

The Satisfaction Analysis of Bus Double Decker Passengers: A Case Bekasi-Semarang Route

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Abstract

Double-decker buses are the latest mode of public transportation that is one of the choices for travelers. Passenger satisfaction is the main thing, so this mode remains an option and increasingly provides a good level of service. This paper aims to analyze the level of importance and customer satisfaction. The method used is importance performance analysis using survey data with questionnaires. Data was obtained from passengers of the Bekasi-Semarang double-decker bus route, which was found directly at Bulak Kapal Bus Station. The results showed that most of the measured parameters had a high level of satisfaction. However, four parameters need more attention, one of which is the polite staff. The average importance level is 8.93, with a satisfaction rate of 8.78.

Keywords: Passenger Satisfaction, Bus Double-Decker, Service Level.

1. Introduction

The rapid progress of the world's population and the increase in models on the types of vehicles that are increasing have increased the number of private vehicles. The choice of mode of transport (private vehicle VS public transport) is an individual tendency considered important in decision-making in Khon Kaen, Thailand (Muenrit, Satiennam, Satiennam, & Jaensirisak, 2017). For this reason, the latest collection is fast, unique, and can be enjoyed for travel and other things. as we know, Within the world. Currently, motorcycles account for more than 65 percent of the total capital share, which significantly affects the behavior of tourists because people's motivation to switch to travel using buses could be better (Ngoc, Hung, & Sir, 2017). The BRT (Bus Rapid Transit) system is one of the innovations built to shorten time travel to make it more efficient, and people have become interested in public transportation. On ordinary roads, buses are the most common mode of low-capacity public transport, especially in small areas. Since buses travel on the highway with private cars, trucks, and other vehicles, traffic jams and highway construction areas are the main problems preventing them from reaching their scheduled destination on time. To avoid such problems, innovative solutions are needed; one solution is the rapid transit bus (BRT). (Al-Deek, Sandt, Alomari, & Hussain, 2017)

In Indonesia, many and almost every province uses buses as a means of transportation. For example, in the city of Semarang, there are various types of mass transportation, such as buses or public transportation. As part of efforts to address the problem of traffic congestion, the Central Government, through the Department of Transport, has proposed a Bus Rapid Transit (BRT) program (Fafurida & Octavilia, 2020). And also, to attract the interest of the Indonesian people to use buses as a mode of transportation, efforts are made by the government to carry out unique things such as, City buses in Surabaya have a unique payment system, namely using plastic bottles as a means of payment that can be exchanged for tickets, following Surabaya Mayor Regulation number 67 of 2018, which refers to the contribution of waste in the use of city bus services. This is in line with public transport tariffs, with tariffs that can be suppressed as low as possible (Larasati & Handayeni, 2021).

In the city of Jakarta itself, the Jakarta Government usually recommends using public transportation in Jakarta, so it will make us avoid congestion (when we use Transjakarta). It will reduce congestion in Jakarta, so only some in Jakarta use their transportation (Warnars, Lanita, & Randriatoamanana, 2017). So not only to avoid

congestion but also to help people to be more economical. Moreover, the large number of regions in Indonesia makes transportation facilities a necessity. One of them is land transportation to transport people and goods from one place to another by land at a lower rate than other transport. Of the many types of transportation, buses are a popular vehicle (Agustina, Septiani, Suryobuwono, & Widiyanto, 2021). Therefore, many entrepreneurs have created intercity and interprovincial (AKAP) bus companies to overcome the need for transportation needs to various regions. Central Java is the area that has the highest number of intercity and interprovincial buses or interprovincial (AKAP) in Indonesia. In addition, the number of bus companies (PO) in Central Java is also the largest in Indonesia. So there is more and more competition between the transportation provider companies themselves, which results in the idea of attracting passengers to ride using the company's services. Transportation is a derived demand generated by human activities to meet their basic needs. The travel time offered by the mode of transportation is one of the attractive factors besides price, safety, convenience, and comfort. (Yuliana & Mas' ud, 2020)(Fatkhurrozi, Sudarsana, Yuniar, & Suraji, 2021)

