

ANALYSIS OF USER PERCEPTION OF THE COMFORT LEVEL OF PEDESTRIAN PATH IN THE TRADITIONAL MARKET AREA OF KADIPATEN, MAJALENGKA

Angga Pratama¹, Indrastuti²

¹Faculty of Engineering, Universitas Majalengka, Indonesia

²Faculty of Civil Engineering & Planning, Universitas Internasional Batam, Indonesia

E-correspondence: anggapratama100393@gmail.com

ARTICLE INFO	ABSTRACT
<p>Keywords:</p> <p>Pedestrian Comfort, Pedestrian Path, Traditional Market</p>	<p><i>Pedestrian facilities are a means of transportation to facilitate and provide comfort for outdoor activities. Currently, the Majalengka Regency Government Public Works and Spatial Planning Office of Majalengka Regency continues to improve the development sector, namely the improvement of pedestrian paths in several areas, one of which is the construction of pedestrian paths in the Kadipaten Traditional Market Area. Everyday path is always crowded with visitors, not only buying and selling activities in the market, but some want to enjoy the scenery. It makes the pedestrian path a very dense zone and becomes for comfort in activities in public spaces. The study aims to determine the influence of conditions in the pedestrian area on the felt. The methods used are qualitative and quantitative, by conducting physical observations and then validating the findings of physical observation with opinions from users obtained from the results of the distribution of 100 questionnaires about the conditions of the pedestrian path that affect the comfort of user perception. the study concluded that 100 samples of road user respondents stated that the condition of the pedestrian path obtained a good predicate with a score of 2.59 (scale 4). The highest score was the safety factor score from the pedestrian condition. Final results showed that 73% of respondents stated that the pedestrian path in the Kadipaten Traditional Paasar Area had fulfilled comfort.</i></p>

1. Introduction

In this era of advanced development, all transportation modes have daily activities. The development of modern transport infrastructure cannot ignore the existence of pedestrians. Road planning interaction among different types of road users, including pedestrians, train drivers, signal operators, cyclists, motorcyclists, and motorists, is a very vital part in some countries (Barić, Pilko, & Starčević, 2018). A small street without a sidewalk is a space activity that threatens the safety of pedestrians (Lee & Kim, Perceived safety and pedestrian performance in pedestrian priority streets (PPSs) in Seoul, Korea: A virtual reality experiment and trace mapping, 2021). These streets, alleys, side streets, or access roads exist all over the world, including in fast-growing metropolis where infrastructure development has not kept pace with economic growth, and in older cities in developed countries where organic patterns still exist (Lee & Kim, Shared space and pedestrian safety: Empirical evidence from pedestrian priority street projects in Seoul, Korea, 2019). On such roads, pedestrians are forced to share space with vehicles in extremely dangerous conditions (Lee & Kim, Shared space and pedestrian safety: Empirical evidence from pedestrian priority street projects in Seoul, Korea, 2019).

With the increasing population in the world, it is necessary to change the mode of transportation, one of which is pedestrian facilities. A pedestrian is a pedestrian path that prioritizes the comfort and safety of users on trips without transportation. There needs to be a comfort factor in the pedestrian path

because of the comfort of the right part that must be owned or felt by the community when carrying out activities. Walking is one of the most important means of transportation today, and pedestrian safety, especially when crossing roads, is one of the challenges for highway safety researchers. In addition to social, cultural, and other impacts, pedestrian casualties and injuries result in significant economic losses in any country (Sheykhfard, Haghighi, Papadimitriou, & Van Gelder, 2021).

Pedestrian paths are used by pedestrians and people with disabilities to reach a place, move from one place to another, connect a destination, or perform other activities in urban space. Pedestrian paths ensure the smooth flow, comfort, and safety of people in urban spatial activities, and help create urban spatial activities that are harmonious and accessible to all walks of life (Hetyorini, Mukti, & Maulana, 2023).

The traditional market area of Kadipaten is one of the markets in Majalengka Regency and is also traversed by road users, including pedestrians. Access to the Duchy market did not previously provide comfort for its users, so in 2019, a pedestrian path facility was built by the Majalengka Regency Government. Public facilities were partially damaged due to several factors, for example, the sidewalks that street vendors (PKL) used, benches that were supposed to be used for general needs for sale, and some park lights not on. Due to the dual function in the use of the pavement, this makes pedestrian paths in this area less convenient. Safety, security, comfort, and comfort are the combination of systems the foot needs to feel comfortable (KÜÇÜKYAĞCI & Özgün, 2018).

