

FROM CONGESTION TO ACCESSIBILITY: ANALYZING THE RELATIONSHIP BETWEEN TEGAL CITY'S PUBLIC TRANSPORT INFRASTRUCTURE AND COMMUTER SATISFACTION

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Abstract

Urban transport infrastructure is crucial role in determining commuter satisfaction and overall accessibility in cities, especially in densely populated areas like Tegal City, Indonesia. This study examines the relationship between Tegal City's public transport infrastructure and commuter satisfaction, highlighting the impact of congestion, availability, reliability, and comfort on daily travel experiences. The primary aim is to evaluate how existing infrastructure supports commuter needs and identifies key factors affecting user satisfaction and accessibility. A mixed-methods approach was used, combining surveys, observational studies, and statistical analysis to gather data on commuter experiences and infrastructure efficiency. Results reveal that while Tegal City has improved public transport availability, issues with congestion, limited route coverage, and inconsistent service quality remain. This has led to moderate commuter satisfaction levels and barriers to full accessibility. The study recommends targeted infrastructure upgrades, optimized scheduling, and expanded routes to enhance the usability and appeal of public transportation in Tegal City, ultimately fostering a more accessible and efficient urban transport system for residents.

Article History

Submitted: 14 Januari 2025

Accepted: 20 Januari 2025

Published: 21 Januari 2025

Key Words

Urban Transport Infrastructure, Commuter Satisfaction, Accessibility, Public Transport, Congestion.

INTRODUCTION

Urban transport infrastructure is a critical component in shaping a city's accessibility, efficiency, and commuter satisfaction. In densely populated cities, such as Tegal City, the effectiveness of public transportation is vital for ensuring that residents can commute with ease, reliability, and comfort. However, in many urban areas, including Tegal, current transport infrastructure is often challenged by high congestion levels, inadequate route coverage, and inconsistent service quality, leading to dissatisfaction among commuters and hampering accessibility. These challenges are particularly pressing as urban populations continue to grow, and the demand for efficient transportation solutions increases.

Ideally, an urban transport system should offer a well-coordinated network that provides commuters with convenient access, reliable schedules, and an adequate level of comfort across routes. Efficient public transport infrastructure not only supports sustainable urban growth but also enhances the quality of life by reducing travel times, improving accessibility, and minimizing congestion. In such an ideal situation, the public transport system would be a preferred mode for residents, contributing to lower traffic congestion and higher levels of commuter satisfaction.

Studies on urban transportation underscore the significance of specific infrastructure characteristics, such as availability, reliability, and comfort, as major factors influencing commuter satisfaction. Research conducted in similar urban areas shows that an optimized public transport system can lead to greater accessibility and a more favorable commuting experience. Mixed-methods approaches, including surveys, observational data, and statistical analysis, are commonly employed to assess commuter needs and identify the most critical areas for improvement.

This study focuses on analyzing Tegal City's public transportation system in terms of commuter satisfaction and accessibility. By identifying the relationship between the infrastructure's current state and the commuter experience, this research aims to highlight the areas where Tegal's transport system succeeds and where it falls short. Ultimately, the findings will support recommendations for strategic improvements in infrastructure, route planning, and scheduling to better align with commuter needs and elevate the city's overall transport accessibility and efficiency.