One of Indonesia's traditions when taking advantage of their long holiday when they are already working in a big city like Jakarta is when they return home or return to their hometown, and it can happen not only during the Eid holiday but can happen at any time when they want to travel to their hometown. Therefore intercity and interprovincial (AKAP) Bus transportation companies compete to provide the best such as Double Decker buses that are being interested because of their uniqueness and facilities are very diverse. The emergence of double-decker buses as a form of government in creating new destinations that still need to be created. Apart from being a very new destination, AKAP in Bahasa (Li, Hu, Huang, & Duan, 2017) (Intercity and Interprovincial Intercity) Bus transportation company provides attractive facilities. The facilities are physical or atmospheric forms formed by exteriors and interiors provided by the company to build a sense of security and comfort for customers. (Bakhtiar & Sunarka, 2020)

The study aimed to determine the level of importance, needs, satisfaction, and interest of double-decker bus passengers between cities on the trans-Java route, especially the Bekasi-Semarang route. So that the progress and development of land transportation, especially the Double Decker Bus, which currently seems very popular and has become a mode of transportation currently being sought after. In addition, this paper also aims at readers who need to learn that the Double Decker Bus in Indonesia is not only for tourism but also for long-distance transportation, namely the Intercity and Interprovincial (AKAP) Bus.

2. Literature Review

Public transport is transportation where people move not using private vehicles. The existence of public transportation facilitates the movement of goods and people, thereby improving the regional economy. Good public transportation can be integrated from all regions to facilitate residents in the city. (Alkharabsheh, Moslem, Oubahman, & Duleba, 2021). Good city facilities will also support economic activities within the city. The public transport system offers an alternative way of mobility to achieve a goal for a particular part of society within a community. High mobility is expected to increase interest in road users who use private vehicles now using public transportation. Transportation is essential for people of all ages and backgrounds to live fulfilling lives. (Hussain, Mkpojogun, & Jasin, 2017). It plays an essential role in many aspects of daily life, including access to work, education, health care, shopping, social events, and various recreational activities. From here, many benefits can be taken from public transportation, not only for some circles but for all circles (Bezyak & Sabella, 2017).

The bus system in the public transport sector plays an essential role in improving energy efficiency and reducing emissions. The use of buses in transportation can influence energy savings because the capacity for public transportation is helpful for the public so that people cannot use private vehicles but public transportation. (Kunith, Mendelevitch, & Goehlich, 2017). Double-decker buses are widely used for public mass transportation in many cities around the world because of their large seating capacity and shorter length, allowing for easy operation through narrow roads and narrow corners (Velasco & Segovia, 2021). A double-decker bus is a bus that answers the shortcomings of a typical bus in terms of its capacity, appearance, and efficiency. Furthermore, the description of bus-level transportation service from an accountability aspect can predict the value of quality service dominated by standard bus safety facilities that meet security standards.

The operation of public transport, especially bus services, can be a crucial factor in reducing the decrease in freight passengers or maintaining and improving it. The importance of improving the service of buses for the convenience of users so that the interest of bus transportation users can increase and users can be happy and will use

the bus service and will even be the primary choice in their transportation (Boisjoly, Maguire, Veillette, & Deboosere, 2018)

The satisfaction of public transport passengers is influenced by several factors that vary from person to person and demographic changes. Demographic growth, or what is commonly called population growth, is also one of the things that can affect passenger satisfaction (Hussain, Zefreh, & Torok, 2018). Passenger satisfaction is one of the essential components in transportation services so that school bus services organized by the government can run under the expectations and needs of the community (Lincoln & Widyastuti, 2020). Not only in intercity services between provinces, but customer satisfaction is also biased to be felt by people who use public facilities such as school buses. Customer satisfaction can be from various circles and aims at the customers themselves. Regarding airports, passenger satisfaction has been linked to their perception of the quality of service and scope of services, their emotions, demographic characteristics, and loyalty. Therefore, the satisfaction of public transportation passengers is essential and related to many things and is necessary supervision for all land, sea, and air public transportation providers. (Bezerra & Gomes, 2020).

3. Methodology

Specifically, the IPA classifies service attributes into four groups according to their importance in choosing the services and performance they perceive, as illustrated in Figure 1 (Zhen, Cao, & Tang, 2018).