Factors affecting the level of service of pedestrian facilities, internal and external factors. Rephrase internal factors include the characteristics and behavior of users of pedestrian facilities, and external factors include the condition of the structure of the pedestrian facility, the influence of the speed of vehicles around it, and the presence or absence of vehicle separation lines (Raji, Solanke, & Alli, 2021). Pedestrian paths related to pedestrian needs can lead to a walking environment that is inhospitable to pedestrians. This can create fear and insecurity when passing through pedestrian paths (Monterde-i-Bort, Basbas, Johansson, Leden, & Gårder, 2019). The research aims to analyze the perceptions of pedestrian path users in the Kadipaten Traditional Market area regarding comfort aspects related to the maintenance and public awareness of maintaining public facilities.

2. Literature Review

2.1 Pedestrian Perception

Walking is the most environmentally friendly and healthy mode of transportation (Pooley, 2021). In Indian cities according to (Nag, Bhaduri, Kumar, & Goswami, 2020), Although the proportion of walking is very high, most pedestrian paths are underutilized, unsafe, or poorly maintained. Therefore, studies that measure user satisfaction and non-motor vehicle facilities are needed to establish the basis of the current state of infrastructure and user perceptions. The policy paradigm is being shifted from car-centered to pedestrian-centered policies, and pedestrian-related legislation, programs, and projects are actively promoted as part of national policies such as low-carbon, environmentally friendly economic growth (Lee, Han, Rhee, & Bae, 2021).

In recent years, walking has become an important research topic in transportation planning. Over the past 30 years, people have preferred to walk to reach their nearest destination to overcome many problems such as traffic jams, air pollution, global warming, and obesity to avoid other health disorders (Sahani & Bhuyan, 2020).

The result of the study showed that street lighting is a mandatory facility to enhance the feeling of safety on the streets followed by the morphology of the street formed by various types of businesses,

outdoor dining, and other pedestrian activities (Park & Garcia, 2020). In addition to the physical environment, pedestrian anxiety levels can affect gender and age factors (Park & Garcia, 2020).

The problem of pedestrian facilities in urban areas in Indonesia is that the needs of pedestrians have not been met both in terms of quality and quantity (Isradi, Dermawan, Mufhidin, Sari, & Prasetyo, 2020). There are many possible causes of the government's lack of response to the need for pedestrian facilities, the switching of facility functions from public space to parking lots and five street vendors (Isradi, Dermawan, Mufhidin, Sari, & Prasetyo, 2020). Data shows that pedestrian accidents are caused by a lack of pedestrian facilities such as sidewalks and flyovers (Isradi, Dermawan, Mufhidin, Sari, & Prasetyo, 2020).

2.2 Pedestrian

Mobilization of pedestrians on sidewalks in urban environments is key to sustainable social and economic relations and is important for improving and maintaining quality of life (Marisamynathan & Vedagiri, 2018). People on foot utilize walkways to reach their goals (Pratama, Rifai, & Thole, 2022).

People on foot are less limited by activity rules and lawful directions so have a high degree of opportunity for development and adaptability of choice which is another enormous challenge in modeling, strolling is additionally considered one of the foremost eco-friendly and eco-friendly modes of transportation (Tong & Bode, 2022).

Pedestrian paths are paths provided specifically for pedestrians, where on this path there is the possibility of social interaction both interaction between humans and the surrounding environment and with fellow humans (Noviandini Z. P., Dewi, Laksitoadi, & Widyarta, 2020). Walking activities are also a fairly simple mode of transportation and are also environmentally friendly (Fisher-Gewirtzman, 2018).

2.3 Pedestrian Path Comfort

(Nasution & Fuady, 2023) The comfort of pedestrian path users is influenced by several factors, including Circulation, Safety, Climate or natural forces, Noise, Hygiene, Aroma or odors, Form, and Beauty. In addition to adequate pedestrian paths, attractiveness indicators are also things that need to be considered because they can increase motivation to walk (Mardalena & Murwadi, 2023). By meeting these factors, pedestrian lane users will be comfortable carrying out activities using pedestrian paths (Noviandini Z. P., Dewi, Laksitoadi, & Widyarta, 2020).

A sidewalk is a pedestrian path that is located within the use area of the road and has a surface higher than the surface of the vehicle path. The function of the pavement itself is to provide safety and comfort to pedestrians (Johanes, Dermawan, Isradi, & Rifai, Analysis of the Satisfaction Level of Sidewalk Users:(Case Study on Jl Jendral Ahmad Yani Bekasi), 2022).