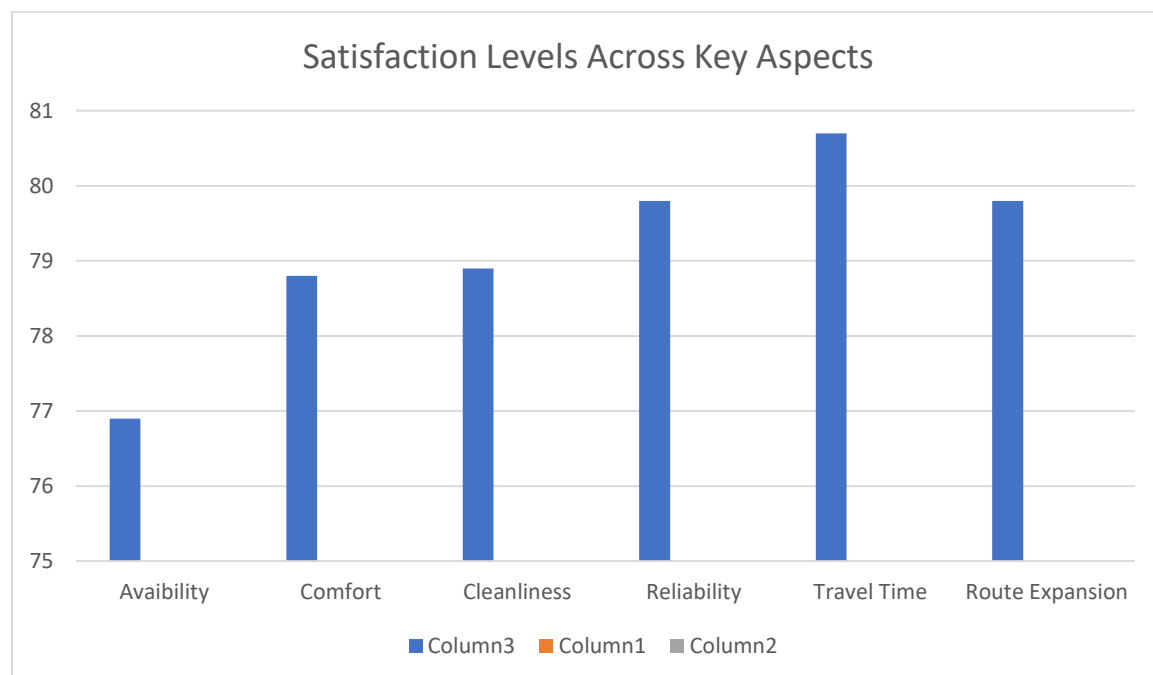
METHODS

This study employs a **mixed-methods approach** combining surveys, case studies, and descriptive analysis to evaluate commuter satisfaction and the effectiveness of Tegal City's public transport infrastructure. This approach enables a comprehensive understanding of the relationship between transport infrastructure and commuter experiences by integrating quantitative data from surveys with qualitative insights gathered from case studies and observations.

The research instrument is a structured questionnaire created to gather both quantitative and qualitative data on commuter satisfaction and the effectiveness of public transport infrastructure in Tegal City.

The research focuses on individuals who frequently use public transportation in Tegal City, Indonesia, as well as important stakeholders including transport operators and policymakers.

DATA DISPLAY



This section presents the findings from the survey, highlighting key aspects of commuter satisfaction with the public transport system in Tegal City. The data provides insights into areas of success and improvement within the system.

Availability of Public Transport

The majority of respondents (76.9%) expressed satisfaction with the availability of public transport, stating that the services are generally accessible. This indicates that public

transport is visible and somewhat meets the needs of urban commuters. However, a significant minority (22.1%) reported dissatisfaction, primarily due to limited route coverage. This issue is particularly noticeable in suburban and peripheral areas, where the availability of transport is insufficient to meet demand. Expanding service coverage to underserved areas would enhance accessibility for these communities.

Effectiveness of Services

A substantial portion of respondents (76.9%) rated public transport as effective in meeting their daily travel needs. The consistency and general reliability of the services are evident in these ratings. However, a smaller group (22.1%) disagreed, citing inadequacies in terms of service frequency and punctuality. This suggests that while the system works well for many users, its reliability falters during peak hours or in high-demand areas. Addressing these gaps would significantly enhance overall system effectiveness.

Comfort and User Experience

Comfort was another aspect of relative strength, with 78.8% of respondents expressing satisfaction. Many commuters appreciated the seating arrangements and overall comfort provided by the vehicles. Nonetheless, concerns remain regarding the quality of vehicles, particularly their maintenance and cleanliness. Respondents highlighted that aging vehicles, lack of cleanliness, and inadequate seating in some cases diminish the overall commuting experience. These findings underscore the need for upgrades in vehicle quality and regular maintenance schedules.

Impact of Traffic Congestion

Traffic congestion emerged as a significant challenge, with 76.9% of respondents agreeing that congestion frequently disrupts their commuting experience. The heavy traffic often leads to delays, longer travel times, and reduced satisfaction levels among public transport users. Congestion not only affects punctuality but also contributes to an overall decline in the reliability of services. Tackling this issue through measures like dedicated bus lanes, optimized routing, and better traffic management would alleviate much of the burden on the system.

Schedule Reliability

Respondents were largely positive about the reliability of public transport schedules, with 79.8% expressing satisfaction. Despite this, complaints about schedule adherence—such as delays and inconsistent timing—were noted by some users. These issues suggest that while the scheduling system performs reasonably well, improvements in punctuality and real-time tracking would further enhance user confidence and satisfaction.