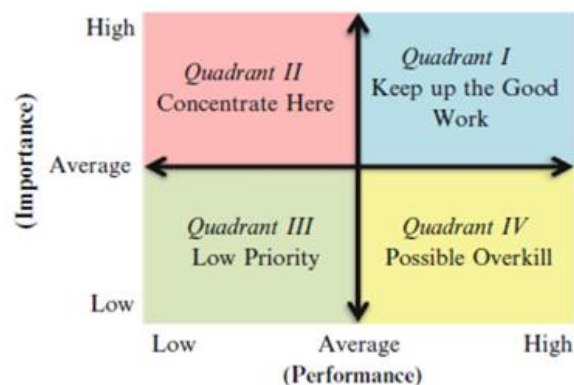


Figure 1. Important performance analysis
(Zhen, Cao, & Tang, 2018)

From the picture above, it can be seen that the IPA is a method that looks for the performance of something. The results can be used to assess what should be maintained and what must be considered so that the performance of a double-decker bus transportation can be even better. The IPA has the primary function of displaying information on factors affecting service satisfaction and loyalty, as well as service factors that need improvement (Ibrahim, Borhan, Zakaria, & Zainal, 2019). The analysis results will show passenger satisfaction, followed by accessibility, service availability, information, security, customer service, waiting rooms, and environmental cleanliness.

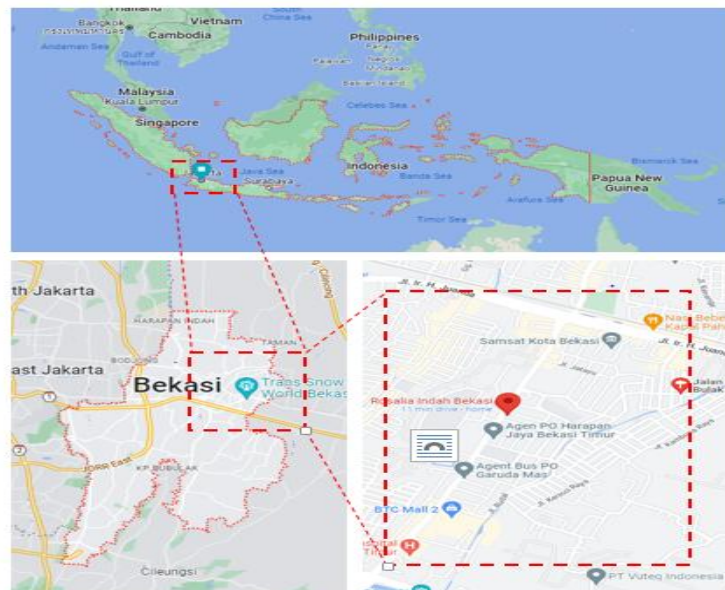


Figure 2. Location of Study

The critical performance analysis method samples were taken from double-decker bus users at the intercity terminal between the provinces of Bulak Kapal Kota Bekasi, Indonesia, on November 16, 2022, with as many as 55 respondents. Respondents were grouped by gender, age, educational background, monthly income, and vehicle ownership. In addition, each respondent was given a question on each parameter's importance and satisfaction level. The parameters are described from various library sources, as seen in table 1.

Table 1. Parameter Importance performance analysis of Bus Double Decker passenger

No	Domain	Parameters	Code	Source				
				(Chaisomboon, Jomnonkwao, & Ratanavaraha, 2020)	(Zhen, Cao, & Tang, 2018)	(Agustien & Haryono, 2021)	(Tsami & Nathanael, 2017)	(Partogi, Dewangga, & Hutauruk, 2017)
1	Responsiveness	Fast service operation	RES1	×	✓	✓	×	×
		Professional and competent staff	RES2	×	✓	✓	×	×
		Staff response to passenger requests	RES3	×	✓	✓	×	✓
		Response staff in assisting passengers	RES4	×	×	✓	×	✓
		Staff pay special attention to female passengers, children, the elderly, and with disabilities	RES5	×	✓	✓	×	✓
2	Assurance (Guarantee or assurance)	The ability of officers to carry out their duties	A1	×	×	×	×	✓
		passengers feel safe while traveling	A2	✓	×	×	×	✓
		Safety from criminals while in vehicles	A3	✓	×	✓	✓	×
		Security from criminals while in the terminal	A4	✓	×	✓	✓	×
		Vehicle safety such as seat belts and glass hammers	A5	✓	×	✓	✓	×

