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Analysis of the Impact of Road Infrastructure Quality in Tegal City on User Satisfaction in Road Transportation: A Qualitative Study in Urban Areas

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Abstract
Road infrastructure plays a crucial role in the efficiency and safety of transportation systems, particularly in urban areas where traffic demand is high. In Tegal City, the quality of road infrastructure directly affects user satisfaction with road transportation. Understanding this relationship is essential for urban planners and policymakers to enhance the transportation experience for residents.This study aims to explore the impact of road infrastructure quality on user satisfaction among road transportation users in Tegal City. By utilizing qualitative methods, the research seeks to gather in-depth insights into users' perceptions and experiences regarding the current state of road infrastructure.A qualitative approach was employed, involving semi-structured interviews with a diverse group of road users, including commuters, drivers, and public transport users. The interviews were conducted in various urban locations throughout Tegal City to capture a comprehensive understanding of user experiences. The data were analyzed thematically to identify key factors influencing user satisfaction. Based on survey results from 100 respondents, the majority rated the quality of road infrastructure in Tegal City with an average of 3.03, indicating a moderate level of satisfaction. Some respondents noted that there were still potholes and less than optimal maintenance. The level of satisfaction with road maintenance scored an average of 3.37, indicating that efforts had been made, but had not fully met residents' expectations. The condition of road signs was rated quite good with an average of 3.47, although some respondents mentioned the need for improvements to safety facilities such as guardrails and road markings. Most respondents also stated that road quality affected their travel experience, with an average score of 3.42. However, there are still shortcomings, especially regarding drainage systems and pedestrian facilities. In addition, a score of 3.25 for road suitability for vehicles and pedestrians indicates the need for a balance of infrastructure for both users.To improve the quality and satisfaction with road infrastructure, the government is advised to increase the road maintenance budget, including repairing potholes and rejuvenating damaged road surfaces. Drainage systems need to be improved to avoid puddles that can damage roads, especially during the rainy season. In addition, improved safety facilities and road signs, such as adequate night lighting, will support road user safety. Pedestal infrastructure. The insights gained from this research can inform local policymakers and urban planners in prioritizing infrastructure improvements that enhance user experiences. By addressing the identified issues, Tegal City can improve overall transportation satisfaction and contribute to a more efficient urban mobility system.

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road Infrastructure Quality, User Satisfaction,Road Transportation, Urban Areas, Tegal City, Qualitative Study,Transportation Experience,Traffic Management,Commuter Perceptions,Infrastructure Improvement.

INTRODUCTION

The quality of road infrastructure a critical factor that significantly impacts the efficiency, safety, and overall experience of transportation systems, particularly in urban environments. Well-maintained roads, clear signage, and effective traffic management not only ensure smooth mobility but also contribute to the safety and satisfaction of users. In rapidly developing urban areas such as Tegal City, where population growth and economic activities are on the rise, the demand for reliable and efficient road infrastructure is paramount. Roads in good condition

serve as a backbone for economic progress, enabling seamless connectivity and supporting the daily transportation needs of residents. However, inadequate infrastructure—characterized by potholes, poor drainage, insufficient pedestrian facilities, or unclear signage—can lead to significant dissatisfaction among road users, hinder mobility, and increase the risk of accidents or delays.

Urban road transportation in Tegal City faces unique challenges as it attempts to balance the needs of its diverse road users, ranging from private vehicle owners to public transportation commuters and pedestrians. The interplay between these user groups further emphasizes the importance of high-quality infrastructure that accommodates all forms of mobility. Issues such as traffic congestion, uneven road surfaces, lack of safety features, and poorly maintained pedestrian zones not only disrupt daily activities but also highlight the gaps in urban planning and maintenance strategies. Addressing these issues is crucial to creating an urban transportation system that is efficient, inclusive, and sustainable.

