life, such as air pollution, noise pollution, accidents, and traffic jams (Nazrul et al., 2020). Several studies have shown that the high rate of motorized vehicle ownership and people's preferences for using other modes of transportation than public transport are due to inadequate levels of public transport services (Belwal & Belwal, 2017; Ibrahim et al., 2020; Yang et al., 2020). In dealing with these changes and challenges, it is necessary to plan a sustainable mode of transportation, especially public transport (Adinata & Wike, 2021).

Various choices of transportation modes are a challenge in increasing public transport users' preferences (Djakfar et al., 2021). Therefore, efforts are needed to increase the use of public transport in daily mobility to maintain the integration of transportation services in a city. Several previous studies have explained that demographic factors such as age, income, number of family members, and vehicle ownership affect the behavior of choosing a mode of transportation (Mayo & Taboada, 2020). Besides that, experts also research travel attributes such as travel time, distance, waiting time, and intermodal transfers as factors influencing the choice of transportation mode.

Public transport systems' capacity building in several world cities is being carried out by considering budget constraints (Ishaq & Cats, 2020). An important thing to consider when introducing a mass transit system into a city is how to integrate it with the existing transit system to maximize the mobility of its users (Zhang et al., 2020). The integration mechanism can provide future mobility developments to balance the transport system (Hensher et al., 2020).

A recent study conducted in a small town showed that to guarantee an efficient and effective public transport service, it is necessary to have a flexible service using new technology (Giuffrida et al., 2021). Furthermore, the decision to use public transport services is also often associated with the location and overall system development. Meanwhile, it was found that the demand for public transport is influenced by factor D, which is included in the dimensions of the built environment, including density, diversity, design, destination, and demographics (Liu et al., 2019).

In this study, an assessment of the importance of urban transportation services to the Pondok Gede - Cililitan route was carried out based on user preferences. This is done to determine the condition of the performance of transportation services under what is felt by passengers as users of public transportation facilities. By analyzing the factors that influence user preferences, data is obtained that

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can be used as a reference in planning the transportation system. Therefore, taking severe steps to optimize city transportation car implementation is necessary. It is hoped that the services provided will be under what the community needs so as to attract interest in using public transportation and reduce the use of private vehicles and reduce congestion.

2. Literature Review

The transportation system consists of two definitions, namely, system and transportation. A system is a form of attachment and linkage between one variable and another in a structured arrangement. At the same time, transportation is an attempt to move, move, transport, or divert people or goods from one place to another. In contrast, the object is more useful in another place or can be helpful for specific purposes (Laurensius & Charles Sitindaon, 2019). The transportation system is an essential element of infrastructure that influences urban development patterns. Transportation and land use development are essential in determining government policies and programs (Siti Aminah, 2018). Rapid urban development impacts the quality and quantity of urban space (Dermawan et al., 2022).

The transportation system is an essential issue the government must consider in supporting people's accessibility and mobility in everyday life (Zakiyah & Fadiyah, 2020). The essential components of a transportation system are infrastructure, vehicles, and propulsion operated by humans or computers (Gudmundsson & Regmi, 2017). In using the transportation system, people expect quality public transportation. They are starting with the availability of a fleet that follows passenger capacity, easy access to information on the quality of trips, and the accuracy of travel times to provide comfort during the trip. This is a general description of how the ideal transportation system, according to the community, must be implemented by the government in making government policies and programs (Dertta Irjayanti et al., 2021).

Angkutan kota is transportation from one place to another within the city area using a public bus or a public passenger car tied to a fixed and regular route. The main objective of the existence of public passenger transportation is to provide excellent and proper public transport services for the community (Buamona et al., 2017). Angkutan Kota Currently, it is still a means of transportation for people who do not have access to and the ability to own a private vehicle. Angkutan Kota, with affordable fares and wide enough routes, is the right choice for meeting the needs of transportation for the lower middle class (Alexandri & Novel, 2019). Angkutan Kota services can raise and lower passengers along existing routes to be one of the attractions of passengers. This differs from a bus that must have a particular stop (Kriswardhana et al., 2022).