No	Domain	Parameters	Code	Source				
				(Chaisomboon, Jommonkwao, & Ratanavaraha, 2020)	(Zhen, Cao, & Tang, 2018)	(Agustien & Haryono, 2021)	(Tsami & Nathanael, 2017)	(Partogi, Dewangga, & Hutauruk, 2017)
3	Tangible (physical evidence)	New and clean vehicles	T1	✓	×	✓	✓	✓
		Clean toilets	T2	✓	×	✓	✓	×
		The air conditioner works fine	T3	✓	×	✓	✓	✓
		The vehicle has facilities for the elderly such as handrails	T4	✓	×	✓	×	×
		Availability of facilities (seats, TVs, power plugs, emergency equipment, air conditioners, toilets, etc.)	T5	×	×	✓	×	×
4	Empathy (attention)	Driver Drive safely	E1	✓	×	×	✓	×
		The car departs after the passenger is seated	E2	✓	×	×	×	×
		Staff dedicated and willing to serve	E3	✓	×	×	✓	✓
		The staff is polite	E4	✓	×	✓	×	×
		There is a channel for passengers to complain (suggestion box)	E5	×	×	✓	×	✓
5	Reliability	Stable and regular service	REL1	✓	×	✓	×	×
		The time spent traveling is concise	REL2	✓	×	×	×	✓
		Schedule frequency according to	REL3	✓	×	×	✓	✓
		Punctuality of departure and arrival.	REL4	✓	×	×	×	✓
		Large selection of ticketing routes	REL5	×	×	✓	×	×

In this research, the respondents will be given a questionnaire that is useful for respondents to judge from a scale of 1 to 10 in determining the very influence of the characteristics above to collect data and given the importance and quality of the parameters above, the smallest value has no effect, and the most significant value is very influential.



Figure 3. Grading scale

After the data is collected, data processing will be carried out in the IPA (Importance Performance Analysis) method, the results of which will be in the form of diagrams. The diagram will later see what parameters must be developed, what parameters must be maintained in quality, what parameters can be omitted, and what parameters can be lowered in quality.

4. Result And Analysis

The questionnaire is distributed directly to respondents who are leaving or using transportation. Two types of respondents are riding a double-decker bus for the first time, and those who have boarded and want to ride the double-decker bus. Questionnaires are distributed at the intercity bus terminal between Bulak Kapal and east Bekasi provinces. Those who will be processed are respondents who have already boarded double-decker buses. The respondents were among the 55 respondents collected.

Respondents had different characteristics for gender alone, and there were 23 male respondents and 32 female respondents. For ages ranging and fulfilled, respondents aged 21 to 30 years with 42 respondents, the remaining four were under 20 years old, four were over 41 years old, and five were aged 31 to 40 years. The last education respondents also varied for those who achieved high school, and there were 14 respondents for S1 there were 24 respondents. For S2 there was one respondent, and for D3, there were 16 respondents. For the income of respondents received, there are various kinds. For those who have not earned, there are three respondents, and for income below Rp. 2,000,000, there are two respondents with an income of Rp. 2,000,000 to Rp. 6,000,000, there are 30 respondents. For those above Rp.6,000,000, there are 19 respondents, and those with incitement are not necessarily one respondent. What is interesting is that all respondents who use double-decker buses have vehicles. For those who have motor vehicles, there are 55 respondents, and for those who have car vehicles, there are 19 respondents. The data can be seen in table 2.

Table 2. Characteristic of Respondents.

Variables	Category	Frequency	Relative Frequency
Gender	Male	23	41,8%
	Female	32	58,2%
Age	Under 20 th	4	7,2%
	21 - 30	42	76,4%
	31 - 40	5	9,2%
	Over 41 th	4	7,2%
Education Background	High School	14	25,2%
	S1	24	43,7%
	S2	1	1,9%
	D3	16	29,2
Income/Month	Not earning yet	3	5,6%
	Under Rp. 2.000.000	2	3,7%
	IDR 2,000,000 – IDR 6,000,000	30	54,4%
	Over IDR 6,000,000	19	34,4%
	Indeterminate	1	1,9%
Vehicle Ownership	Motorcycle	55	100%
	Car	19	34,4%

From the respondent's data above, the respondent expressed his opinion about the importance and satisfaction of being a double-decker bus passenger with the parameters above. Moreover, the result can be seen in figure 4. In these results, the Responsiveness domain of the parameter with the code RES5 (Staff pays special attention to female passengers, children, the elderly, and with disabilities) is in quadrant one, which means that the parameter must be increased because the importance level is high while the performance is low. The parameters with the code RES3 (Staff response to passenger requests) are in quadrant three, which means that the level of importance and performance is low so that it can be ignored. Meanwhile, parameters with the codes RES1 (Fast service operation), RES2 (professional and competent staff), and RES4 (Response staff in assisting passengers) can be ignored or can be reduced in performance to be balanced with their interests but do not need to be eliminated because a respondent has a high interest in these parameters.

