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## Analysis of Factors Driving Displacement Private Vehicle User Mode to KRL Green Line (Cisauk-Tanah Abang)

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**Abstract:** This study analyzes the factors encouraging private vehicle users to switch to the KRL Line. With population growth and transportation needs in the Cisauk Sub-district, it is necessary to understand that many commuter users still choose private vehicles, even though KRL offers advantages such as low-cost efficiency in time. This research uses a qualitative approach with group and discussion methods to identify factors influencing decisions. The data was analyzed using a qualitative descriptive approach with the Nvivo 12 application. The results showed that convenience, stations, and parking facilities influence mode switching. This research is expected to provide recommendations to KRL operators and policymakers to improve service quality and support facilities so that more private vehicle users switch to public transportation. In addition, this study provides practical advice for developing public transportation in other areas with similar characteristics.

**Keyword:** Mode Shift, KRL Green Line, Private Vehicle Users, Convenience, Ease, Service Quality

## INTRODUCTION

Transportation is vital in supporting activities, especially in urban areas with large populations. (Karim & Lesmini, 2023). Along with the rapid development of infrastructure and urbanization, efficient, safe, and comfortable modes of transportation are needed. In Indonesia, land transportation, such as buses, trains, and other public transportation, is the backbone of community mobility. (Kadarisman et al., 2015) This is especially true in areas such as Jabodetabek. Cisauk sub-district, which is located in the district area, is one of the areas that has experienced development in recent years. Benefiting from its strategic location and significant population growth, many Cisauk residents work and move to Jakarta, the capital city of Indonesia.

Daily mobility between Cisauk and Jakarta is vital for residents. In this case, the mode of transportation that can meet mobility needs is a very relevant question.

One of the modes of transportation that Cisauk relies on is the electric train line that connects Cisauk station to Tanah Abang station in Jakarta. KRL Green Line is one of the modes of transportation that can be used as an alternative to meet the transportation needs of the Cisauk community. The Green Line KRL offers various advantages, such as low emission efficiency, absence of congestion, and affordable ticket prices. However, the data shows that many people still use private vehicles such as motorbikes and cars. According to BPS data, around 70% of people in Tangerang Regency use motorcycles, 8% of people, and only 22% use public transportation, including KRL. (Prabawa, 2019).

This phenomenon raises the fundamental question of why passengers in Cisauk prefer vehicles over KRL, even though this mode of public transportation offers many advantages. A deeper understanding of the factors that influence transportation modes is essential to significantly reduce the use of private vehicles with negative environmental impacts such as traffic congestion, air pollution, and high fuel consumption. (Wayan Arnaya et al., 2021)..

Various previous studies have examined the factors that influence commuter transportation mode choice. For example, (Rahmawati, 2014) found that factors related to cost, income, and ownership of a mode significantly influence the transportation mode between motorbikes and KRL in one of the Bekasi cities.

Meanwhile, (Setyodhono, 2017) found that age, gender, education, employment status, income, distance, and travel time also affect the mode choice of Jabodetabek commuter transportation workers. This study analyzes the factors supporting private vehicle users' mode shift to KRL. This study's main objectives are to identify why passengers in Cisauk prefer private vehicles, understand the shortcomings of the KRL Green Line service, and find the main driving factors that motivate them to move to KRL. Based on these results, this study will provide recommendations and solutions for KRL operators and policymakers to accelerate the shift of transportation modes from private vehicles to public transport.

This research used qualitative methods to achieve these objectives: in-depth interviews, discussions, and field observations. Data from various sources were analyzed descriptively and qualitatively using the Nvivo 12 Plus application. This method was chosen because it allowed them to explore information in depth and gain a deeper understanding of complex social phenomena related to transportation mode choice.

This research was conducted in Tangerang Regency between August and October 2023. The selection of this location was based on the large number of passengers from Cisauk who work in Jakarta using KRL as the primary mode of transportation. With a population of 82,497 in 2020, Cisauk is one of the fastest-growing areas in Tangerang Regency. This shows that there is a great need for reliable transportation to support population mobility.

