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THE LEVEL PERFORMANCE ANALYSIS OF SERVICE: A CASE OF JALAN I GUSTI NGURAH RAI, JAKARTA

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ABSTRACT

Jalan I Gusti Ngurah Rai, which is located in the Administrative City of East Jakarta, is one of the areas with quite crowded visitors because it is one of the access roads connecting Bekasi City to Jakarta, and there is a train station and TransJakarta bus stop which is a travel accommodation to the destination. This study aims to determine the level of pavement service performance on the Jalan I Gusti Ngurah Rai section, East Jakarta. This research was conducted using a questionnaire instrument distributed through a google form. The analysis method used in this study is Importance Performance Analysis (IPA) by comparing the satisfaction and importance values of pedestrians passing through the sidewalk. The results showed that the average pedestrian interest index was 4.44, the average service index was 4.03, and there was an average GAP for each variable of -0.42. From the processed data, it was concluded that the performance of the pavement service level could be categorized in class A with some maintenance that needs to be improved.

INTRODUCTION

Jakarta is a metropolitan city that connects the surrounding towns (Bogor, Depok, Bekasi, and Tangerang). Its role as the capital of the country and the central region of the economy and business makes Jakarta famous as a city with reasonably high mobility and traffic density in Indonesia. It has led to transport authorities and urban planners focusing on a road infrastructure design model that focuses on safe access for motorists only and forgetting that pedestrian facilities are the essential part of a travel chain and that pedestrians have the right to safety and comfort on-road use (Frazila, Zukhruf, Simorangkir, & Burhani, 2019).

Some cities in developed countries have begun to make policies to strive for a good quality of life by improving pedestrian services to reduce significant air pollution, noise, and accident rates. However, currently, there are still many cities found, one of which is Jakarta, with sidewalk conditions that need to meet the standard requirements made for pedestrian facilities and are considered unable to serve the rights and needs of pedestrians following the requirements of safety and comfort. Typical of these sidewalks are often dirty and too narrow, there is a diversion of sidewalk function and is sometimes aggravated by adverse weather conditions, installation of low-

quality sidewalk facilities, and lack of maintenance around the sidewalk area (Amprasi, Politic, Nikiforiadis, & Basbas, 2020); (Corazza, Di Mascio, & Moretti, 2017).

Jalan I Gusti Ngurah Rai, which is located in the Administrative City of East Jakarta, is one of the areas with quite crowded visitors because it is one of the access roads connecting Bekasi City to Jakarta, and there is a train station and TransJakarta bus stop which is a travel accommodation to the destination. For this reason, Jalan I Gusti Ngurah Rai is expected to be able to provide a good and satisfying pedestrian service infrastructure. Therefore, the success of sidewalk performance, as defined and its function, is judged by how capable the sidewalk offers comfort and safety for pedestrians in that area of the street (Philanthropist, Bagaskara, Isradi, & Mufhidin, 2021).

On the other hand, the existence of sidewalks around the train station area and TransJakarta bus stop on Jalan I Gusti Ngurah Rai are often misused as an online transportation parking lot and a place to sell street vendors so that pedestrians usually take part of the shoulder of the road to continue the journey. Therefore, it is necessary to evaluate the level of pedestrian satisfaction with the performance of sidewalk facilities as a reference to improve service and pedestrian satisfaction so that there is a change in the pattern of pedestrian behavior that is better and more enjoyable (Mutiawati, Suryani, Faisal, & Ahlan, 2020).

Literature Review

1. Pedestrian

   The pedestrian is one of the essential objects that cannot be separated from a chain of travel. A pedestrian can be defined as a subject who carries out activities or moves from one place to another with both feet as his means of transportation. Pedestrians come of different ages and usually decide to walk when they feel comfortable and interested in walking in the area (Corazza, Di Mascio, & Moretti, 2017).

   In a study, pedestrians are very flexible and can respond to events quickly but are prone to accidents due to their unexpected behavior. Because of these events, pedestrians are entitled to the availability of particular infrastructure and facilities that are comfortable and safe. Therefore, safety for pedestrians should also be the main focus for transportation authorities, urban planning planners, and researchers in designing road infrastructure (Deb, et al., 2017); (Rifai, End, Isradi, & Mufhidin, 2021); (Deb, et al., 2017).

