The performance service evaluation of Sibinuang regular passenger train

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Abstract. The Regular Sibinuang train is one of the railway bases of public transportation, which is serving passengers of Padang – Pariaman corridor, from Padang Station in Padang to the Gandohria station in Pariaman. While PM No. 48 of 2015 regulates the Minimum Passenger Service Standards (SPM) of passenger railways. It needs to be investigated whether the services of the Regular Sibinuang passenger train are in accordance with the SPM. Three hundred respondents are obtained by distributing questionnaires to Sibinuang (Regular) train passengers. The parameters observed in this study were 26 attributes. The analysis was conducted by using the Importance Performance Analysis (IPA) method. This method compares the level of importance with the level of satisfaction (performance), which is separated into four quadrants. As the result, there are five attributes included in quadrant IV. Those attributes are ‘the availability of CCTV cameras,’ ‘the availability of toilets which have good air circulation,’ ‘the availability of a handle for standing passengers,’ ‘the availability of station information to be passed in sequence, and the availability of facilities for disabled passengers.’ The results of the analysis in this quadrant should be the primary reference for PT. KAI Regional Division II West Sumatra as the main priority to immediately improve.

1. Introduction

Nowadays, transportation as a means of transport is developing very fast. The number of users of transportation modes has also increased. One of the means of transportation mode is a train. The regulation of the Republic of Indonesia Number 23, 2007, regarding the Train, consist of the railways as one of the modes of transportation in the national transportation system that has complete and unique characteristics. In its development, the train is one of the modes of transportation which is a solution for population movement. High interest in rail transportation modes must be balanced by improving the quality of stations and facilities on trains, especially at the level of services and facilities in trains [1].

According to [2], the minimum service standard (SPM) for the transportation of people using the train has been listed. The minimum service standard in travel by train is one of the SPMs contained in the regulation. According to [2] concerning Standard Minimum Service of Transporting People by Train, Article 3, paragraph 1, namely: safety, reliability, comfort, convenience, and equality.
The Sibinuang train is an economy class train that serves the Padang-Pariaman corridor. This train is under PT KAI Regional Division II West Sumatra authorities. PT KAI is the only one of the railway company which is owned by the government that provides railway transportation services. As an Indonesian railroad service provider, PT KAI should provide facilities to support its service for users’ comfort and safety.

Research needs to be conducted whether the SPM has been applied optimally or not yet on the Sibinuang train. Based on the existing SPM, whether there still a lot of supporting facilities that have not available yet, or whether the current facilities are not being maintained with the result that the facilities are not appropriate to use.

2. Literature review

2.1. Sibinuang regular train

Padang City is the capital of West Sumatra Province which is located on the west coast of Sumatra island. This city is located at 0 ° 44 '00" and 1 ° 08" 35 "South Latitude and between 100 ° 05" 05 "and 100 ° 34" 9 "East Longitude. According to Government Regulation No. 17 of 1980, the area of Padang City was 694.96 km2 or equivalent to 1.65 percent of the area of West Sumatra Province. Whereas Pariaman City is geographically located at 0 ° 33'00" - 0 ° 40'43" South Latitude and 100 ° 10 '33' - 100 ° 10'55" East Longitude. Padang City is the capital of West Sumatra Province which is located on the west coast of the island of Sumatra. The city is between 0 ° 44 '00" and 1 ° 08" 35 "South Latitude and between 100 ° 05" 05 "and 100 ° 34" 9 "East Longitude. According to Government Regulation No. 17 of 1980, the area of Padang City was 694.96 km2 or equivalent to 1.65 percent of the area of West Sumatra Province. Whereas Kota Pariaman is geographically located at 0 ° 33 '00" - 0 ° 40 '43" South Latitude and 100 ° 10 "33" - 100 ° 10'55 " East Longitude. The total land area of the Pariaman is 73.36 km2, and the sea area is 282.56 km2. Padang and Pariaman are two big cities in West Sumatra Province and geographically located on the west coast of Sumatra.

The transportation modes used from/to these two cities is Sibinuang Regular Train. Sibinuang Train is an economy class train that serves the Padang-Pariaman corridor. This train only serves passengers. This train travels Padang-Pariaman four round trips in a day. Ticket prices are only IDR 5,000 per trip.

Figure 1. Sibinuang regular train
As illustrated in Figure 1, Sibinuang Train consists of a locomotive and six carriages. This train starts from ‘Padang Station’ in Padang City, through Alai Stop Station, Air Tawar Stop Station, Tabing Station, Lubuk Buaya Stop Station, Duku Station, Lubuk Alung Station, Pauhkambar Stop Station, Kuraitaji Stop Station, and finally ‘Pariaman Station’ in Pariaman City. In one trip Sibinuang train has a capacity of ± 450 passengers.