One of the main problems Green Line KRL users face is the limited transportation capacity during peak hours. This condition causes passengers to be forced to stand in uncomfortable conditions during the trip. In addition, accessibility to the station is also an obstacle, mainly due to congestion during peak hours. Monitoring in the field, the parking lot at Cisauk Station is often entire, especially during peak hours, making it difficult for those who want to use KRL. Non-rail public transportation services such as taxis, buses, and informal public transportation are more accessible than train stations. (Irfayanti et al., 2021). The lack of supporting facilities, such as comfortable and safe parking lots, and other supporting facilities, such as clean toilets and adequate waiting rooms, also affects private transportation users' interest in switching to KRL.

The government and KRL operators have tried to improve the quality of Green Line KRL services by improving infrastructure, facilities, and travel frequency. But in reality, there are still many passengers who are reluctant to ride the KRL and prefer to use private vehicles. Therefore, this research focuses on efforts to identify the driving factors that can motivate private vehicle modes to the Green Line KRL.

In addition, this research also aims to provide practical recommendations that KRL and policymakers can use to improve service quality and incentivize more private users to switch to public transport. Thus, this study's results are expected to significantly contribute to developing more efficient, safe, and environmentally friendly transportation in urban areas, especially Greater Jakarta.

Overall, this research combines various approaches to understand the factors influencing transportation choices among Cisauk commuters. Using qualitative data obtained from focus group interviews and field observations, the research sought to identify the most critical determinants and propose workable solutions to increase the use of public transportation in the area.

Through this research, the author hopes to provide news for the development of more efficient mass transportation that is more environmentally friendly in urban areas, thus providing recommendations that can help operators and policymakers in helping operators and policymakers to improve service quality and attract more individual vehicle users to switch to public transportation. Thus, this research is expected to contribute significantly to developing more efficient, safe, and environmentally friendly mass transportation in the region, especially Greater Jakarta.

## **METHOD**

This research uses a qualitative approach to understand the perceptions and factors influencing Cisauk passengers in choosing transportation modes.

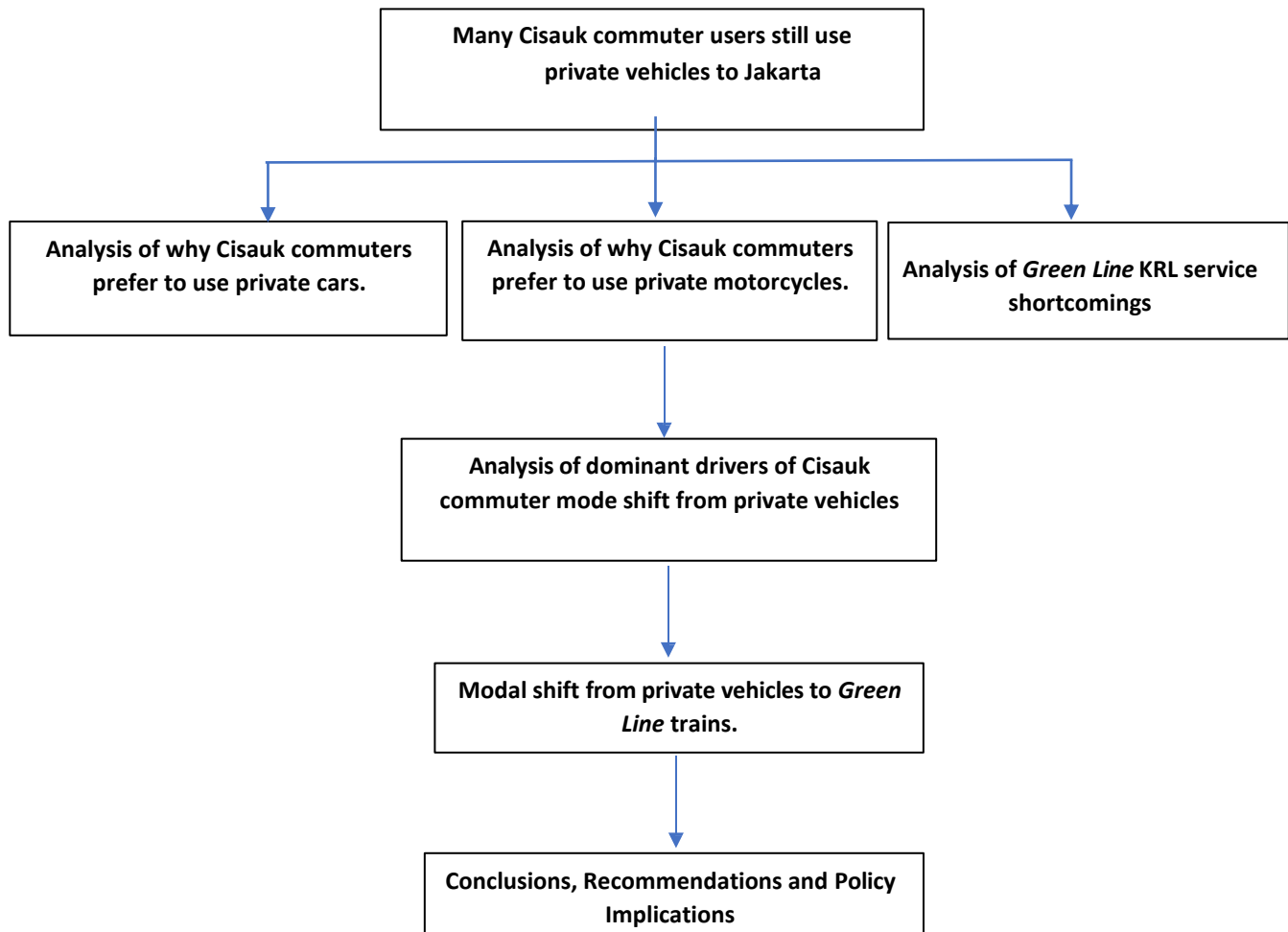
The methods used included in-depth interviews, group discussions, and field observations. A descriptive qualitative approach was chosen as it allows researchers to explore information in-depth and understand complex social phenomena related to fashion choices.

