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THE SATISFACTION ANALYSIS OF LOCAL PUBLIC TRANSPORTATION (CARRY) SERVICES AT BATAM, INDONESIA

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ABSTRACT

Carry is one of the public transportation found in Batam, Indonesia. However, there is a need for innovation so that this public transportation can compete with other public transportation and private vehicles. Therefore, this study was carried out to determine what variables must be considered when determining the level of public satisfaction with "Carry." First, the data collection method is to distribute questionnaires to 131 respondents through google forms. Then the analysis method uses IPA (Importance Performance Analysis), which is presented as a diagram with four quadrants. The results show that the user satisfaction level is 2.85 to 3.45. In contrast, the user importance level is in the range of 4.29 to 4.68, with a gap between -0.94 to -1.68. Finally, based on the study's findings, it can be determined that the variables cleanliness of public transportation facilities, the safety of service users, comfort of service users, and availability of facilities/interiors are placed in quadrant A, requiring special attention.

INTRODUCTION

The backbone of urban transport systems worldwide, particularly in densely populated metropolitan areas, is public transport, defined as a variety of high-capacity vehicles with fixed routes and schedules (Hörcher & Tirachini, 2021). This public transportation plays an essential part in servicing urban transportation and making it easier for individuals to carry out their activities in various dispersed locations throughout urban areas (Rifai, 2021). In other words, public transportation can alleviate the difficulties faced by the general public, especially the lower middle class, to meet their travel needs. The economic goal of public transport is to ensure the optimal allocation of resources to unlock all the social benefits of mass mobility. However, rural settlements are still growing around cities all over the developed world. Since most commuters in this region drive to the city, there are more traffic, parking, and environmental issues, and the downtown transportation system is constantly under stress (Hansson, Pettersson, Svensson, & Wretstrand, 2019).

Transportation moves people, things, or both between locations (Johanes, Dermawan, Isradi, & Rifai, 2022). Without a well-developed transportation system, it is impossible to envision a modern metropolis, as the rate of economic development of cities, industries, and other areas of activity is primarily determined by this factor (Anikin, Terentyev, Andreev, Shemyakin, &

Martynushkin, 2020). The Indonesian population relies heavily on public transit in their daily lives. Indonesia's dense population and growing economy have increased the demand for transportation and vehicle ownership, making public transportation necessary for the country's citizens. Currently, the government is intensively distributing public transportation in Indonesia to reduce congestion and fuel use. However, an increase in public transport supply will not automatically increase people's interest in public transport. The use of efficient and well-utilized public transportation networks is crucial in reducing fossil fuel consumption and the damaging environmental effects of automobiles, such as greenhouse gas emissions and other factors that contribute to climate change (Setiawan, Nasihien, & Masirin, 2021).

Batam City is one of the bustling and busy cities because Batam is an industrial city and also a transit city for goods from abroad. As a result, Batam is also among the cities with the densest traffic in Indonesia. Like other cities, Batam also has several types of land transportation modes to support the travel needs of its people. However, most people in Batam prefer private vehicles instead of public transportation, which can hinder road performance. Not infrequently, congestion in Batam city often occurs, especially during employee return hours coupled with the mobilization of heavy vehicles such as container trucks that are still operating.

One of the locations in the Batam area, namely the Batam Center, will be the place of analysis for this research. Batam Center also has 3 general bus categories: Carry, Bimbar, and Trans Batam. These public transportation categories have their routes according to their colors, but this research only focuses on “carry” public transportation operating in Batam Center (Figure 1). The people of Batam favor this public transportation because of its low prices for near and far trips. However, in addition, the city's public transportation needs to improve in the form of the absence of unique stops so that passengers. Also can get off along the travel route, and the terms of facilities provided need to be improved, such as seats that have begun to tear and need to be equipped with air conditioning.