This study focuses on analyzing the impact of road infrastructure quality on user satisfaction in Tegal City. Employing a qualitative approach, it explores the experiences and perceptions of road users regarding the existing conditions of the city's road infrastructure and the extent to which these conditions influence their satisfaction. By conducting in-depth interviews with various stakeholders, including commuters, drivers, and public transportation users, this research aims to uncover the key factors that drive satisfaction or dissatisfaction in urban road transportation. These factors include road surface conditions, safety features, accessibility, traffic management, and the availability of supporting infrastructure such as signage and lighting.

The findings of this study are intended to provide valuable insights for urban planners, policymakers, and local government officials in Tegal City. By identifying the strengths and weaknesses of the current road infrastructure, this research seeks to support evidence-based decision-making for infrastructure improvements. Ultimately, the study aims to contribute to the development of a transportation system in Tegal City that meets the expectations and needs of its residents, fostering a safer, more efficient, and more satisfying urban mobility experience.

The quality of road infrastructure is a crucial factor in ensuring effective and efficient transportation, impacting not just the performance of road networks but also the satisfaction of the users who depend on these systems every day. The key variables for this study include the condition of road surfaces, traffic management strategies, safety features, and accessibility all elements that have a direct influence on user satisfaction within urban road transportation. In Tegal City, a medium-sized urban center facing increasing mobility demands, these variables are essential for evaluating whether the existing infrastructure adequately meets the needs of its users and promotes sustainable urban transportation.

The quality of road infrastructure is a crucial factor that influences the efficiency and comfort of road transportation. Adequate road infrastructure enables smooth movement, enhances safety, and improves user experience, especially in densely populated urban areas such as Tegal City. As a city experiencing population growth and economic activity, Tegal faces challenges in maintaining road quality that can support the mobility needs of its residents. Poor road quality, such as damaged road surfaces or a lack of supporting facilities, can lead to dissatisfaction among road users, hinder mobility, and potentially increase the risk of accidents.

This study focuses on analyzing the impact of road infrastructure quality on road user satisfaction in Tegal City through a qualitative approach. The study aims to explore the experiences and perceptions of road users regarding the existing infrastructure conditions and their impact on daily transportation activities. By identifying factors that influence user satisfaction, this research is expected to provide valuable recommendations for local

government and relevant stakeholders in efforts to improve road infrastructure quality in urban areas.

METHODE

1. Introduction to the Variable / Content of Study

This study focuses on the main variables of road infrastructure quality and road user satisfaction. Road infrastructure quality covers various aspects, such as the condition of the road surface, drainage systems, the presence of safety facilities (such as traffic signs and lighting), and facilities for pedestrians. These variables are considered to influence road users' experience in terms of travel comfort, safety and efficiency. Road users' level of satisfaction is measured through their perceptions of various indicators of infrastructure quality, such as smooth driving, facility reliability, and impact on daily activities.

2. Current Situation

Tegal City currently faces significant challenges in providing and maintaining adequate road infrastructure. Based on the results of an initial survey, most respondents gave a moderate assessment of road quality in the city, with an average user satisfaction score of 3.03. This condition reflects the existence of problems that still need to be addressed, such as potholes, poor drainage, and less than optimal facilities for pedestrians. Frequent puddles during rainy days indicate an inadequate drainage system, while the lack of safety facilities such as road markings and lighting at night increases the risk of accidents. These deficiencies not only disrupt the smooth mobility of road users but also impact their safety and comfort.

3. Ideal Situation

The ideal situation is the creation of high quality road infrastructure in Tegal City, where every aspect of the infrastructure is able to meet the needs of road users. Smooth roads without potholes, effective drainage systems, adequate pedestrian facilities, and optimal signage and lighting are indicators of this ideal situation. Well-maintained infrastructure will not only improve the comfort and safety of road users but also contribute to overall transportation efficiency. In addition, this ideal situation also reflects sustainability in infrastructure planning and maintenance, where local governments consistently allocate resources to improve and update existing facilities according to community needs.