2. Sidewalk

   A sidewalk is a footpath located in the area of use of the road, and its elevation is higher than the pavement surface and generally parallel to the axis of the road. Sidewalks are essential infrastructure for roads, so when sidewalks do not meet the requirements of being safe and comfortable for pedestrians, it will cause inconvenience effects and potential dangers to pedestrians (Philanthropist, Bagaskara, Isradi, & Mufhidin, 2021); (Jiang, Han, Li, Bai, & Wang, 2022).

   The role of sidewalks in activities in urban areas becomes essential because it protects and maintains the safety of pedestrians. Sidewalks can also increase the motivation of

pedestrians to carry out physical activities such as shopping and sightseeing. However, although the function and presence of sidewalks are essential, sidewalks still cannot take all the attention from researchers to research and develop sidewalk facilities even more intensely (Talen & Jeong, 2019); (Tani, Hanazato, Fujiwara, Suzuki, & Kondo, 2021); (Sousa, Coutinho-Rodrigues, & Natividade-Jesus, 2017).

Good sidewalks must be planned accordingly, meet various quality indices, and ensure everyone has inclusive and safe access. The pavement factors that significantly influence the feasibility of the pavement quality are traffic situations, the feeling of safety, convenience, and comfort, the maintenance of road infrastructure (including sidewalks and surrounding signs), and aesthetics. Therefore, the road infrastructure control authority and its planners are expected to be able to design sidewalks according to their function and comfort (Rocha et al., 2019); (Sahani, Ojha, & Bhuyan, 2017).

3. *Level of Service (LOS)* Sidewalks

The level of *service (level of service)* of the sidewalk is influenced by several factors, namely the availability and width of the sidewalk, the quality of the sidewalk, crossing facilities, street lighting, and others. These factors are used to determine how feasible and how satisfied pedestrians are with the performance of sidewalk function services. However, pedestrian satisfaction also has random characteristics, so it isn't easy to relate the relationship between the factors that influence it (Bivina & Parida, 2019); (Shu, Bian, Zhao, Rong, & Liu, 2021).

The value of the pavement service level dramatically affects the unprotected area and strongly considers the unique needs of people with disabilities. However, the value of the pavement service level also emphasizes the facility's characteristics and ignores user perceptions and user efforts to walk (Campisi, Canale, Tesoriere, Lovric, & Čutura, 2019); (Wibowo & Nurhalima, 2018).

4. Pedestrian and Sidewalk Problems

Sidewalks are an essential part of a sustainable transportation system. The pedestrian safety factor is still the main point in building a sidewalk. However, the existence of sidewalks as a safety provider that was supposed to be something that its users can feel now no longer an essential part of pedestrians (Sari, Wiranegara, Hardjakusumah, & Luru, 2020); (Kweon, Rosenblatt-Naderi, Ellis, Shin, & Danies, 2021).

In addition to safety factors, the misuse of sidewalk function is a significant issue faced by pedestrians. One of the criteria contributing to achieving good pavement quality is adjusting the sidewalk's condition focusing on its functional performance, namely as an area that all its users can access. However, some sidewalks in the city of Jakarta have begun to lose their function due (Di Mascio, D'Alessandro, Moretti, & Corazza, 2020) to a large number of street vendors and online transportation drivers who have begun to take over the sidewalk land so that the value of the quality of the sidewalks has started to decrease.

METHOD

This study was conducted to determine the level of pavement service performance on the Jalan I Gusti Ngurah Rai section, East Jakarta. The area has a sidewalk length of 500 meters, and users of public service transportation services such as KRL, TransJakarta, public transportation, and other online transportation often use the area. This study location is around Buaran Station and Raden Inten Trans Jakarta Stop, shown in Figure 1.



Figure 1. Gusti Ngurah Rai Road Research Location

This research was conducted in December 2022 through an online survey which will be disseminated using the google form facility to all pedestrians who use the sidewalk of Jalan I Gusti Ngurah Rai as access to connect them from their place of origin to their destination and pass through the sidewalk for the past three years. The study was followed by 70 respondents, of which only 52 accessed sidewalks on the road.