Due to the growing growth of the Batam Center community and the increasing level of community transportation needs, several factors certainly determine the satisfaction level with carrying transportation services. In light of the occurrence, it is deemed essential to examine the level of public satisfaction with public transit "Carry." The findings may aid in determining which variables should be emphasized to contribute to developing a successful transportation system. Furthermore, considering that after the increase in fuel in Indonesia, the fuel used by private vehicles will be more expensive, and people will consider using public transportation.



Figure 1. Local public transportation (carry) in Batam

LITERATURE REVIEW

Public Transport

Transport plays a crucial part in moving people and things in any thriving metropolitan metropolis where trade and economic activity are crowded (Mayo & Taboada, 2020). To meet the rising demand for transportation services in cities, it must be acknowledged. There has been an increase in the number of vehicles and a greater reliance on private modes of transportation, which has led to severe environmental pollution, heavy traffic, and a high accident rate (Elmansouri, Almhroog, & Badi, 2020). However, nowadays, especially in developing countries, inadequate public transport and population growth have led to a decline in road performance. With a relatively high level of urbanization in Indonesia which is predicted to reach 66.6% in 2035, according to BPS data, the demand for transportation services will also be a challenge to build an excellent urban transportation system.

In big cities, incredibly densely populated cities, congestion is a severe problem. Although the government has been trying to widen the road, this has yet to cause much change. The only solution available to solve the problem of traffic congestion in medium or large cities is to develop efficient public transport (Luo, Zhang, Zhang, Yu, & Li, 2019). Public transportation usually loads more people compared to private vehicles to reduce congestion.

A nation's development also depends on how well its urban public transit systems function. The development and enhancement of public transportation benefit both the local and national economies (Alkharabsheh, Moslem, Oubahman, & & Duleba, 2021). This is due to the fact that using the public transportation systems that have been developed allows one to move between locations while saving time and money. In addition, a transportation system that has developed, it can create jobs and increase state income so that it can help improve the country's economy.

It is well known that Indonesians are more prone to use private vehicles than public transportation. Inadequate public transport and government-subsidized fuel contribute to many private vehicle ownership in Indonesia. People tend to think that public transportation is only used

in times of urgency, so they feel it could be more critical. Public transportation also contributes to supporting the success of the transportation system in urban areas. Furthermore, developing a public transportation infrastructure in a city lessens congestion and pollution (air and noise) owing to fewer private automobiles when inhabitants rely on public transit instead of private vehicles (Alkharabsheh, Moslem, Oubahman, & & Duleba, 2021).

Public Transport User Satisfaction

Compared to driving a private vehicle, taking public transportation has several advantages. Regarding environmental impact, using public transportation is far superior to driving a private vehicle. In addition, overall satisfaction with travel is increased when there is good public transportation (Friman, Lättman, & Olsson, 2020). However, a better understanding of which external variables are required and which are sufficient to create high travel satisfaction for users of public transport services is necessary to manage high travel satisfaction in that mode of transportation (Sukhov, 2021).

Satisfaction with public transportation is closely correlated with the level of service. Several studies have been conducted to determine the qualitative features that attract car drivers (Beirão & Cabral, 2007). Rates and accessibility are also essential attributes in determining that interest. Users can also demand a pleasant and social mobility experience, not only convenient and efficient. (Friman, Lättman, & Olsson, 2020).

A greater understanding of travel behavior, travel experiences, and young people's life satisfaction will aid in the clarification of proposed theoretical linkages and the construction of appealing public transportation (Olsson, Friman, Lättman, & Fujii, 2020). In general, the purpose of the trip, access, and mode-specific aspects connected to personal preferences are decisive factors in choosing public transportation (Gao, Rasouli, Timmermans, & & Wang, 2018). Furthermore, in public transportation, there are two quality features: perceived and physical attributes (Redman, Friman, Gärling, & Hartig, 2013). These conclusions are supported by a more recent analysis, emphasizing the significance of punctuality and frequency of service, comfort and Cleanliness, staff/operator behavior, and safety (Van Lierop, Badami, & El-Geneidy, 2018).