4. Literature Review

The quality of road infrastructure has long been recognized as a key factor in determining the efficiency and convenience of urban transportation. According to research conducted by Sharma et al. (2020), road quality has a positive correlation with user satisfaction, where good road surfaces and adequate safety facilities significantly improve the travel experience. Another study by Liu and Wang (2019) found that poor drainage systems are one of the main causes of road user dissatisfaction, especially in areas with high rainfall, as they can cause standing water that disrupts traffic and accelerates road deterioration.In addition, research by Brown (2018) highlighted the importance of pedestrian facilities in creating inclusive urban transportation. The author notes that the lack of sidewalks and safety facilities such as zebra crossings can limit pedestrian mobility and increase the risk of accidents. In the Indonesian context, a study conducted by Prasetyo and Widodo (2017) concluded that the lack of road maintenance is a major problem facing medium-sized cities, including Tegal, where limited budgets are often a major constraint in keeping infrastructure in good condition.

5. Survey Question List
    1. The overall quality of road infrastructure in Tegal City meets my expectations.
    2. I am satisfied with the maintenance level of roads in Tegal City
    3. How would you evaluate the availability and condition of road signage in Tegal City?
    4. Roads in Tegal City are well-paved and free from potholes
    5. The road signage in Tegal City is clear and easy to understand.
    6. The road signage in Tegal City is clear and easy to understand.
    7. The overall quality of road infrastructure in Tegal City meets my expectations.
    8. How satisfied are you with the overall safety of roads in Tegal City?

9. How does the quality of road infrastructure influence your choice to use road transportation?
10. Lighting on the main roads in Tegal City is adequate for safe driving at night.
11. How important do you believe it is for the local government to invest in road maintenance and improvements?
12. Compared to other cities, how would you rate Tegal City's road infrastructure?
13. Sidewalks and pedestrian areas are well-maintained and safe to use.
14. Drainage systems on Tegal City roads work effectively during the rainy season.
15. Traffic congestion in Tegal City is manageable and does not cause significant delays
16. The road infrastructure in Tegal City accommodates both vehicles and pedestrians well
17. The safety features on Tegal City roads (e.g., guardrails, markings) are effective.
18. The quality of road infrastructure in Tegal City positively affects my travel experience.
19. Poor road conditions are a significant cause of vehicle damage in Tegal City
20. I am satisfied with the quality of public transportation infrastructure in Tegal City.

RESULT

The results of this study indicate that the quality of road infrastructure in Tegal City still faces significant challenges, such as road surface conditions, drainage systems, and safety and support facilities. Based on a survey of 100 respondents, most gave a moderate assessment of road conditions. Only 35% of respondents said the condition of the road surface was good or very good, while the other 60% rated it fair to poor, with many complaints about the presence of potholes that interfere with travel comfort. The drainage system is also a concern, with 50% of respondents rating the drainage system as poor or very poor, which often leads to waterlogging during the rainy season, hindering mobility and accelerating road deterioration.Safety facilities such as traffic signs and nighttime street lighting received mixed ratings. Most respondents rated traffic signs as fair (40%) or good (30%), but another 20% rated them as poor to very poor, indicating the need for improvement on these facilities. Street lighting was considered adequate by 60% of respondents, but there were still 10% who felt this facility was not adequate at all, especially in less strategic areas. Pedestrian sidewalks are also still considered suboptimal, with 55% of respondents rating their quality as fair to poor, reflecting the need for more attention to pedestrian infrastructure. Overall, road users' satisfaction with road infrastructure in Tegal City was moderate. 40% of respondents were moderately satisfied, while only 33% were satisfied or very satisfied. In contrast, 27% of respondents were dissatisfied or very dissatisfied, with the main reasons related to road damage, puddles, and lack of supporting facilities. Respondents also highlighted that the condition of road infrastructure has a direct impact on their daily activities, with 50% stating that roads are moderately supportive to supportive, but there are still 20% who feel that this infrastructure is less supportive of their activities.Feedback from respondents emphasized the need for improvements in several key aspects, such as road surface improvements, drainage system updates, additional nighttime street lighting, and the development of more adequate sidewalks. These results provide a clear picture that despite efforts to improve, the quality of road infrastructure in Tegal City still needs to be significantly improved to meet the needs and expectations of road users. These findings can serve as the basis for strategic recommendations for local government in formulating prioritized policies for future infrastructure improvements.