2.2. PM No. 48 of 2015

The minimum service standard in [2], is a reference for the operators of railway infrastructure in providing excellent services for passenger trains. In this regulation are listed, first, Minimum service standards at the train station; second, the minimum service standard in trains. The minimum service standards are listed in Minister Regulation, No. 48 of 2015, concerning Standard Minimum Service of passenger Train, Article 3, paragraph 1, namely; safety, reliability, amenities, convenience, and equality.

3. Research methodology

The data used in the analysis were obtained from the satisfaction surveys. Three hundred respondents participated in this study. The parameters studied were adjusted to PM No. 48 of 2015. Respondents were asked to express the level of importance of these parameters and the level of satisfaction of respondents towards the service of these parameters on a Likert scale. Likert scale is a scale used to express respondents’ perceptions. The scale consists of 5 points rating scale, where the value of 1 indicates the lowest scale while the value of 5 is the highest scale [3].

Figure 2. Quadrant diagramme
Data were analyzed by using the Importance Performance Analysis (IPA) Method. According to [4], the Importance Performance Analysis (IPA) Method was first introduced by [5] to measure the relationship between consumer perceptions and priorities for improving product/service quality. IPA has been generally accepted and used in various fields of study because of its ease of application and display of analysis results that facilitate the proposed improvement of performance [6]. IPA has the main function to display information relating to the service factors, which is according to consumers, which affect their satisfaction and loyalty, and service factors that according to consumers, need to be improved because the current conditions are not satisfied yet.

IPA is a method of analysis that is a combination of aspects of the importance level (Importance) and satisfaction (Performance) of the quality or condition of an object. The method used in IPA is a Cartesian diagram where there are two parameters in this analysis, which are represented by the X and Y axes. The X-axis is the perception of an object that can provide satisfaction to consumers, while the Y-axis is the level of importance of an object (Figure 2).

4. Results and discussion

In this study, determining the total population is calculated using the average daily train passenger data for 40 working days. Based on these data, the number of Railway passenger population from Padang and Pariaman (one way) was 1250 passengers, using the Krejcie and Morgan Tables, a total sample of 300 respondents was obtained.

Through cross tabulation analysis (Crosstabs), the majority of respondents were students, totaling 198 people (66%) and having an origin in Kota Pariaman as many as 137 (45.67%). The travel origin of the majority of respondents comes from the city of Pariaman (45.67%). The travel origin of the user with the second most number, namely from Padang Pariaman district (25.67%), then the third was the user coming from the city of Padang (26.33%). For more details, the characteristics of respondents based on occupation can be seen in Figure 3. The characteristic of respondents by travel origin can be seen in Figure 4.

![Figure 3. Respondents based on the occupation](image-url)
Based on the tabulated data of passenger perceptions of Sibinuang railroad facilities and services, the results of the calculation of the average value of the level of satisfaction and the average value of the importance for each attribute can be seen in Table 1.

### Table 1. The average value of satisfaction and importance level

| No. | Code | Type of Service                                           | Average value | Satisfaction | Importance |
|-----|------|----------------------------------------------------------|---------------|--------------|------------|
| 1.  | A1   | The availability of Light Fire Extinguisher (APAR)       | 3.66          | 4.55         |            |
| 2.  | A2   | Braking smoothness when the train will stop              | 3.78          | 4.56         |            |
| 3.  | A3   | The availability Glass Breaker                          | 4.11          | 4.63         |            |
| 4.  | A4   | The availability of the Evacuation Route Instructions   | 3.79          | 4.54         |            |
| 5.  | A5   | The availability of First Aid Equipment                 | 3.65          | 4.57         |            |
| 6.  | B1   | The availability of CCTV Cameras                        | 2.59          | 4.46         |            |
| 7.  | B2   | The availability of security guards who stand guard     | 4.01          | 4.57         |            |
|     |      | during the trip                                         |               |              |            |
| 8.  | B3   | The availability of the security interference information | 3.35          | 4.33         |            |
| 9.  | B4   | The availability of Lighting for safety                 | 3.85          | 4.42         |            |
| 10. | C1   | Timely Schedule departed                                | 4.22          | 4.65         |            |
| 11. | C2   | Timely Schedule arrived at the destination              | 4.12          | 4.66         |            |
| 12. | D1   | The availability of seats with fixed construction and   | 4.20          | 4.65         |            |
|     |      | have a backrest                                        |               |              |            |
| 13. | D2   | The availability of seats that has a number             | 4.27          | 4.66         |            |
| 14. | D3   | The availability of Toilets that meet the technical and  | 3.75          | 4.50         |            |
|     |      | operating standards                                     |               |              |            |

