CSI Analysis of Transportation Services in Kabupaten Wakatobi

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Abstract. The Wakatobi Islands are one of the national priority tourist destinations in the 2020-2024 Medium Term Development Plan (RPJM), but the level of transportation services is not yet adequate. The physical condition of the area in the form of an archipelago is one of the obstacles in transportation services besides the limited accessibility of transportation, the availability of facilities and infrastructure to support tourism and human resources. The purpose of this study was to determine public satisfaction with the level of transportation services in Kabupaten Wakatobi. The analysis method used is the Customer Satisfaction Index (CSI) and Importance Performance Analysis (IPA) using seven indicators of transportation services, namely network connectivity, intermodal integration, travel time, travel costs, comfort, safety, and security. Based on the CSI analysis, it was found that the public satisfaction score was 52.73% which was included in the sufficient category with a value range of 50% to 80%. The IPA results state that the most important indicators to be improved are travel costs, comfort, intermodal integration, and travel time.

1. Introduction

Wakatobi Islands have enormous tourism potential, but this has not been optimally utilized. The poor condition of accessibility and connectivity in Wakatobi needs to be addressed by developing integration between transportation modes to support the development of national priority tourist destinations as well as equitable distribution of basic services throughout the region [1], [2].

Provision of transportation facilities and infrastructure is very important to accelerate economic activity in a region [3]. The quality of the facilities and infrastructure services for land, sea and air transportation needs to be improved. The community's need for ideal transportation must meet the criteria of being cheap, safe, fast, comfortable, and large [4], [5]. Customer satisfaction is the main goal for every service provider. Public satisfaction with these services is defined as the ability to meet and exceed their expectations and desires. For this reason, it is necessary to know whether the service user is satisfied with the current service [6]. If there is still a gap between expectations and desires, it is necessary to study what indicators should be corrected immediately [7].

2. Methodology

This study uses a descriptive analysis approach by processing qualitative data and quantitative data through interviews and surveys using a questionnaire distributed to respondents, namely the public who use transportation in Kabupaten Wakatobi. The method of calculating the quality of service used in this study is the Customer Satisfaction Index (CSI) method and the Importance Performance Analysis (IPA) method.
The CSI method is used to measure the level of user satisfaction with the services needed. This method is calculated using the formula:

\[ CSI = \sum_{k=1}^{n} [S_k \cdot W_k] \]  

(1)

Note:

- \( S_k \) = level of average user satisfaction with service quality
- \( W_k \) = attribute importance weights

The assessment of the CSI score obtained indicates the level of public satisfaction with the services provided. The maximum CSI value is 100%. If the CSI value is lower than 50%, it indicates a low level of satisfaction. The CSI score ranges from 50% to 80% indicating a sufficient level of satisfaction, whereas the CSI score of 80% to 100% indicates a high level of satisfaction with the services provided [8].

The IPA method is a descriptive statistical method to measure the priority of improving service quality and the relationship between user perceptions. The results of the calculation are obtained by calculating the average of each type of question from two variables, namely service performance and user interests to find the level of suitability. The assessment is done by giving a score of 5 for the very satisfied category, a score of 4 for the satisfied category, a score of 3 for enough category, a score of 2 for the dissatisfied category, and a score of 1 for the very dissatisfied category. There are four quadrants in this model which are described in Figure 1.

3. Results and Discussion

The following sections will discuss the characteristics of respondents, CSI, and IPA analysis.

3.1. Characteristics of Traveller and Characteristics of Trips

The results of the interview survey in the form of the characteristics of travelers and the characteristics of their trips are presented in Figure 2.

The ages of the residents of Wakatobi who become travelers are generally at the productive age/working age (between 25 to 55 years old) and school-age (between 17-25 years old). This means that business travel dominates the movement of people in Kabupaten Wakatobi. The sex of travelers is predominantly male and less than 40% are female. The level of education of travelers, in general, is relatively high, namely: undergraduate and senior high school. This indicates that in general there will be demands for a relatively high level of transportation services. The majority of Kabupaten Wakatobi who become travelers are employees or entrepreneurs. The number of family members who become the traveler is generally 3-4 people/family. The majority of vehicle ownership is 1-2 motorbikes/cars. So it can be stated that the Wakatobi community is an alternative user (who has the choice of using other modes of transportation other than public transportation, in the form of motorbikes or private vehicles). The income of travelers is in the lower-middle-income class. This shows that local travel in
Wakatobi is relatively sensitive to tariffs, so the provision of cheap transportation remains a priority. Generally, the transportation expenses of Wakatobi residents who become travelers are between IDR250,000.00 per month to IDR500,000.00 per month.

The characteristics of trips made by Wakatobi residents are mostly inter-island within the Kabupaten Wakatobi (46%), intra-island trips (37%). The majority of the population travels for work or business. The frequency of trips shows a balanced proportion between formal and non-formal work activities. For daily trips, most of the Wakatobi residents use motorbikes and/or private cars as the main mode.