A reliable public transport service will reduce people's dependence on the use of private vehicles and reduce the level of congestion (Oktariansyah et al., 2017). The measure of good service is service that is safe, fast, cheap, and convenient. In addition, public transportation must be able to provide maximum performance to satisfy public transport users (Rifai et al., n.d.)

Service quality is a dimensional condition related to products, services, people, processes, and the environment where the quality assessment is determined when these public services are provided. In assessing service quality, it can be based on service dimensions, namely the dimensions of reliability, responsiveness, assurance, empathy, and physical evidence (Deb & Ali Ahmed, 2018).

Service quality that considers passengers' experiences and feelings is an important research topic. Variables in assessing the quality of public transport services are related to infrastructure and operations, namely mileage, speed, and waiting time. In contrast, passenger-oriented action variables include reach, comfort, cleanliness, and safety (He et al., 2021). Improving public transportation

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services or parking locations can help reduce environmental problems caused by the massive use of private vehicles in an area (Abdulrazzaq et al., 2020). To increase public interest in using public transportation, it is necessary to provide optimal assets by providing facilities and infrastructure to maximize service quality (Ardianto, 2017).

3. Method

The purpose of this study was to determine the performance of public transportation for the Pondok Gede – Cililitan route, find out the indicators and variables that most influence people's interest in public transportation for the Pondok Gede – Cililitan route, and obtain recommendations for public transportation development strategies in the Jabodetabek area. The process of systematic scientific research must begin with the identification of the right problem (Rifai et al., 2015). This research was conducted by taking the research location in the Greater Jakarta area. The selection of this location can represent environmental conditions, population, and socio-economic conditions in most locations in Indonesia. The research location is shown in Figure 1.

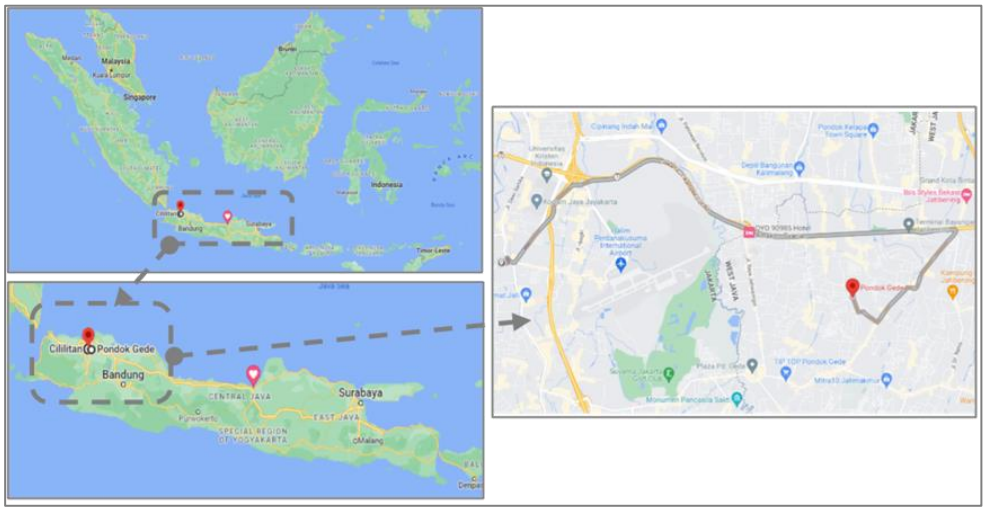

Figure 1. Research Location

For travel parameters, namely frequency of use, the purpose of use, travel time to public transport, mode availability, route service range, route suitability, and waiting time for arrival. Meanwhile, the service quality parameters are shown in Table 1.