Cleanliness and Facility Maintenance

Cleanliness and the quality of public transport facilities were well-received by 78.9% of respondents. However, 16.3% pointed out deficiencies, including poorly maintained vehicles and unhygienic conditions. Ensuring regular cleaning routines and upgrading facilities would address these concerns and foster trust among commuters.

Travel Time Efficiency

Efficient travel times were another area of success, with 80.7% of respondents indicating satisfaction. The majority felt that public transport helps them save time compared to alternative commuting options. Despite this, complaints regarding service frequency and waiting times indicate that some inefficiencies remain. Increasing service frequency, particularly during peak hours, would mitigate these issues and enhance the system's overall efficiency.

Route Expansion and Accessibility

The survey revealed strong support (79.8%) for expanding public transport routes and improving the scheduling system. Many respondents emphasized the need for better

accessibility, particularly in suburban and less-served areas. Expanding the route network and ensuring seamless connectivity across the city would make public transport more appealing to a broader audience.

RESULT AND DISCUSSION

This study evaluated commuter satisfaction and the efficiency of Tegal City's public transport infrastructure. The findings were derived from survey responses and analyzed across various factors affecting commuter experiences.

1. Public Transportation Availability

- **Findings:** Most respondents (16.3% strongly agree, 60.6% agree) felt public transport is generally available. However, a notable proportion (22.1%) expressed dissatisfaction, highlighting gaps in route coverage and frequency.
- **Discussion:** While availability is a strength, the dissatisfaction points to the need for expanded routes and increased service coverage to better serve remote areas.

2. Effectiveness in Meeting Travel Needs

- **Findings:** A significant majority (14.4% strongly agree, 62.5% agree) found public transport effective. Nonetheless, 22.1% disagreed.
- **Discussion:** These findings suggest that while many users benefit, inconsistencies in service limit the system's overall reliability.

3. Convenience and Comfort

- **Findings:** Most users (9.6% strongly agree, 69.2% agree) rated public transport as convenient. Regarding comfort, 11.5% strongly agree, and 65.4% agree.
- **Discussion:** Improvements in vehicle quality, seating arrangements, and cleanliness could address the concerns of dissatisfied users.

4. Congestion and its Impact

- **Findings:** Many respondents (25% strongly agree, 51.9% agree) noted frequent congestion. Additionally, 83.6% agreed that congestion negatively affects trips.
- **Discussion:** Addressing congestion, through measures like optimized scheduling and traffic management, is critical for enhancing the commuter experience.

5. Reliability and Scheduling

- **Findings:** Public transport reliability was affirmed by 23.1% strongly agreeing and 56.7% agreeing. However, schedule adherence showed mixed results with 15.4% disagreement.
- **Discussion:** Reliability improvements could be achieved by investing in better infrastructure, such as real-time tracking systems.

6. Cleanliness and Quality

- **Findings:** A combined 78.9% of respondents expressed satisfaction with vehicle cleanliness and public facilities, though 16.3% disagreed.
- **Discussion:** Continued focus on maintaining clean and pleasant environments is essential for sustained commuter satisfaction.

7. Travel Time and Efficiency

- **Findings:** Many commuters (14.4% strongly agree, 66.3% agree) were satisfied with travel times, but 16.3% expressed dissatisfaction with inefficiencies.
- **Discussion:** Reducing wait times and increasing frequency can mitigate these inefficiencies.

8. Expanding Routes and Improving Accessibility

- **Findings:** A significant majority (22.1% strongly agree, 57.7% agree) supported expanding routes. Similarly, 79.8% agreed that improving scheduling would enhance usability.
- **Discussion:** Strategic route expansion and better scheduling could greatly improve accessibility and attract more users to public transportation.

The data highlights moderate satisfaction among commuters, with specific concerns about congestion, reliability, and limited route coverage. While availability and comfort are generally rated positively, inconsistencies in service quality and scheduling reduce overall commuter satisfaction.

CONCLUSION

While Tegal City's public transport has strengths in availability and general reliability, challenges such as congestion, limited routes, and inconsistent service quality impact overall commuter satisfaction. Addressing these areas will significantly enhance public transportation's efficiency and appeal, fostering greater commuter trust and accessibility.

RECOMMENDATION

1. **Infrastructure Upgrades:** Expand routes to underserved areas and improve vehicle conditions.
2. **Optimized Scheduling:** Implement real-time tracking systems to enhance reliability and punctuality.
3. **Address Congestion:** Introduce measures like dedicated bus lanes or adjusted service frequencies to reduce delays.
4. **Service Quality Enhancements:** Focus on vehicle maintenance and cleanliness to improve commuter trust and comfort.

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