



Analysis of Service Satisfaction at A. A. Bere Tallo Atambua Airport Using Importance Performance Analysis (IPA) and Customer Satisfaction Index (CSI) Methods

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Abstract. Service is important in the aviation industry because less optimal service will reduce customer satisfaction. Atambua A. A. Bere Tallo Airport is an airport service provider unit currently under development in terms of service. This research was conducted by distributing questionnaires to passengers, airline ground staff, and tenants and then calculating using the IPA method to determine the value of the level of conformity between the level of interest and the level of satisfaction, which was then plotted onto the Cartesian Diagram and the CSI method to determine the overall level of user satisfaction. Based on calculations using IPA, this study's results show that passenger respondents have an average attribute suitability level of 92.84%. In Quadrant I of the Cartesian Diagram of 20 attributes, four attributes need to be improved or repaired. Airline ground staff respondents have an average attribute level of >100%, and in Quadrant I of the Cartesian diagram of 20 attributes, five attributes need to be improved or corrected. Tenant respondents have an average attribute level of >100%, and in Quadrant I of the Cartesian diagram of 20 attributes, six attributes need to be improved or corrected. The results of calculations using the CSI method, the value of the performance or service that the Airport has carried out for passengers is 86.26%, for Airline Ground staff is 89.89%, and for Tenants is 89.05%.

Keywords: Service Satisfaction, Importance Performance Analysis (IPA) and Customer Satisfaction Index (CSI) methods.

1 Introduction

The transportation industry, particularly air transportation, is one of the world's most important economic sectors [1,2]. As a result, one challenge for airlines and airports is, among other things, to provide high-quality service to travelers, which leads to high passenger satisfaction and, as a result, influences their decision-making process [3]. The rapid development of transportation makes people choose fast, effective, and efficient transportation, so air transportation is the right alternative for people in choosing transportation modes [4,5].

Air travelers can sometimes choose between different airlines and airports that serve the same air route. Customer satisfaction is one of the fundamental foundations for maintaining customer loyalty in the air transportation industry. As a result, airlines and airports face some difficulties. For example, meeting their customer's needs rather than their competitors. Customer satisfaction strategies can help improve service quality in the air transportation industry. As a result, to satisfy travelers and win customer loyalty, airlines and airport managers must provide high-quality service. In this way, evaluating various aspects of air transportation service could highlight areas where it performs poorly to improve service and, as a result, capture new customers [6,7].

AA Bere Tallo Atambua Airport, located adjacent to the Democratic Republic of Timor Leste (RDTL) in NTT, is one of the Belu District Government's concerns in developing developing regional infrastructure due to its strategic location of the Airport. In the effort to develop Atambua A. A. Bere Tallo Airport, one thing that needs to be considered is development in terms of service. As an airport located on the border, the existence of A. A. Bere Tallo Airport also further supports and strengthens the position of Atambua City as a growth center. Therefore, the quality of service at A. A. Bere Tallo Atambua Airport is very important to improve and measure from time to time because service that meets expectations will increase the satisfaction of airport service users and can provide positive feedback to A. A. Bere Tallo Atambua Airport.

In the implementation of service activities carried out by A. A. Bere Tallo Atambua Airport, several service attributes still have not been implemented or are inadequate, so airport users still feel dissatisfied, which will certainly affect airport user satisfaction with the services that have been provided. To solve the service problems, A. A. Bere Tallo Atambua Airport needs to improve the service quality. Moreover, A method is needed to measure the level of user satisfaction and identify service attributes that are considered important to be improved. One of the solutions uses The Importance Performance Analysis (IPA) and Customer Satisfaction Index (CSI) methods. Furthermore, IPA is also useful for investigating customer satisfaction and management strategies. The primary goal of IPA is to diagnose the performance of various product or service attributes while facilitating data interpretation and deriving practical management recommendations. IPA provides insights into which product or service areas managers should focus on by identifying the most important attributes, i.e., the strengths and weaknesses. As a result, it prioritizes management actions to suggest the best use of limited resources to improve and sustain customer satisfaction. [8-13].

CSI models are commonly used to assess customer satisfaction in line with IPA. A CSI is a customer-based evaluation system that measures the quality of a service or product based on the customer's consumption experience. As a result, CSI has been used to evaluate industry performance [14,15]. However, most CSIs used in the air transportation market have primarily measured customer satisfaction for the airline industry [7,16-18]. As a result, a suitable customer satisfaction index is employed to comprehend the current state of traveler satisfaction and loyalty behaviors, a critical management issue for air transportation. However, no customer satisfaction index for the air transportation market has been developed or tested, focusing on different service quality stages of air journeys.