As for the Assurance domain, the parameters with the codes A2 (passengers feel safe when traveling), A3 (Security from criminals when in the vehicle), A4 (Security from criminals when in the terminal), and A5 (Vehicle safety such as seat belts and glass hammers) are in quadrant two, which means that the level of importance and performance is high so they must focus on maintaining performance so that it can be consistent and balanced with

the level of importance. Parameters with code A1 (the ability of officers to perform their duties) are in quadrant three where importance and performance are low, so they can be ignored.

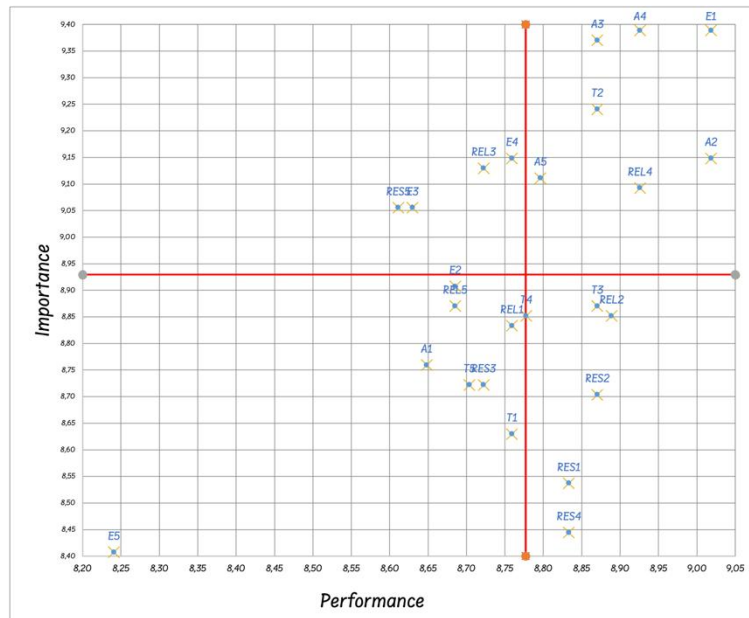


Figure 4. Cartesian Diagram

As well as for the Tangible domain in the parameters with the code T2 (Clean toilet) is in quadrant two, which means that the level of importance and performance is high, so it must focus on maintaining performance so that it can be consistent and balanced with the level of importance, for parameters with codes T4 (Vehicles have facilities for the elderly such as handrails), T5 (Availability of facilities (seats, TVs, power plugs, emergency equipment, air conditioning, toilets, etc.)), and T1 (New and clean vehicles) are in quadrant three which means that the level of importance and performance is low so that they can be ignored. As for the parameter with the code T3 (AC works well), being in quadrant four can be ignored or can be reduced in performance to be balanced with its importance but does not need to be eliminated because several respondents have high importance in the parameter.

In the Empathy domain, parameters with E4 (The staff is polite), and E3 (Staff is dedicated and willing to serve) are in quadrant one, which means that the parameters must be increased because the importance is high while the performance is low. However, the parameter with the code E1 (Driver Driving safely) is in quadrant two, which means that the level of importance and performance is high, so you must focus on maintaining performance so that it can be consistent and balanced with the level of importance. Moreover, for parameters with code E2 (The car departs after the passenger is seated), E5 (There is a channel for passengers to complain (suggestion box)) is in quadrant three, which means that the level of importance and performance is low so that it can be ignored.

Moreover, domain Reliability on the REL3 parameter (Schedule frequency accordingly) is in quadrant one, which means that the parameter must be increased because the importance level is high while the performance is low. The parameters with the REL4 code (timeliness of departure and arrival) are in quadrant two, which means that the level of importance and performance is high, so you must focus on maintaining performance so that it can be consistent and balanced with the level of importance. Parameters with the code REL1 (Service stable and regular) and REL5 (Many ticket purchase route options) are in quadrant three, which means that the importance and performance levels are low so that they can be ignored. However, parameters with the REL2 code (Time spent traveling very short) being in quadrant four can be ignored or reduced in performance to be balanced with their importance but do not need to be omitted because several respondents have high importance in these parameters.