In a series of studies, data is an essential thing that affects the process and results of the study. The data used in this study are primary data and secondary data. Primary data were obtained through an online survey with a questionnaire instrument. The data obtained from the questionnaire results aims to recognize information about pedestrian characteristics and how satisfied and comfortable pedestrians are with the service of sidewalk facilities on Jalan I Gusti Ngurah Rai. The analysis and processing of data from the results of this survey use the Importance Performance Analysis (IPA) method so that it is easy to represent to determine which indicators should be maintained, corrected, and reduced to determine the level of service (LOS) and maintain pedestrian satisfaction with the sidewalks on the Jalan I Gusti Ngurah Rai section.



Figure 2. Sidewalk Conditions on Jalan I Gusti Ngurah Rai

RESULTS AND DISCUSSION

The results obtained from an online survey that was distributed using the Google From platform and filled in by 52 respondents who passed the sidewalk of Jalan I Gusti Ngurah Rai obtained the following classification of pedestrians.

1. Characteristics of Pedestrians

   From the results of an *online* survey distributed through the Google Form platform, out of 52 respondents, the characteristics of pedestrians were dominated by women at 54% and men at 46%, the age range of 21-30 years with results of 50%. The majority of 37% of users of these sidewalks come from private employees, with the primary purpose of 58% of respondents being to work.

Table 1. Characteristics of Pedestrians

No	Characteristics of Respondents	Variable	Value (%)
1	Gender	Man	46%
		Woman	54%
2	Age	< 20 years	25%
		21 - 30 years old	50%
		31 - 40 years old	19%
		41 - 50 years old	6%
		51 - 60 years old	0%
		> 60 years	0%
3	Final Education	SD	0%
		JUNIOR	0%
		SMA	35%
		D3	0%
		D4/S1	50%
		S2	15%
		S3	0%
4	Types of Work	Private Employees	37%
		SOE employees	12%

		Civil Servants/Police/TNI	17%
		Self-employed	4%
		Students	31%
5	Domicile	Jakarta	81%
		Bekasi	12%
		Bogor	0%
		Tangerang	0%
		Depok	8%
6	Frequency of Passing Through the Sidewalk	<3 times	17%
		3-10 times	25%
		> 10 times	58%
7	The primary purpose of sidewalks	Work	58%
		School or College	17%
		Sport	9%
		Recreation	8%
		Shop	8%

The level of pedestrian education is dominated by respondents who have passed D4 / S1 with a result of 50%, followed by some students who have graduated from high school by 35%. Around 81% of Jalan I Gusti Ngurah Rai pavement users are domiciled in Jakarta, and the frequency of pedestrians passing through the sidewalk over the past three years has been more than ten times by 58%.

2. Level of Importance and Satisfaction

Comparisons between pedestrian interests and satisfaction need further study to analyze sidewalk service performance suitability with road users' expectations. A GAP between pedestrian interests and satisfaction indicates a discrepancy in road user expectations and the level of pavement service, so it is necessary to evaluate facility improvements and maintenance of these sidewalks.

Table 2. Importance and Pedestrian Satisfaction Analysis

No	Variable	Importance	Performance	GAP
A1	Curb Width	4.42	3.98	-0.44
A2	Sidewalk Surface	4.50	4.42	-0.08
A3	Sidewalk Lighting	4.50	4.17	-0.33
A4	Shading Facilities	4.58	4.25	-0.33
A5	Cleaning Facilities	4.50	4.17	-0.33
A6	Crossing Zone Facilities	4.58	3.42	-1.17
A7	Disability Facilities	4.42	4.08	-0.33
A8	Facilities Stop / Stop	4.58	4.00	-0.58

A9	Road Separator Condition (Kerb)	3.92	3.76	-0.16
	Average	4.44	4.03	-0.42

From the results of an *online* survey conducted on 52 respondents, an average pedestrian interest factor of 4.44 was obtained. All variables in Table 2 are included in the critical category. On the average satisfaction factor of pedestrians with the performance of sidewalk services, it can be categorized as satisfied with a satisfaction score of 4.03. When viewed from Table 2, there is still a GAP between the value of importance and average satisfaction of pedestrians of -0.42 (negative), which indicates a discrepancy between pedestrian expectations and the performance of sidewalk services on Jalan I Gusti Ngurah Rai. The existence of the GAP is also an evaluation for road infrastructure authorities and planners to improve sidewalk facilities and improve their maintenance.