- 1) In-depth interviews were conducted with several key groups, including private vehicle users, KRL users, and KCI representatives. The interview questions were designed to uncover why passengers choose private vehicles, the lack of KRL services, and the factors that may lead to modal shifts.
- 2) The FGD involved a group discussion consisting of private vehicles and KRL users. The discussion aimed to identify perspectives on the quality of KRL services and public transportation's constraints.
- 3) Observations were made at the station and along the Green Line to understand the conditions in the field in terms of comfort, station equipment, and accessibility. The results of these observations were used to analyze interview and FGD data.

Data from interviews, focus groups, and observations were analyzed using the Nvivo 12 Plus application. Data analysis was carried out using qualitative descriptive, which included the steps of coding and data interpretation. Researchers also used triangulation techniques to ensure data validity by comparing findings from various sources.

The informants were selected by purposive sampling using specific criteria such as frequency of vehicle use, experience using KRL, and knowledge of Green Line KRL. The number of informants is determined based on the data, namely when the information obtained is considered sufficient, and there is no new information.

This research was conducted in Cisauk Sub-district, Tangerang Regency, from August to October 2023. The location selection was based on the high number of Cisauk commuter users who work in Jakarta and use KRL as the primary mode of transportation.

**Table 1. Research Flow of Thought**

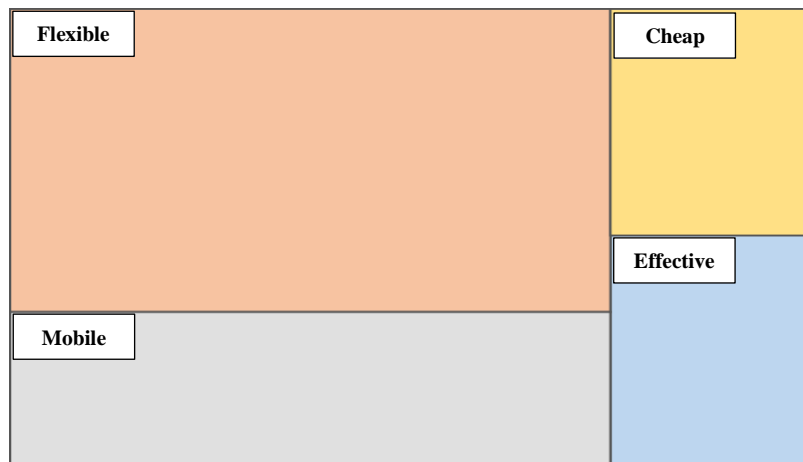
## RESULTS AND DISCUSSION

This study found that several main factors influence the decision of passengers in the Cisauk District in choosing a mode of transportation, especially between private vehicles and the Green Line KRL. The results of interviews and Focus Group Discussions with commuter users show that accessibility and schedule flexibility are the most dominant factors.