As the significance of passenger satisfaction grows, the perception of travel time has emerged as an intriguing hot topic in the field of public transportation (Meng, Rau, & Mahardhika, 2018). If a passenger who uses a public transportation mode becomes late to work or school, the passenger will feel disappointed. Apart from being viewed from the travel time, comfort is also an essential factor in the interest in public transportation. Convenience is frequently disregarded when designing transportation systems and evaluating how well they perform operationally, despite being one of the most significant factors determining a demand for public transportation (İmre & Çelebi, 2017).

The Trend of Public Transportation

Passengers frequently use multiple transportation or services to complete their journey (Meng, Rau, & Mahardhika, 2018). One of the modes of transportation used is public transportation. In urban areas, public transportation plays a crucial role in providing access to

destinations such as residences, businesses, schools, public health facilities, services, and shopping (Poliak, et al., 2017). Considered an economical and democratic mode of transportation, public transport can promote social cohesion by allowing access to specific activities for the most disadvantaged segments of the community (low-income groups, students, and the elderly population) (Silva, Cadima, Castro, & Tennøy, 2021) Travel destinations, accessibility, and mode-specific features connected to personal preferences are often what influence people's decisions about public transportation. (Gärling, Bamberg, & Friman, 2018).

In most medium-sized cities, demand for public transportation is declining (Zhang, He, Wu, & Li, 2018). The demand for public transport usually comes back to the individual's choice to use it. When selecting particular options, the level of satisfaction with prior decisions or the predicted intensity of emotions (good or hostile) might also impact desire (De Vos, Waygood, & Letarte, 2020). Undeniably, all people also want to get satisfaction in public transportation. Therefore, the facilities are also influential enough to increase interest from the community.

To meet the demand for mobility services, efficient public transportation is required (Al Otary, Abou-Zeid, & Kaysi, 2022). Although it can be more problematic than private transportation, public transportation is generally a safe and secure mode of transportation (Chen & Jou, 2019). Moreover, if the consumer is happy with the service received, they are more likely to utilize, visit again, or refer to the service (Ng & Phung, 2021). Therefore, people began to stop using public transport due to some inconvenience. (Harini, Parkavi, Supriya, Kruthika, & Navya, 2020).

Population growth in urban areas places a burden on local transport infrastructure. (McQuilkin, 2021). So, the public transportation provided by the government needs to meet the capacity of the existing population. As a result, people have to use other modes of transportation. Numerous elements, including those of an economic, social, and geographic nature, impact the choice of various means of transportation (Shaaban & Siam, 2021). Nonetheless, access to affordable transport will improve an individual's quality of life and is a sign of a well-managed city (Othman & Ali, 2020).

METHOD

Data is one of the main strengths in compiling scientific research and modeling (Rifai, Hadiwardoyo, Correia, Pereira, & Cortez, 2015). To acquire data on characteristics of interest to public transportation consumers using the Importance Performance Analysis (IPA) approach, the research begins with a survey of public transportation to determine its current state. Then identify the problem in the form of variable variables that will be used as primary data from the study. The next step is to carry out the data collection method and continue by determining the population size.

John A. Martilla and John C. James established the IPA method in 1977 as a descriptive analysis technique (Djastuti, Kusumawardhani, Mahfudz, & Udin, 2020). Traditional IPA methods indicate regions with high or low attribute performance and high or low attribute significance levels (Coghlan, 2012). The suggestions for variables are titled Quadrant A, Concentrate Here,

indicating that the elements in this quadrant are the most important to improve (Widjaja, Astuti, & Manan, 2019). Quadrant B, Keep up the excellent work, explains that the factors in this quadrant are deemed significant and expected to support customer satisfaction. The management must ensure that the performance of the managed institution can continue to be maintained in light of the accomplishments that have been made (Widjaja, Astuti, & Manan, 2019). Quadrant C, Low Priority, states that the components in this quadrant have a low degree of perception or actual performance and are insignificant and insignificant and anticipated by customers. Thus there is no need to prioritize or pay excessive attention to these aspects (Widjaja, Astuti, & Manan, 2019). Quadrant D, Possibly Overkill, explains that the aspects placed in this quadrant are deemed unimportant or unanticipated. Thus it is required to shift resources connected to these factors to other factors that have higher handling priority and still need to be enhanced (Widjaja, Astuti, & Manan, 2019).