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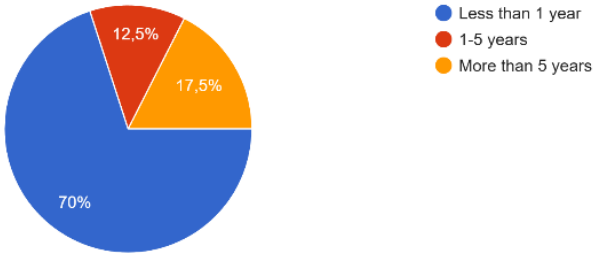
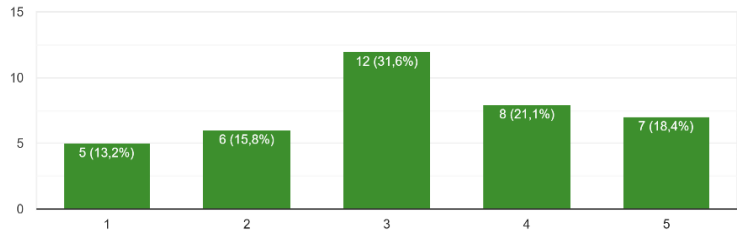
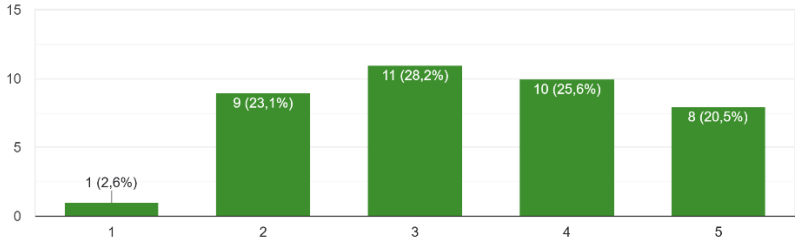
How long have you lived in Tegal City?
40 jawaban



1. The overall quality of road infrastructure in Tegal City meets my expectations.
38 jawaban



2 . I am satisfied with the maintenance level of roads in Tegal City
39 jawaban



3.How would you evaluate the availability and condition of road signage in Tegal City?
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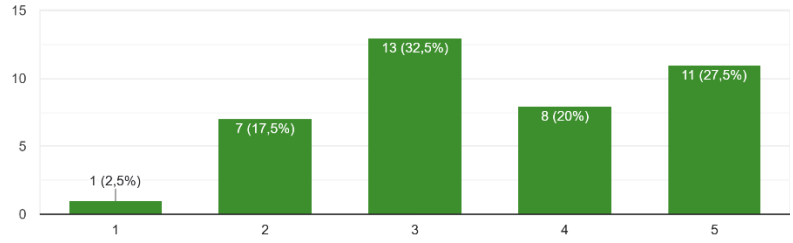

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4. Roads in Tegal City are well-paved and free from potholes
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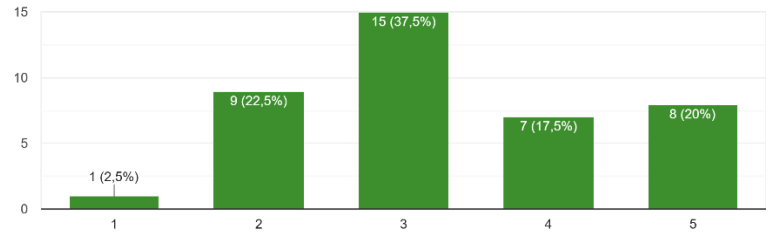