(Johanes, Dermawan, Isradi, & Rifai, Analysis of the Satisfaction Level of Sidewalk Users:(Case Study on Jl Jendral Ahmad Yani Bekasi), 2022) common problems associated with pedestrian facilities include the deterioration of the physical shape of the sidewalk, and the use of sidewalks as a location for other activities, such as street vendor areas, car parks, and signs.

2.4 Traditional Market

(Wahyudi & Subham, 2023) A traditional market is a place where the activities of sellers and buyers are carried out directly in a retail form, both temporary and permanent, with a limited level of service. Generally, the general public understands that a traditional market is a place or location where buyers and sellers meet to negotiate the price of goods to be sold, usually trading household goods, agricultural produce, and seafood (Ilhami, Abbas, Mutiani, Jumriani, & Rusmaniah, 2022).

Logistics and transport allow economic development but are traditionally less efficient in urban areas, which are characterized by people with different interests interacting within adjacent distances (Rose, Bell, Autry, & Cherry, 2017). There are potential impacts from traffic congestion, pollution, and vehicle noise, as well as business opportunities from expanding your customer base and economies of scale. Making cities pedestrian-friendly while ensuring safety and high quality of life for its residents is a major challenge for city planners and logistics service providers (Rahayu, Rifai, & Akhir, 2022).

For people with disabilities and the elderly to easily access and perform outdoor activities, they must be provided with facilities that meet their comfort and safety requirements (Wulanningrum, 2021).

3. Method

This research uses qualitative methods as well as quantitative methods. According to (Mappasere & Suyuti, 2019) The qualitative approach can be taken by observation, interviews, documentation, or a combination of all three. This research was conducted by taking data from field observation, interviews, and questionnaires. The data will be assessed by scoring and the percentage is then described.

The study will be conducted from October to December 2023. Conducted research in the Kadipaten traditional market area, Majalengka Regency. The population used in this study is all pedestrians in the Kadipaten Traditional Market Area. Sampling in this study was carried out by random sampling technique totaling 100 people.

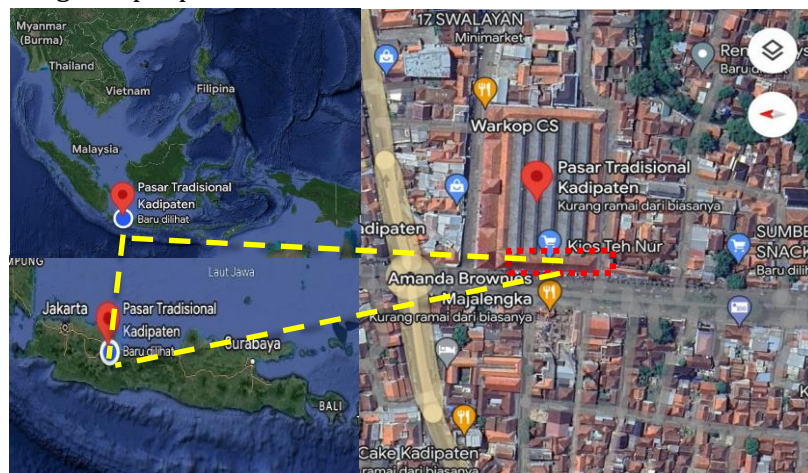


Figure 1. Map of the Research Location.

4. Results and Discussion

The pedestrian path is a public facility used to carry out outdoor activities and facilitate road access from one place to another. Related pedestrian line is located in the Kadipaten Traditional Market Area, one of the benefits is to facilitate buying and selling transactions. The pedestrian situation can be seen in Figure 2.



Figure 2. Pedestrian situation.

Data was obtained from the distribution of questionnaires randomly 100 respondents. From the results of the distribution of questionnaires, data were obtained on the condition of pedestrian paths. Figure 3 shows respondents' opinions on pedestrian paths.