Based on the formulation of the problem described previously, this research aims, first, to find out what attributes are considered important and which are priority improvements for users or service quality to improve the performance of airport services provided by A. A. Bere Tallo Atambua Airport, second to find out the gap between airport performance and the expectations of A. A. Bere Tallo Atambua Airport Service users in a quadrant I, third to find out how far the overall user satisfaction index or service quality is at A. A. Bere Tallo Atambua Airport.

2 Research Methodology

Research methodology is the sciences/methods used to determine, describe, or test a truth using a search in a certain way. Research methodology has benefits for obtaining new knowledge or discoveries, ing or proving existing truths, and for Therefore, before carrying out research, it is necessary to design a research methodology in advance so that the analysis becomes directed according to the research objectives so that it can provide solutions to the existing problem formulations. The research steps and methodology used in this study are described as follows

2.1 Research Object

This study aims to analyze what attributes are considered important or which are a priority for users and the gap between performance and expectations, then identify the extent of the overall user satisfaction index for services at A. A. Bere Tallo Atambua Airport, Atambua, Belu Regency, East Nusa Tenggara Province.

2.2 Determine the problem formulation and research objectives

This problem is formulated by identifying what attributes are considered important and which are a priority for users or service quality to improve airport service performance, identifying gaps between airport performance and user expectations then calculating overall user satisfaction with service quality. at A. A. Bere Tallo Airport, Atambua.

2.3 Determining Service Attributes Based on Five Dimensions of Quality

Selecting Service Attributes Based on Five Dimensions of Quality Service attributes are based on five dimensions of quality, Tangible, Reliability, Responsiveness, Assurance, and Empathy.

2.4 Determine the population and research sample.

The population in this study were passengers (departing), Wings Air airlines (ground staff), and Tenants at A. A. Bere Tallo Airport, Atambua.

Because the total population of passengers is unknown, the determination of the number of passenger respondents uses the Bernoulli formula

$$S = \frac{Z^2 pq}{e^2} \quad (1)$$

With:

N = The number of observations that should be made

Z = Normal table

p = Percentage of eligible questionnaire

q = Percentage of defective questionnaires

e = Percentage of research allowance

Based on the formula above, it can be calculated as follows:

$$N = \frac{1,645 (100 - 9 / 100)(1 - p)}{0,05^2}$$

$$N = \frac{2,706025 (0,91)(0,09)}{0,025}$$

$$N = 88,649$$

From the results of the calculation above, because the number of respondents for passengers is $100 > 88.64$, it can be stated that the data is sufficient to be a sample

Based on the results of direct observations and interviews with Wings Air airlines and Tenants, it was found that the number of Wings Air airline ground staff was 11 people and the number of tenants was 9 people. So that the total number of ground staff and tenants is taken as a whole to be the sample in this study

2.5 Preparation of Questionnaires

Preparation of Questionnaires, The questionnaire formulation in this study is based on five dimensions of service quality (Tangibles, Reliability, Responsiveness, Assurance, and Empathy). In this study, data were obtained through the questionnaire method (closed questionnaire) and using a scale developed by Ransis Likert.

2.6 Data Processing

Data processing methods in this study use Importance Performance Analysis (IPA), gap analysis, and Customer Satisfaction Index (CSI). The data is processed using SPSS software to create Cartesian diagrams and to obtain the highest priority service quality attributes, followed by calculating gaps to determine the gap between airport service performance and customer interests and calculating the Customer Satisfaction Index (CSI) to determine the overall user satisfaction index or service quality at A. A. Bere Tallo Atambua Airport.