Convenience is one of the main factors considered by private vehicle users. Many commuter users feel more comfortable using a private car or motorcycle than the KRL, especially during peak hours when the train is complete. Observations show that KRL passengers often have to stand during long-distance travel, which is uncomfortable. In contrast, private vehicles provide more personal space and flexibility to organize trips according to needs.

Accessibility to KRL stations is another critical factor. Many respondents complained about the difficulty of reaching the station due to traffic congestion, especially during peak hours. In addition, parking facilities at Cisauk station are considered inadequate to accommodate the number of private vehicles that want to switch to KRL mode. Limited parking lots and lack of supporting facilities such as safe and comfortable parking lots are some of the main reasons commuters prefer to use private vehicles rather than KRL.

Travel time and flexibility are other considerations that strongly influence the transportation mode choice. Private vehicles allow commuters to leave and return to work according to their schedules without being tied to the KRL departure schedule. In addition, constraints related to travel frequency and the uncertainty of the KRL schedule often make users uncomfortable and cause them to choose private vehicles.

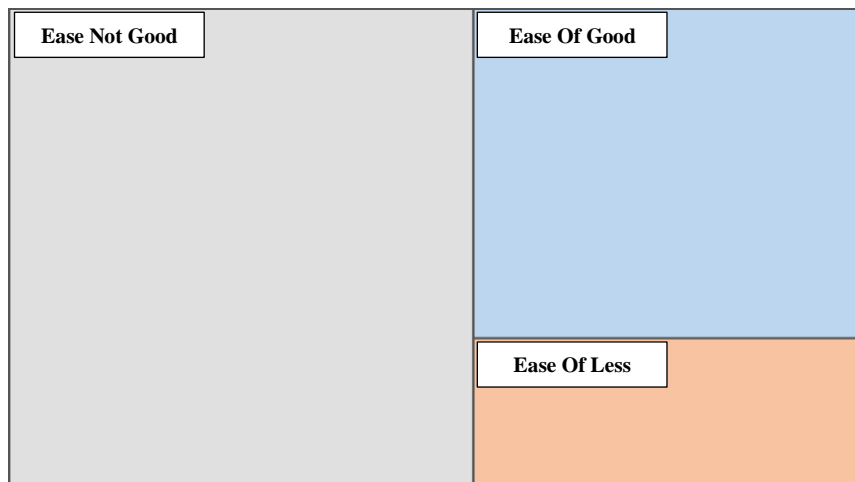


**Figure 1. Hierarchy Chart Tree Map of Reasons Cisauk Commuters Use Private Vehicles Rather than the Green Line KRL**

In addition to the factors above, this study also identified several shortcomings in the Green Line KRL service that discourage commuter users from switching from private vehicles.

The limited carrying capacity of the Green Line, especially during peak hours, is one of the main obstacles to monitoring on the ground, as passengers often congregate on the train, especially in the morning, on their way to work. This reduces not only passenger comfort but also safety risks, especially in the event of an emergency.

Facilities at the station, especially in Cisauk, are considered inadequate to support changes in transportation modes. Observations show that this parking lot has not been able to accommodate the increasing number of vehicles, and the condition of the existing parking lot has not been equipped with parking support facilities such as tents for vehicles to avoid heat and rain. This lack of facilities makes many passengers prefer private vehicles to avoid the station's inconvenience.



**Figure 2. Hierarchy Chart Tree Map Aspects of Convenience of Green Line Commuter Line**

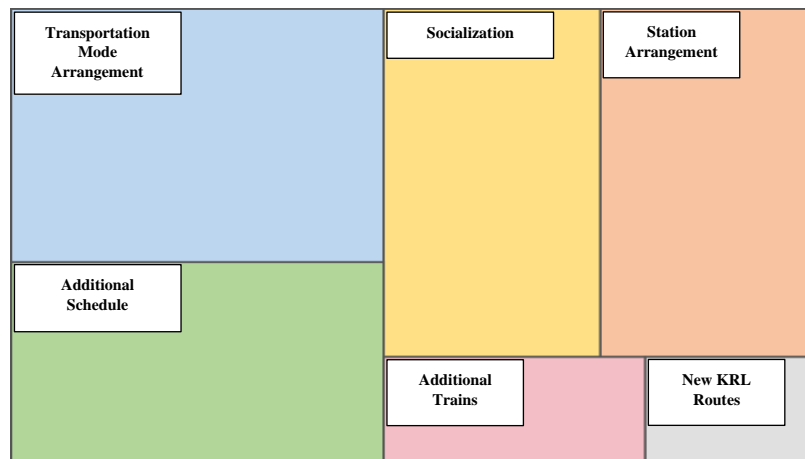
The schedule and frequency of Green Line KRL routes are often considered unresponsive to passengers. Schedule uncertainty, especially during peak hours, means passengers must wait longer than expected. Frequent delays also add to the inconvenience for those who prefer private vehicles, which are more considered in terms of travel time.