Table 1. Importance Service Quality Parameter

No	Parameter	Source		
		(Retnoningtyas, Handayeni, 2019)	(Jumain, Manaf, Bau 2021)	(Frans, Pah, Ikun, 2017)
1	Security	✓	✓	✓
2	Safety	✓	-	✓
3	Comfort	✓	-	✓
4	Tariff	✓	✓	-
5	Regularity	✓	✓	✓
6	Travel Time	✓	-	✓
7	Speed	✓	✓	✓
8	Occupancy	✓	-	✓
9	Punctuality	✓	✓	✓
10	Route service coverage	✓	✓	✓

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No	Parameter	Source		
		(Retnoningtyas, Handayeni, 2019)	(Jumain, Manaf, Bau 2021)	(Frans, Pah, Ikun, 2017)
11	Route suitability	✓	-	-
12	Information	✓	-	✓
13	Integration	✓	-	✓
14	Accessibility	✓	-	✓

In assessing service quality parameters, researchers use numbers as a rating scale. Values are shown from 1 to 5, where number 1 indicates very dissatisfied, and number 5 indicates very satisfied.

The stages in collecting data in this research activity were carried out using quantitative methods. The data obtained is one of the main sources in compiling a research and scientific modeling (Rifai et al., 2015). This research was conducted by distributing questionnaires made using Google Forms. Respondents in this study were public transport passengers from Pondok Gede to Cililitan. Passengers are grouped by gender, occupation, and age. In this study, a hundred respondents were taken and represented by each description using a purposive sampling method.

To find out user preferences for public transportation service performance for the Pondok Gede - Cililitan Department, an IPA (Importance Performance Analysis) analysis was carried out. This analysis is used to determine customer satisfaction with the services offered. IPA combines the measurement of the level of interest and satisfaction factors in a 2-dimensional graph for an easy explanation of the data. This suitability level determines priority service order that affects passenger satisfaction (Rifai & Arifin, 2020). The results of this study will also be described using the Radar Chart. From this Radar Chart, it will be seen which parameters need to be maintained or corrected so that the aims and objectives of the service procurement can be achieved.

4. Result and Discussion

The correspondents surveyed in this study were as many as 100 passengers on public transport from Pondok Gede to Cililitan. From the survey results, a summary of the characteristics can be seen in Table 2.

Table 2. Demographic Data and Correspondent Travel Characteristics

Variable	Description	Presentence
Gender	Female	40%
	Male	60%
Education	Basic	10%
	High School	67%
	Bachelor	13%
	Other	10%
Age	< 20	14%
	21-30	66%
	31-40	14%
	> 40	6%
Occupation	Student	47%
	Private Sector	30%
	Government	8%
	Entrepreneur	7%
	Other	8%

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Variable	Description	Presentence
Used Frequent	Everyday	15%
	2-6 times weekly	33%
	Ones Weekly	12%
	Ones month	40%
Purpose	Working	40%
	Social	11%
	Scholl	31%
	Holiday	5%
	Hospital	5%
	Shopping	8%

Based on gender, the male sex dominates with a percentage of 60%. Furthermore, the average high school graduate/equivalent is dominated in terms of education. In addition, the majority of Pondok Gede-Cililitan public transportation users are in the age range of 20 to 30 years, as much as 66%. Then, judging from work, more than 47% are students. Most Pondok Gede-Cililitan, public transportation users use it 2-6 times/week, as much as 33%. Most users use Pondok Gede-Cililitan public transportation to work, with a percentage of 40%.

Furthermore, the research results regarding the importance of service quality for Pondok Gede-Cililitan public transportation are analyzed. In order to make it easy to understand, the survey results are presented in the form of a radar chart, as shown in Figure 2. Each parameter shows the level of importance for passengers using traditional public transport according to their respective characteristics.