Systematic scientific research must identify appropriate problems (Rifai, Hadiwardoyo, Correia, & Pereira, 2016). This study uses quantitative and qualitative methods to determine the number of each variable. This research will later focus on people of productive age (18-64 years) in the Batam Center area. The data was obtained from a questionnaire distributed to the people of Batam Center. The questionnaire was given consisted of four closed-question sections. The questions used in the questionnaire used variables taken from similar research journals. This questionnaire will later be distributed online using a form that respondents will fill out. The research variables will be measured by the range of answers using a linear scale. This is useful to find out the factors of interest of the people of Batam Center towards Carry.

RESULT AND DISCUSSION

The research variables were selected based on similar research journals that discussed the quality and satisfaction of public transportation users. After that, several variables were selected as a reference to determine the factors that influence public interest in public transportation. The variables selected in this study are the Cleanliness of public transportation facilities (Cheng & Chen, 2015); public transport access (Hoang-Tung, Kojima, & Kubota, 2016); service user safety (Kwanto & Arliansyah, 2016); comfort of service user (Kwanto & Arliansyah, 2016); friendliness of officers / driver when serving on trips (Prima, 2020); willingness of driver to serve if there are problems on the way. (Prima, 2020); availability of facilities/interiors. (Idris, 2019); route availability (Retnoningtyas & Handayeni, 2021); waiting time for transportation (Frans, Saranga, & Pah, 2022); and travel time (Frans, Saranga, & Pah, 2022). The information shown below is the result of a questionnaire completed by respondents.

Table 1. Average and gap of performance and importance

Variables	Performance	Importance	Gap
1. Cleanliness of public transportation facilities	2.94	4.59	-1.65
2. Public transport access	3.38	4.49	-1.11
3. Service user safety	3.00	4.68	-1.68

Variables	Performance	Importance	Gap
4. Comfort of service user	2.92	4.57	-1.65
5. Friendliness of officer/driver when serving on trips	3.19	4.29	-1.1
6. Willingness of driver to serve if there are problems on the way	3.07	4.30	-1.23
7. Availability of facilities/interiors	2.85	4.47	-1.62
8. Route availability	3.39	4.36	-0.97
9. Waiting time for transportation	3.33	4.56	-1.23
10. Travel time	3.45	4.39	-0.94
Average	3.15	4.47	-1.32

From taking primary data through questionnaires distributed using google forms, 131 people filled out the form, and as many as 112 respondents who are the user or have ever used the carry and 19 people who never used carry are not included in the research. Therefore, the data shown above were collected from 112 respondents in the city of Batam who replied "yes" or had utilized carry public transport. According to the acquired data, the average value of performance (XI) is 3.15. Meanwhile, the mean significance value (YI) is 4.47. Therefore, the average difference between performance (XI) and importance (YI) based on the collected data is -1.32.