Based on the findings above, several recommendations can be proposed to improve the Green Line KRL service and encourage more commuter users to switch from private vehicles to this mass transportation mode.

One of the most urgent solutions is to increase the receiving capacity of the KRL, especially during peak hours. Adding trains or frequency during peak hours can help reduce the number of train passengers, thereby improving passenger comfort and safety. In addition, KRL operators should ensure on-time travel schedules to reduce the uncertainty users feel.

Station facilities, especially parking lots, are being improved to support the shift from private vehicles to KRL. Constructing larger parking areas with buffers such as awnings and video surveillance can increase users' sense of security and comfort. In addition, the addition of public facilities such as clean toilets, comfortable waiting rooms, and better ones for people with disabilities will also provide a better passenger experience.

To encourage changes in commuter behavior, it is necessary to conduct awareness and education campaigns emphasizing the benefits of using KRL from an economic and environmental perspective. This campaign can involve parties such as local communities, KRL operators, and local communities to jointly reap the benefits of switching to public transport. Education on carbon emission reduction and cost-effective travel can help change people's perceptions about using public transportation.



**Figure 3. Hierarchy Chart Tree Map Solution for Cisauk Commuters Using Private Vehicles to Switch Modes**

In comparison, case studies conducted in neighboring countries such as Malaysia and Singapore show that public transport systems depend not only on good management and integration between different modes of transport.

In Kuala Lumpur, public transportation systems such as MRT, LRT, and buses are integrated, allowing passengers to switch modes quickly. The availability of clear information and easy access to these various modes of transportation makes people prefer public transportation over private vehicles. This success is also supported by professional transportation management and an integrated ticketing system, which makes it easier for passengers to plan their trips.

In Singapore, the MRT and LRT are the backbone of the public transportation system. Despite Singapore's small land mass, its fast, safe, and reliable transportation system makes it the first choice for commuters. Affordable and distance-adjusted pricing has made this mode of transportation increasingly popular. In addition, strict regulations and effective law enforcement help maintain order and comfort at stations and on trains.

The results of this study align with previous findings, which show that convenience, accessibility, and time flexibility are the main determinants of the choice of transportation



mode. Studies from Rahmawati et al. (2014) and Setyodhono (2017) also revealed that travel costs, income, and ownership of private vehicles greatly influence commuter users' decisions in choosing transportation modes.

However, this study also provides new information about integration and service quality as factors that support modal shift. These results are consistent with research conducted in other countries, which show that the success of a public transit system depends not only on its infrastructure but also on service quality and good management.

The results of this study have important implications for policymakers and transportation operators. A comprehensive strategy is needed to improve the quality of KRL services and encourage more passengers to switch from private vehicles to public transport.

Improving service quality should be an absolute must, emphasizing increasing carrying capacity, improving station facilities, and increasing travel frequency during peak hours. In addition, the government and KRL operators must work together to integrate different modes to provide convenience and comfort for users.

## CONCLUSION

Based on the research results, it can be concluded that the transfer of transportation modes from private vehicles to the Green Line KRL in the Cisauk area is still a significant challenge. Some of the main factors that influence commuters' decisions in choosing modes of transportation include convenience, accessibility, time flexibility, and service quality.

Comfort is one of the crucial factors in a user's decision to choose a mode of transportation. The often full and crowded condition of the KRL, especially during peak hours, reduces passenger comfort. Many commuters feel more comfortable using private vehicles that offer more privacy and flexibility.

Accessibility to KRL stations is also a challenge. Traffic congestion around Cisauk Station, especially during peak hours, and limited parking facilities discourage many commuters from using KRL. Difficult access to the station worsens private vehicle users' interest in switching to public transportation.

Time flexibility is another factor that influences transportation mode decisions. Private vehicles allow commuters to manage their travel time without being tied to KRL schedules that may not always suit their needs.