5. The road signage in Tegal City is clear and easy to understand.
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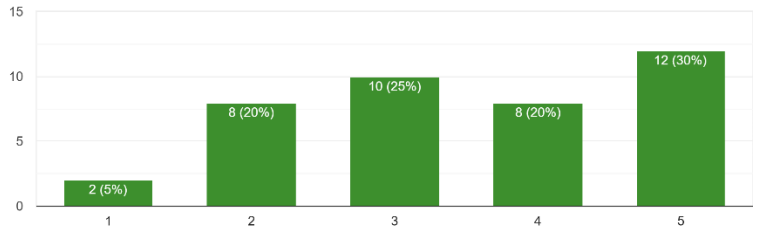
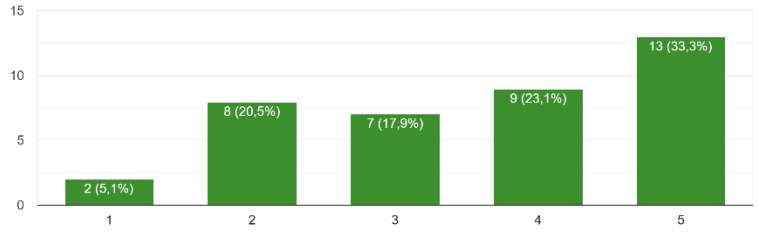
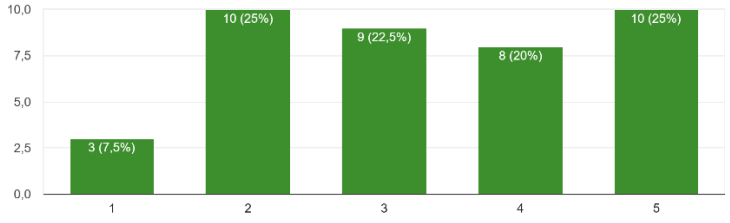


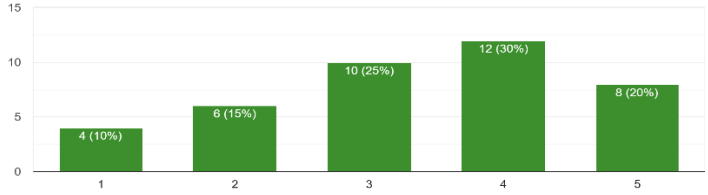
6. The road signage in Tegal City is clear and easy to understand.
39 jawaban



7. The overall quality of road infrastructure in Tegal City meets my expectations.
40 jawaban



8. How satisfied are you with the overall safety of roads in Tegal City?
40 jawaban



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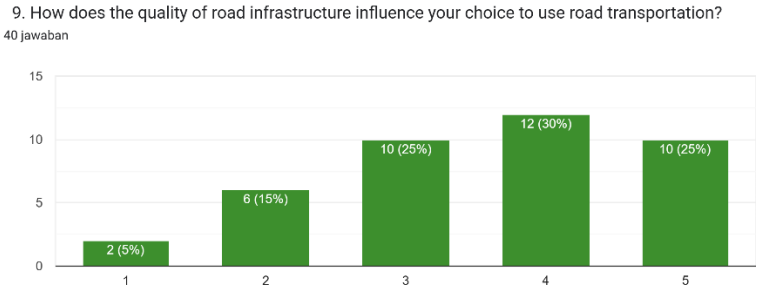