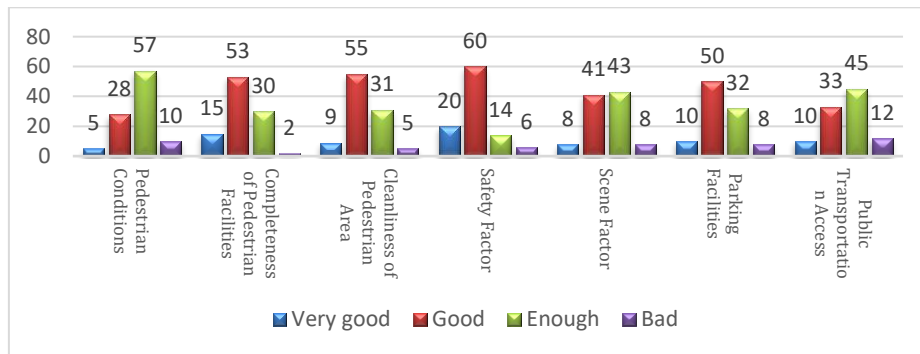


Figure 3. Results of questionnaire data regarding the condition of pedestrian paths

In the data, figure 3 is a sample of filling out a questionnaire about user perceptions of pedestrian conditions in the Kadipaten Traditional Market Area. The average user perception states good and, only one point with enough statements is the point of smooth circulation of pedestrian paths. Then from the data, questionnaire data was taken about users' opinions on the comfort of public spaces in the Duchy Market Area.

Based on the observations, the data will be compared with the perceptions of pedestrian lane users in the Duchy Market Area with the following assessment score criteria:

- a. Very good = 4
- b. Good = 3
- c. Enough = 2
- d. Bad = 1

From some of the score criteria above, the total number of scores will be calculated, then an average score will be obtained by dividing the number of respondents so that later the final score will be obtained from the condition of the Pedestrian Path which is matched with the number description table (table 1):

Table 1. Description of Score Rating Numbers

Skor	Deskripsi
(0 - 1)	Bad
(1,1 - 2)	Enough
(2,1 - 3)	Good
(3,1 - 4)	Very good

The following is an assessment of the pedestrian path in the Kadipaten Market Area:

Table 2. Pedestrian Path Assessment Table

No.	Nama	Point	Jumlah skor	Nilai Rata-rata
1	Pedestrian Conditions	5	20	2,28 (Good)
		28	84	
		57	114	
		10	10	
2		15	60	

	Completeness of Pedestrian Facilities. (Chairs, Lighting lights, Trash bins, Bollar lane dividers, etc.)	53	159	2,81 (Good)
		30	60	
		2	2	
3	Cleanliness of Pedestrian Facilities	9	36	2,68 (Good)
		55	165	
		31	62	
		5	5	
4	Safety Factors in Pedestrian Areas	20	80	2,94 (Good)
		60	180	
		14	28	
		6	6	
5	Scenic Factors in Pedestrian Areas	8	32	2,49 (Good)
		41	123	
		43	86	
		8	8	
6	Parking Facilities	10	40	2,62 (Good)
		50	150	
		32	64	
		8	8	
7	Public Transport Access	10	40	2,41 (Good)
		33	99	
		45	90	
		12	12	
AVERAGE				2,60 (Good)

The calculation of user perception data score about the condition of the Pedestrian Path in the Kadipaten Traditional Market Area obtained a total of 2.60 (good). The smallest score was obtained from pedestrian conditions with a score of 2.28 (good) and the highest points were obtained from the safety factor of pedestrian paths with a score of 2.94 (good).

After obtaining information about user perceptions about the condition of pedestrian paths, then sample testing is continued by assessing perceptions of the overall opinions of pedestrian path users in the Kadipaten Traditional Market Area, and whether they have reached the expected quality standards. Whether the standard of comfort in public spaces has been met or not. The results of the observation evaluation are shown in Figure 4.

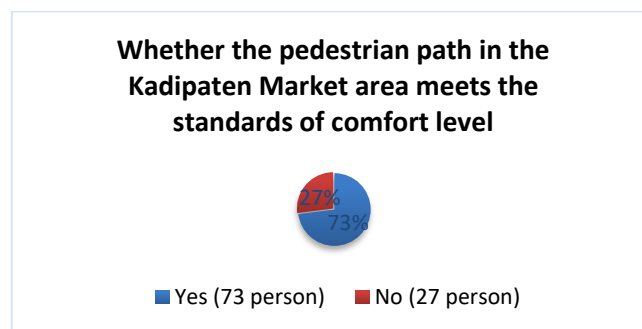


Figure 4. User perception of the comfort level of the pedestrian path

Figure 4 shows that 73 people think that the pedestrian path in the Duchy Traditional Market area has met the comfort level standard, and 27 people have not met the comfort level standard. From the results of the data above, it is stated that the pedestrian path in the traditional market area of the Duchy has met the criteria of comfort for users who are adapted to the physical conditions and existing facilities. So it can be said that the condition of the pedestrian path in the Traditional Market area does not affect comfort, related to activities in the area.