The quality of KRL services also needs to be improved. Problems with delays, schedule uncertainty, and limited carrying capacity during peak hours are some of the things that prevent private vehicle users from switching to KRL. Although KRL fares are relatively affordable, non-economic factors such as convenience and service reliability are critical for users.

This study recommends several strategies to increase commuters' interest in using the KRL.

Increase the capacity and frequency of KRL trips, especially during peak hours. Adding more trains and increasing the frequency of trips can reduce overcrowding in the train, thereby improving passenger comfort and safety.

Improvement of station facilities, especially in terms of accessibility and parking areas. The construction or expansion of safe and comfortable parking facilities and improved access to the station can make it easier for commuters to use KRL.

Awareness and education campaigns on the benefits of using public transportation. This campaign can involve various parties, including local governments, KRL operators, and local communities, to encourage changes in people's behavior in choosing more environmentally friendly and efficient modes of transportation.

The study also found an urgent need to improve intermodal integration in urban areas, as has been successfully implemented in neighboring countries such as Malaysia and Singapore.

A well-integrated transportation system allows passengers to switch modes quickly and efficiently, encouraging greater public transportation use.

In addition, this study underscores the importance of improving the quality of KRL services, including punctuality, safety, and comfort. This aligns with previous findings, which show that service quality is a significant determinant in influencing users' decisions when choosing transportation modes.

This research provides important insights for developing more effective strategies to encourage a modal shift from private vehicles to public transportation in Cisauk and surrounding areas. The implementation of recommendations resulting from this research is expected to help improve the quality of KRL Green Line services and attract more private vehicle users to switch to more efficient and environmentally friendly modes of transportation.

## REFERENSI

- Irfayanti, A. D., Sari, D. W., & Rosida, I. (2021). Perilaku Pemilihan Moda Transportasi Pekerja Komuter: Studi Perilaku Pemilihan Moda Transportasi Pekerja Komuter: Studi Kasus Jabodetabek. *Jurnal Ekonomi Dan Pembangunan Indonesia*, 21(2), 125–147. <https://doi.org/10.21002/jepi.2021.09>
- Kadarisman, M., Gunawan, A., & Trisakti, S. (2015). Implementasi Kebijakan Sistem Transportasi Darat dan Dampaknya terhadap Kesejahteraan Sosial di Jakarta. *Jurnal Manajemen Transportasi & Logistik (JMTransLog)*, 02(01).
- Karim, A., & Lesmini, L. (2023). Manajemen Transportasi. Cendikia Mulia . [https://books.google.co.id/books?hl=en&lr=&id=bum1EAAQBAJ&oi=fnd&pg=PA1&dq=Transportasi+merupakan+salah+satu+faktor+penting+bagi+kemajuan+suatu+Negara,+Wilayah,+atau+Daerah&ots=q5GQAC7lQc&sig=R33KV85I007HY\\_orGT37ElokwIQ&redir\\_esc=y#v=onepage&q&f=false](https://books.google.co.id/books?hl=en&lr=&id=bum1EAAQBAJ&oi=fnd&pg=PA1&dq=Transportasi+merupakan+salah+satu+faktor+penting+bagi+kemajuan+suatu+Negara,+Wilayah,+atau+Daerah&ots=q5GQAC7lQc&sig=R33KV85I007HY_orGT37ElokwIQ&redir_esc=y#v=onepage&q&f=false)
- Prabawa, P. D. (2019). STATISTIK KOMUTER JABODETABEK Hasil Survei Komuter Jabodetabek 2019.
- Rahmawati, A. (2014). ANALISIS PEMILIHAN MODA SEPEDA MOTOR DAN KRL COMMUTERLINE UNTUK PERJALANAN KERJA KE PROPINSI DKI JAKARTA.
- Setyodhono, S. (2017). Faktor yang Mempengaruhi Pekerja Komuter di Jabodetabek Menggunakan Moda Transportasi Utama. *Warta Penelitian Perhubungan*, 29(1), 21. <https://doi.org/10.25104/warlit.v29i1.326>
- Wayan Arnaya, I., Sylvan Ryanto, S., & Oka Khrisna Surya, Aab. (2021). ANALISA FAKTOR PEMILIHAN MODA TRANSPORTASI MENGGUNAKAN METODE ANALYTIC HIERARCHY PROCESS. *Jurnal Teknologi Transportasi Dan Logistik*, 2(1), 11–18.