In terms of width and surface, the pavement is good but still needs a slight improvement and improvement in the function of the sidewalk. Adding pavement width and granite stone surfaces on the sidewalks still requires little maintenance. The lighting around the sidewalks of Jalan I Gusti Ngurah Rai, especially the Buaran Station area and TransJakarta Bus Stop, is already functioning properly. However, it needs improvement at some points where the lights need to be brighter. Shading facilities in the area still need to be improved because it still relies on shading facilities from stations, stops, and areas under the Buaran flyover, so it still needs additional shading facilities for several sections of the road. Stops and road dividers are essential.

The cleanliness facilities in the sidewalk area are good. There are landfills with several categories and road sweepers actively cleaning the sidewalk area but still need repairs to maintain the sidewalk. There is still much improvement in the crossing zone facilities because the crossing facilities on the sidewalks need to provide a sense of security and comfort for pedestrians. The GAP value between this variable's level of importance and satisfaction is enormous, around -1.17 (negative). It indicates that the variable is very far from road users' expectations. The provision of road and traffic signs for crossing people needs to be done to support pedestrian crossing activities.

Other variables such as disability facilities, stop or stops, and road separation conditions need to be improved even more because they have a reasonably high GAP (-0.58, -0.16, -0.42) which indicates that these variables are still far from road user expectations and urgently need further action for the improvement of sidewalk facilities.

3. *Importance Performance Analysis (IPA) Analysis*

The results of *online survey data* through Google Forms on pedestrian perceptions of the importance and performance of sidewalk services were analyzed using the *Importance Performance Analysis (IPA)* method, represented in the form of a quadrant graph. Quadrant I is a top priority, indicating that improvements are urgently needed because of the high importance value. However, the performance of the level of service provided by the pavement

could be better. Quadrant II is a defense of achievement in which the value of importance and implementation of the pavement is considered high. In quadrant III, it is a low priority and is considered not something that should be taken seriously. Finally, quadrant IV is considered excessive because it has low importance but high pavement service performance.

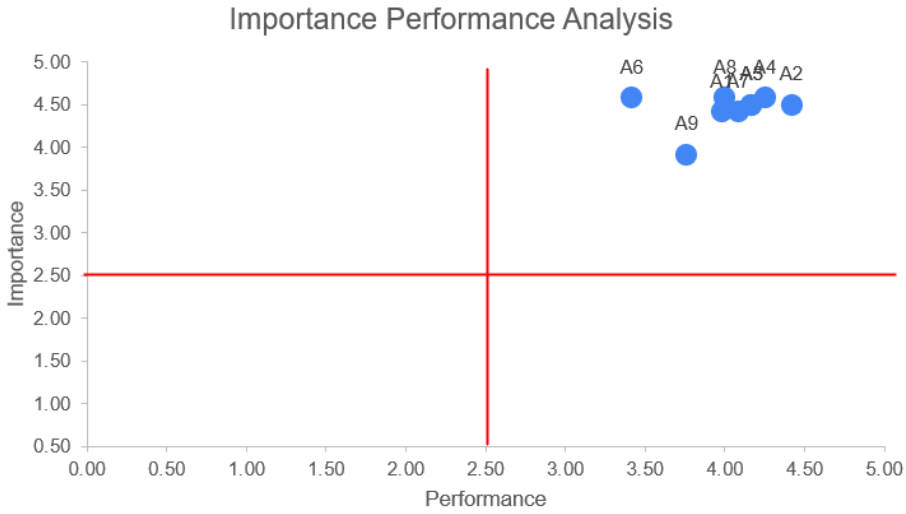

Figure 3. Importance Performance Analysis (IPA) Graph

Following the results of the study, the performance of sidewalk services on Jalan I Gusti Ngurah Rai is categorized as having a level A service standard. Pedestrians are satisfied with the facilities on the sidewalk and are not bothered by the presence of street vendors and online transportation parking around the sidewalk. However, these achievements must be maintained and improved, given that there is still a GAP between pedestrian interests and satisfaction in the area.

CONCLUSIONS

Based on the research results, the pavement service performance on the Jalan I Gusti Ngurah Rai section is categorized as very good or includes level A. It is evidenced by the processed data replicated in a graph with the Importance Performance Analysis (IPA) method. The level of importance and public satisfaction with the performance of sidewalk services is included in quadrant II, which is an achievement that should be maintained. The sidewalk condition on Jalan I Gusti Ngurah Rai is entirely satisfactory for pedestrians. Still, pavement maintenance needs improvement, considering there is still an average GAP in each variable.

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