5. Conclusion

From the results of research and data analysis it can be concluded, it was concluded that 73% of users stated that they had fulfilled the comfort of the pedestrian path. The level of condition of the pedestrian path in the Kadipaten Traditional Market area is in good condition with an average value of 2.60 with the highest value both from the safety aspect (2.94) and the lowest value from the condition aspect (2.28). The a need for government and community cooperation in paying attention to and maintaining the condition of pedestrian paths that meet user comfort standards.

References

- Barić, D., Pilko, H., & Starčević, M. (2018). Introducing experiment in pedestrian behaviour and risk perception study at urban level crossing. *International journal of injury control and safety promotion*, 25(1), 102-112.
- Fisher-Gewirtzman, D. (2018). Perception of density by pedestrians on urban paths: An experiment in virtual reality. *Journal of Urban Design*, 23(5), 674-692.
- Herdiansyah, H. (2013). Wawancara, observasi, dan focus groups: *Sebagai instrumen penggalan data kualitatif*.
- Hetyorini, H. H., Mukti, S. E., & Maulana, A. M. (2023). The The Effectiveness Of The Pedestrian Path And Ramp On Jl. Imam Bonjol Corridor Semarang. *Canopy: Journal of Architecture*, 12(1), 41-52.
- Ilhami, M. R., Abbas, E. W., Mutiani, M., Jumriani, J., & Rusmaniah, R. (2022). The Social Values of the Banjar People in Traditional Markets. *The Innovation of Social Studies Journal*, 4(1), 71-83.
- Isradi, M., Dermawan, W. B., Mufhidin, A., Sari, R. N., & Prasetijo, J. (2020). Analysis of Pedestrian Facilities Service Level:(Case Study: Jl. Raya Bogor In Front of Pasar Jaya Kramat Jati). *World Journal of Civil Engineering*, 1(01), 45-57.
- Johanes, A., Dermawan, W. B., Isradi, M., & Rifai, A. I. (2022). Analysis of the Satisfaction Level of Sidewalk Users:(Case Study on Jl Jendral Ahmad Yani Bekasi). *ADRI International Journal of Engineering and Natural Science*, 7(1), 74-82.
- Johanes, A., Dermawan, W. B., Isradi, M., & Rifai, A. I. (2022). Analysis of the Satisfaction Level of Sidewalk Users:(Case Study on Jl Jendral Ahmad Yani Bekasi). *ADRI International Journal of Engineering and Natural Science*, 7(1), 74-82.
- KÜÇÜKYAĞCI, P. Ö., & Özgün, A. R. (2018). a Study on Measuring Pedestrian Comfort Level in Istanbul Kadiköy City Center. *Atlas Journal*, 4(10), 626-636.