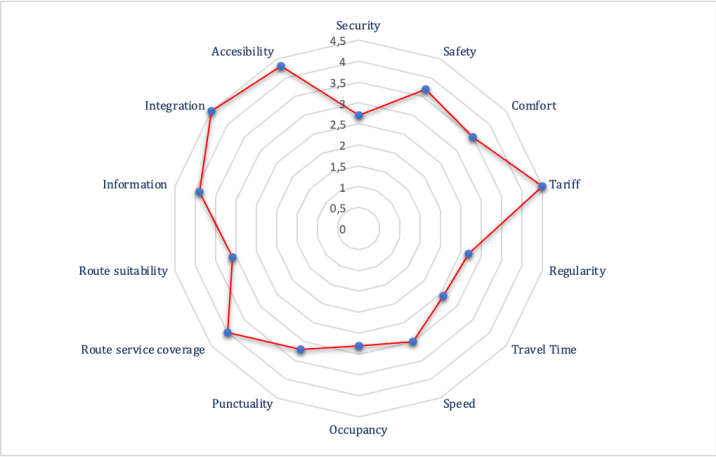

Figure 2. Public transportation service importance

The radar chart above shows that tariff, integration, and accessibility occupy the highest level of importance. This shows that the ease of reaching modes and changing modes can be one of the attractions for people to use public transportation. Then the third highest service point, followed by tariff affordability. Ease of accessing modes and ease of changing modes coupled with affordable tariffs can help people in terms of the economy.

At service points, ease of access to information, route suitability, route service coverage, equity, mode availability, timeliness, and safety are on the safe radar. The community considers that these service points are good enough but still need to be improved to increase preferences for the use of public transportation compared to other transportation. At service points, comfort, safety, waiting time, speed, travel time, and regularity are on the unsafe radar. The community considers that the service points

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need to be better to facilitate the community. This needs to be used as a reference in improving public transport services so that people's interest can grow again to use public transport as a means of mobility.

One of the things that makes public transportation uncomfortable is the need for intermodal integration. This makes people spend extra physical and material effort to reach their destination. Various studies have found that the lack of integration of public transportation is the reason for the high use of private vehicles. An example of poor public transport integration can be seen in the Jakarta area, where bus stops that need modal transfer routes are often found. Commuter line users who get off at the station must walk through a pedestrian path less than one meter wide to get to the Transjakarta bus stop. The makeshift path will be even more infeasible at night and when it rains. Besides there are no lighting facilities, this path is made worse by the many puddles and puddles. The two transportation nodes are at most 1 km apart.

According to Institute for Transportation and Development Policy (ITDP) research, intermodal integration can benefit public transport users. With integration, waiting times and intermodal transfer times can be made faster. Thus, people's travel time from the point of departure to the point of destination will also be shorter. The integration will also provide convenience and comfort for public transport users to access intermediate modes or go to their destinations. This is because the walking distance to do these two things can be cut, reducing transportation burden.

In addition, integration can also reduce the financial burden because there is no need for additional expenditure to access advanced modes. Simultaneous integration of the payment system will also make public transportation more affordable. With these benefits, people's interest in public transportation can increase further. Furthermore, a public transportation system with a high level of service and integration can be the best solution to overcoming transportation problems in Jabodetabek.

In its development, regulators must make integration facilities available at every transportation node even though the scale of modal shifts that occur is in a small category. Mode shifts categorized as small scale are if the number of public transport users who make modal shifts is less than 100 people per hour during rush hour. In the medium scale category, if the modal shift is carried out by 100 to 500 people per hour during rush hour. As for the large-scale category, if the movements occur above 500 people per hour during rush hour.

The modal shift facility at each node will be either a particular channel or a mixed lane. As the name suggests, special lanes are lines dedicated explicitly to changing modes of transportation. It can be a bridge, tunnel, or line equipped with a physical separation from other lines. Meanwhile, the mixed lane does not only function to make modal shifts. This route can have other functions, such as a path for pedestrians. However, it is equipped with markings or directions for changing modes.

5. Conclusion

This study aims to analyze the level of user interest in the Pondok Gede-Cililitan public transportation service as a mode of public transportation. The level of public interest in Pondok Gede-Cililitan public transportation is found in tariff, integration, and accessibility. As a form of management commitment, the results of this study can be used as material for evaluating the quality of public transport performance to re-optimize and increase public interest in using public transportation, especially public transport, to reduce regional congestion levels.