**Figure 4.** The Respondents characteristic based on the Origin of the travel

Padang City: 26%
Pariaman City: 46%
Padang Pariaman Regency: 26%
The other City: 2%
| No. | Code | Type of Service | Average value | Satisfaction | Importance |
|-----|------|-----------------|---------------|--------------|------------|
| 15  | D4   | The availability of Clean and well-maintained toilets | 3.62          | 4.56         |            |
| 16  | D5   | The availability of a toilet that has a good air circulation | 3.53          | 4.54         |            |
| 17  | D6   | The availability of Lighting for amenities | 3.81          | 4.44         |            |
| 18  | D7   | The availability of Air Regulating Facilities | 3.61          | 4.53         |            |
| 19  | D8   | The availability of restoration Coach | 2.63          | 3.85         |            |
| 20  | D9   | Availability of Handles for Standing Passengers | 2.52          | 4.51         |            |
| 21  | D10  | The availability of Luggage Rack | 4.01          | 4.54         |            |
| 22  | D11  | The availability of bicycle storage | 2.44          | 3.38         |            |
| 23  | E1   | The availability of the Station Information that will be passed/visited in a sequence | 3.36          | 4.47         |            |
| 24  | E2   | The availability of the Information of the Comfort disturbances | 3.15          | 4.45         |            |
| 25  | E3   | The availability of Train Names and Carriage Numbers | 4.04          | 4.49         |            |
| 26  | F1   | The availability of Facilities for Disabled Passengers | 2.81          | 4.60         |            |
|     |      | **Average**     | **3.57**      | **4.47**     |            |

Based on the calculation results in Table 1, it can be seen that the average value of satisfaction is 3.57 and the average value of importance is 4.47. The average value of the satisfaction will fill the horizontal axis (X) and the average value of importance will fill the vertical axis (Y) for the Importance Performance Analysis (IPA) diagram as can be seen in Figure 5.

![Figure 5. Diagram of Importance Performance Analysis](image)

Based on Figure 5, it can be seen that 26 attributes of facilities and services are spread in 4 quadrants as follows:
1. Quadrant IV (top priority), shows the factors of the attributes that are considered very important for passengers while the level of implementation is still not satisfactory. Attributes in this quadrant need to be prioritized by authorities who provide facility services to improve quality. In quadrant IV, there are 5 (five) attributes, namely:
   a. The availability of CCTV cameras (B1)
   b. The availability of toilets that have good air circulation (D5)
   c. The availability of handles for standing passengers (D9)
   d. The availability of station information to be visited/passed in sequence (E1)
   e. The availability of Facilities for disabled passengers (F1)

2. Quadrant III (low priority), shows the factors that are considered less important for passengers while the quality of service or facility implementation is considered less important and less satisfying. Quadrant III there are 4 (four) attributes, namely:
   a. The availability of the security interference information (B3)
   b. The availability of restoration coach (D8)
   c. The availability of bicycle storage (D11)
   d. The availability of the Comfort disturbances Information (E2)

3. Quadrant II (excessive) indicates factors or attributes that are considered less important, but implementation is considered excessive (the quality of facilities and services is good). Quadrant II, there are 2 (two) attributes, namely:
   a. The availability of lighting for safety (B4)
   b. The availability of lighting for amenities (D6)

4. Quadrant I (maintain performance), shows the factors of the attributes that are considered important and in accordance with passenger expectations. In this quadrant, the level of passenger satisfaction is relatively high. Attributes in this quadrant need to be maintained by the company or service provider facilities and services so as not to degrade in quality. In quadrant I there are 15 (fifteen) attributes, namely:
   a. The availability of Light Fire Extinguisher (APAR) size 3 kg (A1)
   b. Smooth braking when the train will stop (A2)
   c. The availability of glass breaker (A3)
   d. The availability of evacuation route instructions (A4)
   e. The availability of First aid kit (A5)
   f. The availability of security officers who are on guard during the trip (B2)
   g. Timeliness of train travel departure schedule (C1)
   h. Timelines to the train destination (C2)
   i. The availability of seats with fixed construction and backrest (D1)
   j. The availability of Seat with has a number (D2)
   k. The availability of toilets operate according to technical and operating standards (D3)
   l. The availability of clean and well-maintained toilet area (D4)
   m. The availability of air Regulating Facilities (D7)
   n. The availability of luggage rack (D10)
   o. The availability of train names and coach numbers (E3)
5. Conclusion

There are four attributes of facilities and services that are not available in the Sibinuang train in accordance with the minimum service standards in train travel in PM No.48 of 2015 namely: the availability of CCTV cameras (B1), the availability of restoration coach (D8), the availability of a handle for passengers standing (D9), the availability of bicycle storage (D11).

There are five attributes of facilities and services that are considered important, but the level of service is considered unsatisfactory, namely the availability of CCTV cameras, toilets that have good air circulation, the availability of a handle for standing passengers, the availability of station information to be visited/passed in sequence, the availability of facilities for disabled passengers. Therefore it is necessary to do:

1. Provide CCTV cameras in every train coach, because as the results of observations and surveys found that there are no CCTV cameras in every train car.
2. Improve air circulation facilities in each toilet.
3. The addition of a handle for standing passengers in each train car, because as the results of observations and surveys found that there is no handle for standing passengers in each train car.
4. Improving and improving service information stations that will be visited/passed in sequence, both visual information services, and audio information services.
5. Addition and improvement of facilities for disabled passengers.

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