- Lee, H., & Kim, S. N. (2021). Perceived safety and pedestrian performance in pedestrian priority streets (PPSs) in Seoul, Korea: A virtual reality experiment and trace mapping. *International journal of environmental research and public health*, 18(5), 2501.
- Lee, H., & Kim, S. N. (2019). Shared space and pedestrian safety: Empirical evidence from pedestrian priority street projects in Seoul, Korea. *Sustainability*, 11(17), 4645.
- Lee, H., & Kim, S. N. (2021). Perceived safety and pedestrian performance in pedestrian priority streets (PPSs) in Seoul, Korea: A virtual reality experiment and trace mapping. *International journal of environmental research and public health*, 18(5), 2501.
- Lee, S., Han, M., Rhee, K., & Bae, B. (2021). Identifikasi faktor-faktor yang mempengaruhi kepuasan pejalan kaki terhadap penggunaan lahan dan tipe jalan. *Keberlanjutan*, 13(19), 10725.
- Mappasere, S. A., & Suyuti, N. (2019). Pengertian Penelitian Pendekatan Kualitatif. *Metode Penelitian Sosial*, 33.
- Mappasere, S. A., & Suyuti, N. (2019). Pengertian Penelitian Pendekatan Kualitatif. *Metode Penelitian Sosial*, 33.
- Mardalena, L., & Murwadi, H. (2023). ANALISIS KENYAMANAN BERJALAN MAHASISWA PADA JALUR PEDESTRIAN DI KOTA BANDARLAMPUNG. *NALARs*, 22(1), 63-72.
- Marisamynathan, S., & Vedagiri, P. (2018). Estimation of pedestrian safety index value at signalized intersections under mixed traffic conditions. *Transportation in Developing Economies*, 4, 1-11.
- Monterde-i-Bort, H., Basbas, S., Johansson, C., Leden, L., & Gårder, P. (2019). Have information technologies forgotten pedestrians? To what extent can IT/ITS improve Pedestrian mobility and safety? In *Data Analytics: Paving the Way to Sustainable Urban Mobility: Proceedings of 4th Conference on Sustainable Urban Mobility (CSUM2018), 24-25 May, Skiathos Island, Greece*. Springer International Publishing, pp. 3-10.
- Nag, D., Bhaduri, E., Kumar, G. P., & Goswami, A. K. (2020). Assessment of relationships between user satisfaction, physical environment, and user behaviour in pedestrian infrastructure. *Transportation research procedia*, 48, 2343-2363.
- Nasution, R. T., & Fuady, M. . (2023). Identifikasi Kenyamanan Jalur Pejalan Kaki Kawasan Wisata Bersejarah di Pusat Kota Banda Aceh. *Jurnal Ilmiah Mahasiswa Arsitektur dan Perencanaan*, 6(4), 72-78.
- Noviandini, Z. P., Dewi, O. C., Laksitoadi, B., & Widyarta, M. N. (2020). The effect of permeable pavement on pedestrian walkways for human comfort. In *IOP Conference Series: Earth and Environmental Science*, 409(1), 012009.
- Noviandini, Z. P., Dewi, O. C., Laksitoadi, B., & Widyarta, M. N. (2020). The effect of permeable pavement on pedestrian walkways for human comfort. In *IOP Conference Series: Earth and Environmental Science*, 409(1), 012009.
- Park, Y., & Garcia, M. (2020). Pedestrian safety perception and urban street settings. *International journal of sustainable transportation*, 14(11), 860-871.

- Pooley, C. (2021). Walking spaces: Changing pedestrian practices in Britain since c. 1850. *The Journal of Transport History*, 42(2), 227-246.
- Pratama, A., Rifai, A. I., & Thole, J. (2022). The Analysis of Pedestrian Service in Railway Station Area: A Case Tanah Abang Station, Jakarta A Case Tanah Abang Station, Jakarta. *Citizen: Jurnal Ilmiah Multidisiplin Indonesia*, 2(5), 794-803.
- Rahayu, A. J., Rifai, A. I., & Akhira, A. F. (2022). The Phenomena of On-Street Parking at Kadipaten Traditional Market, West Java. *Citizen: Jurnal Ilmiah Multidisiplin Indonesia*, 2(5), 815-822.
- Raji, B. A., Solanke, M. O., & Alli, T. K. (2021). Pedestrians' Sidewalk Development and Level of Safety in Ikeja Area, Lagos Nigeria. *University of Zilina*, 18-24.
- Rose, W. J., Bell, J. E., Autry, C. W., & Cherry, C. R. (2017). Urban logistics: Establishing key concepts and building a conceptual framework for future research. *Transportation Journal*, 56(4), 357-394.
- Sahani, R., & Bhuyan, P. (2020). Memodelkan perspektif pejalan kaki dalam mengevaluasi tingkat kepuasan fasilitas pejalan kaki di jalan perkotaan. *Prosedur penelitian transportasi*, 48, 2262-2279.
- Sheykhfard, A., Haghghi, F., Papadimitriou, E., & Van Gelder, P. (2021). Review and assessment of different perspectives of vehicle-pedestrian conflicts and crashes: Passive and active analysis approaches. *Journal of Traffic and Transportation Engineering (English edition)*, 8(5), 681-702.
- Tong, Y., & Bode, N. W. (2022). The principles of pedestrian route choice. *Journal of the Royal Society Interface*, 9(189), 20220061.
- Wahyudi, D. L., & Subham, M. (2023). ANALISIS PENGELOLAAN PASAR TRADISIONAL DALAM MENINGKATKAN EKONOMI MASYARAKAT. *Jurnal Ilmiah Ekonomi dan Manajemen*, 1(4), 138-148.
- Wulanningrum, S. D. (2021). Kajian Kenyamanan Jalur Pejalan Kaki Di Jalan Taman Mini 1 Dan Jalan Raya Pondok Gede, Jakarta Timur. *Jurnal Muara Sains, Teknologi, Kedokteran dan Ilmu Kesehatan*, 5(1), 155-168.