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Civil Engineering and Architecture Journal Vol (Year) E-ISSN
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Bibliography

Abdulrazzaq, L. R., Abdulkareem, M. N., Yazid, M. R. M., Borhan, M. N., & Mahdi, M. S. (2020). Traffic congestion: Shift from private cars to public transportation. *Civil Engineering Journal (Iran)*, *6*(8), 1547–1554. https://doi.org/10.28991/cej-2020-03091566

Adinata, R., & Wike, W. (2021). Public Transport in Developing Countries. In *Alfi Haris Wanto/ JPAS* (Vol. 6, Issue 2).

Alexandri, M. B., & Novel, N. (2019). Pengelolaan Angkutan Kota di Indonesia. *Jurnal Pemikiran Dan Penelitian Administrasi, Sosial, Humaniora, Dan Kebijakan Publik*, *2*(4), 182–189.

Angkoso, G. S. (2021). Performance Analysis Of Roads Using The Indonesian Road Capacity Manual Method (MKJI) 1997 On The Jepara-Kudus Road Km 11 To Km 15. Jurnal Civil Engineering Study, 1(01), 19-25.

Ardianto, R. (2017). *Prosiding Seminar Nasional dan Call For Paper Ekonomi dan Bisnis*. Jember.

Assalam, M. F., Rifai, A. I., & Taufik, M. (2022). The Effectiveness Analysis of Frontage Road on Jalan Margonda Raya, Depok. Indonesian Journal of Multidisciplinary Science, 1(1), 383-396.

Belwal, R., & Belwal, R. (2017). Public transportation in Oman: a strategic analysis. *Advances in Transportation Studies an International Journal Section B*, *42*, 99. https://doi.org/10.4399/97888255035247

Borhan, M. N., Hakimi Ibrahim, A. N., Syamsunur, D., & Rahmat, R. A. (2019). Why public bus is a less attractive mode of transport: A case study of Putrajaya, Malaysia. *Periodica Polytechnica Transportation Engineering*, *47*(1), 82–90. https://doi.org/10.3311/PPtr.9228

Buamona, M. S., Timboeleng, & Karongkong, H. (2017). Analisis Pelayanan Transportasi Angkutan Kota di Kota Ternate. *Jurnal Spasial*, *4*(No. 3 (2017)), 83–95.

Deb, S., & Ali Ahmed, M. (2018). Determining the service quality of the city bus service based on users' perceptions and expectations. *Travel Behaviour and Society*, *12*, 1–10. https://doi.org/10.1016/J.TBS.2018.02.008

Dermawan, W. B., Johanes, A., Isradi, M., & Rifai, A. I. (2022). *Attribution 4.0 International (CC BY 4.0) Analysis of the Satisfaction Level of Sidewalk Users (Case Study on Jl Jendral Ahmad Yani Bekasi)*. *7*(1). http://adri.journal.or.id/index.php/ijens

Dertta Irjayanti, A., Sari, D. W., & Rosida, I. (2021). Perilaku Pemilihan Moda Transportasi Pekerja Komuter: Studi Kasus Jabodetabek Mode Choice Behavior of Commuters' Worker: A Case Study of Jabodetabek. *Jurnal Ekonomi Dan Pembangunan Indonesia*, *21*(2), 125–147.

Djakfar, L., Bria, M., & Wicaksono, A. (2021). How Employees Choose their Commuting Transport Mode: Analysis Using the Stimulus-Organism-Response Model. *Journal of Advanced Transportation*, *2021*. https://doi.org/10.1155/2021/5555488

Farda, M., & al-Rasyid Lubis, H. (2018). Transportation System Development and Challenge in Jakarta Metropolitan Area, Indonesia. In *International Journal of Sustainable Transportation Technology* (Vol. 1, Issue 2).

Giuffrida, N., le Pira, M., Fazio, M., Inturri, G., & Ignaccolo, M. (2021). On the spatial feasibility of crowd shipping services in university communities. *Transportation Research Procedia*, *52*, 19–26. https://doi.org/10.1016/J.TRPRO.2021.01.004

Gudmundsson, H., & Regmi, M. B. (2017). *Transport and Communications Bulletin for Asia and the Pacific DEVELOPING THE SUSTAINABLE URBAN TRANSPORT INDEX*.