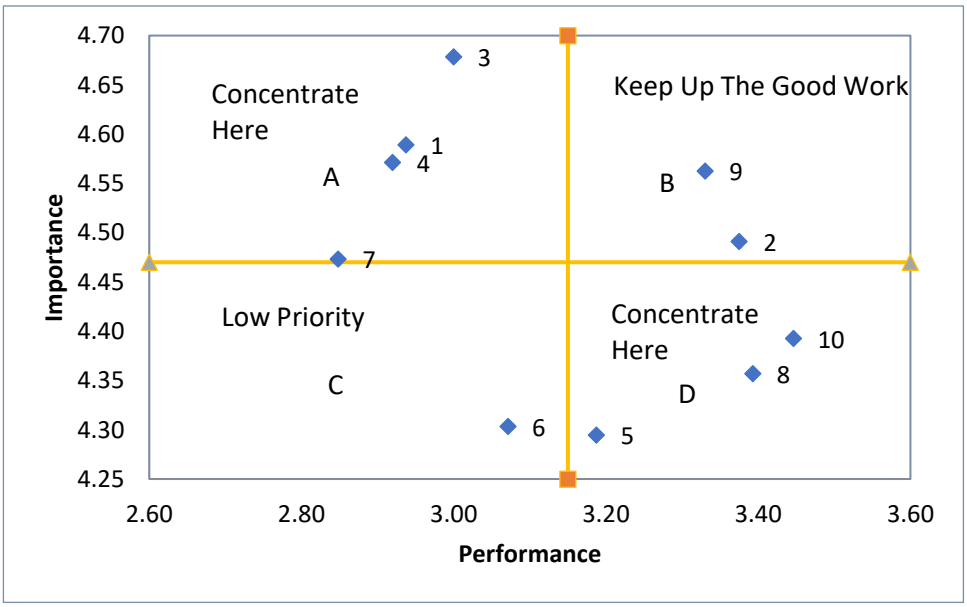


Figure 2. IPA Matrixes

Quadrant A (Concentrate Here) is a quadrant that comprises factors that service customers deem significant. However, these variables still need to be as expected by the customer. Variables 1 (Cleanliness of public transportation facilities), 3 (Service user safety), 4 (Comfort of service

users), and 7 (Availability of facilities/interiors) need to be improved to meet the satisfaction of users of "carry" public transportation services and are the top priority because they have a high level of importance. At the same time, in implementation, they can still not satisfy their users.

Quadrant B (Keep Up The Good Work) is a quadrant that contains variables considered necessary by the user and those attributes that follow what the customer feels. For example, variables 2 (Public transport access) and 9 (Waiting time for transportation) need to be maintained by entrepreneurs/operators because the expectations or interests of users have been in accordance with those felt by service users.

Quadrant C (Low Priority) is a low-priority quadrant because it contains variables considered less critical by the user, and their performance could be better. However, it does not rule out the possibility that this quadrant can be an essential customer concern, so it can still be considered. Variable 6 (Willingness of the driver to serve if there are problems on the way) is considered unimportant by the user. However, its implementation could be better if this variable by both users and public transport service entrepreneurs is not a top priority.

Quadrant D (Possible Overkill) is a quadrant with attributes considered less critical by service users, and the performance is perceived to be too high. Variables 5 (Friendliness of Officers / Drivers when serving on trips), 8 (Route availability), and 10 (Travel time) are variables that are not so important to service users, but because transport operators carry out well, users feel satisfied with the services provided. However, in this case, the variables contained in this quadrant may become necessary for service users in the future.

CONCLUSION

This research aims to assess the degree of public satisfaction with "carry" public transportation. According to the findings of the conducted analysis, the Cleanliness of public transportation facilities, the safety of service users, the comfort of service users, and the availability of facilities/interiors are top priorities for service owners to improve. However, it should be underlined that the safety of service users has the highest gap, which is equal to -1.68. This indicates that this point is one of the points that service owners must prioritize because the results obtained conclude that security in public transport can make it arguably less safe. At the same time, the community has high expectations of security in transport. Cleanliness and the facilities/interior of the transport can also be considered unsatisfactory because most public transportation is not equipped with air conditioning. The seats are already torn and dirty, which is also evidenced by the gaps occupying the second and third positions. The service owner should maintain access to public transportation and waiting time for transportation because it follows user satisfaction. Overall, the performance of public transport carry is considered unsatisfactory because the average gap is less than 1. Therefore, owners of transport services should focus more on quadrant A to compete with other public transport.

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