5. Conclusion

In these results, at the average limit of interests, they got a score of 8.93, and satisfaction got a score of 8.78. If calculated, the gap between the average value of interests and satisfaction is -0.15. From this gap, it means that the

level of importance and performance of bus transportation level can be said to be sufficient. But still has to be improved performance because we can see that in quadrant one, there are still four parameters that can be increased so that there is a possibility to reduce the gap in the average value of the performance. Improving the performance of these services is very important to improve the quality of double-decker bus transportation so that the interest of public transportation users such as intercity buses between provinces is even better and can reduce congestion problems during Eid al-Fitr which until now has not been completed significantly.

Bibliography

- Andriyani, A., Dermawan, W. B., Isradi, M., Rifai, A. I. (2021), Operational Performance Analysis of Rapid Transit Bus (BRT) Corridor 11 in Pulogebang Bus Station, *World Journal of Civil Engineering* Vol. 2 No. 2, pp 71-80
- Agustien, T., & Haryono, T. (2021). Service Improvement Priorities of Train Transport Service: Evidence from Indonesian Economy-Premium Train. *International Journal of Applied Business Research*, 67-88.
- Agustina, F., Septiani, N., Suryobuwono, A. A., & Widiyanto, P. (2021). Bus Occupancy Rate At The Pulo Gebang Integrated Terminal For Java Island And The Losses Experienced By Bus Companies During The 2021 Eid Homecoming Ban. *Advances in Transportation and Logistics Research*, 343-351.
- Al-Deek, H., Sandt, A., Alomari, A., & Hussain, O. (2017). A Technical Note On Evaluating The Effectiveness Of Bus Rapid Transit With Transit Signal Priority. *Journal of Intelligent Transportation Systems*, 227-238.
- Alkharabsheh, A., Moslem, S., Oubahman, L., & Duleba, S. (2021). An integrated approach of multi-criteria decision-making and grey theory for evaluating urban public transportation systems. *Sustainability*, 13(5).
- Bakhtiar, M. R., & Sunarka, P. S. (2020). The Factors of Tourist Satisfaction Enhancement In Double-Decker Tour Bus. *JKBM (Journal Of Business And Management Concepts)*, 82-93.
- Bezerra, G. C., & Gomes, C. F. (2020). Antecedents and consequences of passenger satisfaction with the airport. *Journal of Air Transport Management*, 83.
- Bezyak, J. L., & Sabella, S. A. (2017). Public transportation: an investigation of barriers for people with disabilities. *Journal of Disability Policy Studies*, 52-60.
- Boisjoly, G. G., Maguire, M., Veillette, M. P., & Deboosere, R. B.-G. (2018). Invest in the ride: A 14 year longitudinal analysis of the determinants of public transport ridership in 25 North American cities. *Transportation Research Part A: Policy and Practice*, 434-445.
- Chaisomboon, M., Jomnonkwao, S., & Ratanavaraha, V. (2020). Elderly users' satisfaction with public transport in thailand using different importance performance analysis approaches. *Sustainability*, 12.
- Fafurida, F., & Octavilia, S. (2020). Sustainable Transportation Strategy In Semarang City, Indonesia. *Test Engineering and Management*, 16868-16872.
- Fatkhurrozi, M., Sudarsana, D. K., Yuniar, D., & Suraji, A. (. (2021). Travel Time Behavior Study Of Malang-Denpasar Intercity Bus Considering Sailing Time Of Ketapang-Gilimanuk. *Journal Of Science And Applied Engineering*, 63-68.
- Hussain, A., Mkpojiogu, E. O., & Jasin, N. M. (2017). Usability metrics and methods for public transportation applications: a systematic review. *Journal of Engineering Science and Technology*, 98-105.
- Hussain, B., Zefreh, M. M., & Torok, A. (. (2018). Designing The Appropriate Data Collection Method For Public Transport Passenger Satisfaction Analysis. *International Journal for Traffic & Transport Engineering*, 8.
- Ibrahim, A. N., Borhan, M. N., Zakaria, N. A., & Zainal, S. K. (2019). Effectiveness of commuter rail service toward passenger's satisfaction: A case study from Kuala Lumpur, Malaysia. *International Journal of Engineering and Technology*, 50-55.
- Isradi, M., Nareswari, N.D., Rifai, A.I., & Prasetijo, J. (2021), Performance Analysis of Road Section and Unsignalized Intersections in Order to Prevent Traffic Jams on Jl H. Djole–Jl. Pasar Lama. *ADRI International Journal of Civil Engineering* Vol 6 No 1, pp. 56-67
- Kunith, A., Mendelevitch, R., & Goehlich, D. (2017). Electrification of a city bus network—An optimization model for cost-effective placing of charging infrastructure and battery sizing of fast-charging electric bus systems. *International Journal of Sustainable Transportation*, 707-720.
- Larasati, A. F., & Handayeni, K. D. (2021). Using Confirmatory Factor Analysis To Evaluate The Factor Determining The Bus Usage In Surabaya City, Indonesia. *Series: Earth and Environmental Science* (pp. Vol. 778, No. 1, p. 012007). Surabaya: iop publishing.