**Figure 2.** The characteristics of travelers and the characteristics of trips

**Table 1.** Chronology of trips

| No | Characteristics                  | Pre-Main | Main    | Post-Main | Total   |
|----|----------------------------------|----------|---------|-----------|---------|
| 1  | Estimated Distance (Km)          | 5.28     | 41.22   | 6.23      | 52.73   |
| 2  | Travel time (minutes)             | 19       | 49      | 17        | 84      |
| 3  | Waiting time (minutes)            | 7        | 32      | 10        | 49      |
| 4  | Estimated Cost ( IDR)             | 31,400.00| 108,417.00| 15,278.00 | 155,094.00 |
The chronology of inter-island trips carried out by the community is presented in Table 1. Trip characteristics were analyzed in three phases, namely pre-main, main, and post-main. Pre-main is the mode used from the origin location to the inter-island departure node, the main model used for inter-island travel, while the post-main is the mode used from the arrival node to the destination location. Transportation access distance (from/to the main node) ranges from 5.28-6.23 km, with transportation access costs (using land transportation) ranging from IDR15,278.00 to IDR31,400.00 per trip or around IDR 2,452.00 to IDR 5,947.00 per km. This access fee is relatively expensive considering that most of them use private or rental vehicles. Total travel time (from point of origin to destination) including waiting time is approximately 133 minutes. The proportion of waiting time is around 36.84% of the total trip.

3.2. Analysis Customer Satisfaction Index (CSI)

Public assessment of transportation services in general ranges from a score of 2.51 to 2.78 with an average value of 2.64, which means that the level of satisfaction is at the level of quite satisfied. The assessment of the level of importance is at an important level with a score range of 4.04 to 4.43 with an average value of 4.24. The difference in the value of the satisfaction level which is lower than the value of the level of importance indicates that there is still a gap between the expectations and the reality that is felt by the community towards transportation in this area.

Based on table 2, the CSI value of 52.73% indicates that in general the level of satisfaction with transportation services in Wakatobi is in the moderate category with a tendency to be dissatisfied because it is in the lower limit of the range of 50%-80%. The lowest CSI value is the travel cost indicator, which is 6.83. This occurs because the travel costs incurred are currently higher than the expected travel costs as described in Table 1.

| No | Indicator                        | Score (SN) | Weight Factor (FB) | Score total (SB) | CS Index (SB)/(BM) |
|----|----------------------------------|------------|--------------------|-----------------|-------------------|
|    | Performance level (Xi)            | Importance level (Yi) | Yi/∑Yx100% |                |                   |
| 1  | Network connectivity              | 2.78       | 4.22               | 14.22           | 39.53             | 7.91              |
| 2  | Intermodal integration            | 2.56       | 4.27               | 14.39           | 36.83             | 7.37              |
| 3  | Travel time                       | 2.64       | 4.3                | 14.49           | 38.25             | 7.65              |
| 4  | Travel costs                      | 2.51       | 4.04               | 13.61           | 34.17             | 6.83              |
| 5  | Comfort                           | 2.51       | 4.24               | 14.29           | 35.86             | 7.17              |
| 6  | Safety                            | 2.75       | 4.18               | 14.08           | 38.73             | 7.75              |
| 7  | Security                          | 2.7        | 4.43               | 14.93           | 40.30             | 8.06              |
|    | Total                             | 18.45      | 29.68              | 100.00          | 263.66            | 52.73             |
|    | Average                           | 2.64       | 4.24               |                 | 7.53              |

3.3. Importance Performance Analysis (IPA)

Intermodal integration (Indicator 2) is in quadrant I, which is an area of high importance (High Importance) and low level of satisfaction (Low Performance). This condition indicates that the indicators of intermodal integration are considered important by users, but in fact, they are not as expected. Security (indicator 7) as seen in quadrant II is an advantage of transportation in Kabupaten Wakatobi. This condition shows that the indicators that are considered important by users are by what is felt so that the level of satisfaction is relatively high and must be maintained.

Travel costs (indicator 4) are in quadrant III, which is an area with a low level of satisfaction (low performance) and a low level of interest (Low Importance) so that it can be said that this trip cost indicator is the weakest in service. Network connectivity (indicator 1) and safety (indicator 6) are in quadrant IV, which is an area with a high level of satisfaction (High Performance) and a low level of importance (Low Importance). The two indicators can be said to be less important by users of the services provided too much. Strategy analysis using IPA is presented in Figure 3.
4. Conclusion

Based on the CSI analysis, it was obtained a value of 52.73% which indicates that the level of community satisfaction with transportation services in Wakatobi Regency is in the sufficient category but is classified as "less satisfied". The IPA results show that the security indicator is service excellence that must be maintained. Meanwhile, the indicators of travel costs, comfort, mode integration, and travel time need to be improved.

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