Gultom, D. A., Rifai, A. I., & Isradi, M. (2022). The Community Satisfaction of Transportation Facility Service: A Case of Bengkong Area, Batam. *Indonesian Journal of Multidisciplinary Science*, *1*(1), 81-91.

Hafram, S. M., & Asrib, A. R. (2022). Traffic Conditions and Characteristics: Investigation of Road Segment Performance. International Journal of Environment, Engineering and Education, 4(3), 108-114.

Receieved 22 April 2023
Available online 30 April 2023
Published by Fakultas Teknik Sipil dan Perencanaan UIB

Civil Engineering and Architecture Journal Vol (Year) E-ISSN
DOI 10.37253/leader.v1i1.7666

He, L., Yang, D., & Li, J. (2021). Improving the Service Quality of Public Transit with Exclusive Bus Lanes: A Perspective from Passenger Satisfaction. *Journal of Advanced Transportation*, *2021*. https://doi.org/10.1155/2021/8599256

Hensher, D. A., Wong, Y. Z., & Ho, L. (2020). Review of bus rapid transit and branded bus service network performance in Australia. *Research in Transportation Economics*, *83*, 100842. https://doi.org/10.1016/J.RETREC.2020.100842

Ibrahim, A. N. H., Borhan, M. N., Yusoff, N. I. M., & Ismail, A. (2020). Rail-based public transport service quality and user satisfaction – a literature review. *Promet - Traffic - Traffico*, *32*(3), 423–435. https://doi.org/10.7307/ptt.v32i3.3270

Ishaq, R., & Cats, O. (2020). Designing bus rapid transit systems: Lessons on service reliability and operations. *Case Studies on Transport Policy*, *8*(3), 946–953. https://doi.org/10.1016/J.CSTP.2020.05.001

Kriswardhana, W., Hayati, N., & Kusdiyanto, A. (2022). Public Attitude to Urban Public Transportation Services in Jember, Indonesia. *Civil and Environmental Science*, *005*(01), 045–054. https://doi.org/10.21776/ub.civense.2022.00501.5

Launtu, J., Rauf, B. A., & Ichsan Ali, M. (2022). *Community Motivation in Using Public Transportation in Makassar City, Indonesia*.

Laurensius, L., & Charles Sitindaon, S. 1. (2019). Pemilihan Moda Transportasi Pematangsiantar menuju Bandara Silangit Dengan Metode Stated Preference. In *Maret* (Vol. 2, Issue 1).

Liu, Y., Wang, S., & Xie, B. (2019). Evaluating the effects of public transport fare policy change together with built and non-built environment features on ridership: The case in South East Queensland, Australia. *Transport Policy*, *76*, 78–89. https://doi.org/10.1016/J.TRANPOL.2019.02.004

Maharani, N. A., Rifai, A. I., & Prasetijo, J. (2022). The Performance Analysis of Jalan Tengku Sulung in Botania, Batam Indonesia. Indonesian Journal of Multidisciplinary Science, 1(1), 129-139.

Mayo, F. L., & Taboada, E. B. (2020). Ranking factors affecting public transport mode choice of commuters in an urban city of a developing country using analytic hierarchy process: The case of Metro Cebu, Philippines. *Transportation Research Interdisciplinary Perspectives*, *4*. https://doi.org/10.1016/j.trip.2019.100078

Nazrul, A., Ibrahim, H., & Borhan, M. N. (2020). *The Interrelationship Between Perceived Quality, Perceived Value and User Satisfaction Towards Behavioral Intention in Public Transportation: A Review of the Evidence*. *10*(5).

Oktariansyah, Damayanti, R., Usman, B., & Putra, A. E. (2017). Analisis Kualitas Pelayanan Angkutan Umum (Transmusi) Melalui Kinerja Terhadap Kepuasan Masyarakat di Kota Palembang. *Jurnal Manajemen Dan Bisnis Sriwijaya*, *15*(1), 49–61.