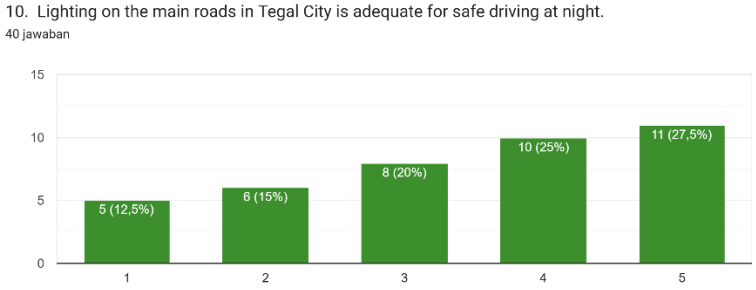

- **Road Quality**

From the survey results, the condition of the road surface in Tegal City was rated moderate to poor by the majority of respondents (60%). Only a small number of respondents (35%) rated road conditions as good or excellent. This suggests that damage to the road surface, such as the presence of potholes, is still a major challenge that affects the comfort of road users. Poor road surfaces not only disrupt travel but also increase the risk of accidents and vehicle damage. This dissatisfaction indicates the need for improvement in the planning and implementation of a more systematic and sustainable road improvement program.

- **Drainage System**

The drainage system was rated poor by 50% of respondents, with the main reason being the frequent occurrence of standing water when it rains. This suggests that the drainage system in Tegal City is not able to handle rainfall well, causing water to pool and accelerate road damage. Standing water also disrupts the mobility of road users, especially motorized vehicles that are more susceptible to the risk of slipping or water damage. This drainage problem is a serious concern that needs to be addressed by the government through better infrastructure planning, especially in areas prone to inundation.

- **Safety and Support Facilities**

Assessments of safety facilities, such as traffic signs and street lighting, show mixed results. Most respondents (70%) rated traffic signs as fair to good, but there were still 20% who considered these facilities poor or very poor. Deficiencies in traffic signage can cause confusion or increase the risk of accidents, especially at congested intersections.Meanwhile, street lighting was rated as adequate by 60% of respondents, but 10% said it was inadequate, especially in less strategic areas. The lack of lighting can have a direct impact on safety, especially for road users at night. This highlights the need for greater investment in the provision and maintenance of safety facilities.Pedestrian sidewalks are also a concern, with more than half of respondents (55%) rating the quality of sidewalks as fair to poor. This suggests that pedestrian infrastructure is not yet a priority, despite its importance for creating an inclusive and safe transportation environment. Damaged or inadequate sidewalks can reduce comfort and increase the risk of accidents for pedestrians.

- **Road User Satisfaction Level**

In general, the level of road user satisfaction is moderate, with 40% of respondents being moderately satisfied, and only 33% being satisfied or very satisfied. Dissatisfaction (27%) mostly stems from problems with road damage, puddles, and lack of supporting facilities. This reflects that although some aspects have been improved, road infrastructure in Tegal City still does not fully meet user expectations. This dissatisfaction also indicates that the problems identified need to be addressed immediately to improve the road user experience.

CONCLUSION

This study shows that the quality of road infrastructure in Tegal City has a significant influence on the level of road user satisfaction. Although there were some aspects that were considered quite good, such as the presence of traffic signs and lighting in some areas, the majority of respondents still rated the overall quality of road infrastructure in the moderate to poor category. Damaged road surfaces, inadequate drainage systems and suboptimal pedestrian facilities are the main challenges that reduce the comfort and safety of road users. The relatively low level of road user satisfaction reflects that the existing infrastructure has not been able to fully meet the needs and expectations of the community. Respondents' main complaints relate to the presence of potholes, puddles during the rainy season, and the lack of attention to supporting facilities such as safe and proper sidewalks. These findings underscore the importance of improving the quality of road infrastructure through more integrated planning strategies and adequate resource allocation. To improve road user satisfaction, the local government is advised to prioritize repairing road surfaces, improving drainage systems to reduce standing water, adding safety facilities such as lighting and traffic signs, and improving sidewalks for pedestrians. With these measures, Tegal City can create a safer, more comfortable and efficient road infrastructure, which in turn supports the mobility of citizens and the overall development of the city. The findings are also expected to provide a solid basis for policy makers to formulate sustainable road infrastructure improvement programs.

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