- Li, Y., Hu, C., Huang, C., & Duan, L. (2017). The Concept Of Smart Tourism In The Context Of Tourism Information Services. *Tourism management*, 293-300.
- Lincoln, M. C., & Widyastuti, H. (2020). Student satisfaction with the performance of Surabaya school buses. *IOP Conference Series: Materials Science and Engineering* (pp. Vol. 930, No. 1, p. 012068). Surabaya: IOP Publishing.
- Muenrit, K., Satiennam, W., Satiennam, T., & Jaensirisak, S. (2017). The Effects Of Psychological Factors On Travelers' Mode Choice Intention: A Case Study Of Light Rail Transit System (LRT) in Khon Kaen, Thailand. *Journal of the Eastern Asia Society for Transportation Studies*, 12.
- Ngoc, A. M., Hung, K. V., & Mr., V. A. (2017). Towards The Development Of Quality Standards For Public Transport Service In Developing Countries: Analysis Of Public Transport Users' Behavior. *Transportation Research Procedia*, 4560-4579.
- Partogi, J., Dewangga, M. I., & Hutauruk, P. S. (2017). The Analysis Of Customers'satisfaction Towards Commuter Line Train Service A Case Study At Bekasi Station, Bekasi-Jakarta Kota Route. In *Global Research on Sustainable Transport (GROST 2017)* (pp. 629-641). Jakarta: Atlantis Press.
- Rifai, A. I., & Fajriliani, Y. I. (2020). Analysis of Passenger Satisfaction Level of Service And Facilities of Electric Rail Train (KRL) Commuter Line Route Bekasi - Manggarai. *Journal of World Conference*, 127.
- Rifai, A. I., Hadiwardoyo, S. P., Correia, A. G., & Pereira, P. A. (2016). Genetic Algorithm Applied for Optimization of Pavement Maintenance under Overload Traffic: Case Study Indonesia National Highway. *Applied Mechanics and Materials (Vol. 845)* (hal. 369-378). Trans Tech Publications Ltd.
- Rifai, A. I., Hadiwardoyo, S. P., Correia, A. G., Pereira, P., & Cortez, P. (2015). The data mining applied for the prediction of highway roughness due to overloaded trucks. *International Journal of Technology*, 6(5), 751-761.
- Tsami, M., & Nathanail, E. (2017). Guidance provision for increasing quality of service of public transport. *Procedia Engineering*, 551-557.
- Velasco, E., & Segovia, E. (2021). Determining a Commuters' Exposure to Particle and Noise Pollution on Double-decker Buses. *Aerosol and Air Quality Research*, 21.
- Warnars, H. L., Lanita, Y. P., & Randriatomanana, R. (2017). Smart Integrated Payment System For Public Transportation In Jakarta. *Bulletin of Electrical Engineering and Informatics*, 241-249.
- Yuliana, N., & Mas' ud, F. (2020). Analysis Influence Of Human Resource Management Practices On Study Employee Performance at PO. Holy Haryanto. *AFEBI Islamic Finance and Economic Review*, 74-85.
- Zhen, F., Cao, J., & Tang, J. (2018). Exploring correlates of passenger satisfaction and service improvement priorities of the Shanghai-Nanjing High Speed Rail. *Journal of Transport and Land Use*, 559-573.