Oktobrianto, A., Rifai, A. I., & Akhir, A. F. (2022). The Traffic Characteristic Analysis of Jalan Ciater Raya South Tangerang, Indonesia. Indonesian Journal of Multidisciplinary Science, 1(1), 437-450.

Patel, P. C., & Rietveld, C. A. (2022). Does globalization affect perceptions about entrepreneurship? The role of economic development. *Small Business Economics*, *58*(3). https://doi.org/10.1007/s11187-021-00455-y

Penelitian dan Pengabdian Masyarakat Politeknik Transportasi Darat Bali, P., Handayani, S., Angga Afrianti, D., & Suryandari, M. (2021). IMPLEMENTASI KEBIJAKAN ANGKUTAN UMUM DI DKI JAKARTA. *Jurnal Teknologi Transportasi Dan Logistik*, *2*(1), 19–28.

Purnama, E., Rifai, A. I., & Nasrun, N. (2022). Analysis of Road Performance Used Indonesian Highway Capacity Manual 1997: A Case Jalan KH Abdul Halim Majalengka-Indonesia. Citizen: Jurnal Ilmiah Multidisiplin Indonesia, 2(5), 888-895.

Rifai, A. I., & Arifin, F. (2020). *Analysis of The Level of Passenger Satisfaction With Services And Transport Facilities-Based Integration in Jakarta*. *2*(2). http://proceedings.worldconference.id.

Rifai, A. I., & Handayani, S. (2016). Pengembangan Model Interface Decision Support System Manajemen Pemeliharaan Jalan Berbasis Data Mining. Rekayasa Sipil, 5(1), 17-23.

Receieved 22 April 2023
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Rifai, A. I., Hadiwardoyo, S. P., Correia, A. G., Pereira, P., & Cortez, P. (2015). The data mining was applied for the prediction of highway roughness due to overloaded trucks. *International Journal of Technology*, *6*(5), 751–761. https://doi.org/10.14716/ijtech.v6i5.1186

Rifai, A. I., Rafianda, F., Isradi, M., & Mufhidin, A. (n.d.). *Analysis Of Customer Satisfaction On The Application Of The Covid-19 Protocol At The Inter-City Bus Terminal*. https://doi.org/10.52088/ijesty.v1i1.105

Siti Aminah. (2018). *Transportasi Publik dan Aksesibilitas Masyarakat Perkotaan*.

Statistik Transportasi DKI Jakarta 2019. (n.d.).

Vendhy, V., Rifai, A. I., & Isradi, M. (2022). The Analysis of Road Performance on Jalan Gajah Mada Batam, Indonesia. Indonesian Journal of Multidisciplinary Science, 1(1), 49-58.

Wahyudi, M. A., Rifai, A. I., & Prasetijo, J. (2022). Analysis of the Effectiveness of Traffic Flow Diversion on Road Performance: A Case of Jalan Gajah Mada Development Project, Batam. *Indonesian Journal of Multidisciplinary Science*, *1*(1), 92-102.

Wincent, W., Rifai, A. I., & Isradi, M. (2022). The Road Performance Analysis in Jalan Ahmad Yani Batam Using IHCM 1997. Indonesian Journal of Multidisciplinary Science, 1(1), 103-116.

Yang, J., Kato, H., Ando, R., & Nishihori, Y. (2020). Analyzing Household Vehicle Ownership in the Japanese Local City: Case Study in Toyota City. *Journal of Advanced Transportation*, *2020*. https://doi.org/10.1155/2020/7264860

Zakiyah, U., & Fadiyah, D. (2020). *INOVASI PELAYANAN TRANSPORTASI PUBLIK RAMAH PENYANDANG DISABILITAS DI DKI JAKARTA*.

Zhang, M., Yen, B. T. H., Mulley, C., & Sipe, N. (2020). An investigation of the open-system Bus Rapid Transit (BRT) network and property values: The case of Brisbane, Australia. *Transportation Research Part A: Policy and Practice*, *134*, 16–34. https://doi.org/10.1016/J.TRA.2020.01.021

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