2.6.1. Importance Performance Analysis (IPA)

Importance Performance Analysis (IPA) was first developed by Martilla and James in 1977 in their article "Importance Performance Analysis," published in the Journal of Marketing. This method aims to measure the relationship between consumer perceptions and priorities for improving product/service quality. This method, quadrant analysis, and gap analysis analyze two things. From the quadrant analysis, it can be seen that consumer responses to service variables are based on the level of importance and performance of these variables. The gap analysis results can be used to see the gap between the performance of a service variable and consumer expectations of that variable [19].

$$Tki = \frac{\sum Xi}{\sum Yi} \times 100\% \tag{2}$$

With:

- Tki = Level of Conformity of Consumer Importance to Performance
- Xi = Performance level value
- Yi = Importance value

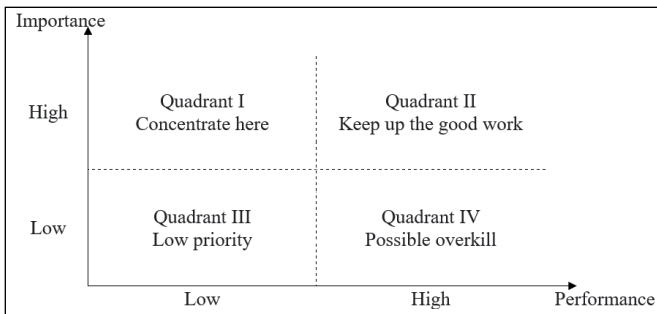


Fig. 1. The four importance-performance analysis (IPA) quadrants [20].

2.6.2. Customer Satisfaction Index (CSI).

Customer Satisfaction Index (CSI), CSI measures how products and services supplied by a company meet or surpass customer expectations. They focus employees on the importance of fulfilling customers' expectations. Customer satisfaction scores and

indices are an attempt to measure how satisfied customers are with the company's performance [21].

Four steps in calculating the Customer Satisfaction Index (CSI) :

$$WF = \frac{MIS_i}{\sum MIS} \times 100\% \quad (3)$$

$$WS = WF \times MSS \quad (4)$$

$$WT = \sum WS \quad (5)$$

$$CSI = \frac{WT}{\text{the max value of likert scale}} \quad (6)$$

With:

- MIS = Mean Importance Score
 MSS = Mean Satisfaction Score
 WF = Weight Factor
 WS = Weight Score
 WT = Weight Total
 CSI = Customer Satisfaction Index

3 Results and Discussion

3.1 Importance Performance Analysis (IPA)

IPA is done by calculating the total score of service performance and the interests of users of A. A. Bere Tallo Atambua Airport. Followed by looking for the gap between the two variables.

3.1.1. Importance Performance Analysis (IPA) Method for Passenger.

Table 1. Attributes for Analysis Passenger Satisfaction

Codes	Attributes
P1	Airport equipment/facilities are adequate and always in good condition/ready to use
P2	Physical facilities (terminal building, waiting room, check-in counters, toilets, etc.) at the Airport are comfortable, clean, and attractive to look at
P3	Service statements/instructions at the Airport are easy to find, understand and interesting to look at
P4	Officers/employees at the Airport always look clean and tidy
P5	Every passenger has a problem at the Airport, and the officers really try to help solve it
P6	Services at the Airport are provided precisely from the first time the passengers arrive.

- P7 Officers at the Airport always provide the latest information to passengers.
 - P8 Ease of getting information at the Airport
 - P9 Clarity of information conveyed from the airport information center
 - P10 Passengers are served immediately/quickly by airport officials
 - P11 Officers are always willing and earnest to help passengers who have problems at the Airport.
 - P12 Officers at the Airport are not too busy, so they can respond quickly to passenger requests/needs.
 - P13 Officers at the Airport can be trusted to provide a sense of security for passengers.
 - P14 Passengers feel safe and comfortable interacting at the Airport
 - P15 Airport staff are always polite and friendly to passengers
 - P16 Airport officers are knowledgeable, so they can answer passenger questions
 - P17 Airport staff pays personal attention to passengers and understands their specific needs.
 - P18 Airport officials prioritize the needs of passengers
 - P19 Airport operating hours that are suitable/according to passengers
 - P20 Officers at the Airport are fair (do not discriminate between passengers) when providing services.
-

Based on the calculation of 20 attributes which include the Five Dimensions of Service Quality at the level of conformity between passenger importance and airport performance, the overall results obtained have a conformity value of $> 80\%$, which means that passengers feel very suitable between their importance and the services provided by A. A. Bere Tallo Atambua Airport.

The results of calculating the service performance of A. A. Bere Tallo Atambua Airport using the Importance Performance Analysis (IPA) method for passenger satisfaction, it is found that the important attributes to be improved or repaired by the A. A. Bere Tallo Atambua Airport are the attributes that are in Quadrant I, namely: P1, P8, P9, and P10 (see Fig 2).

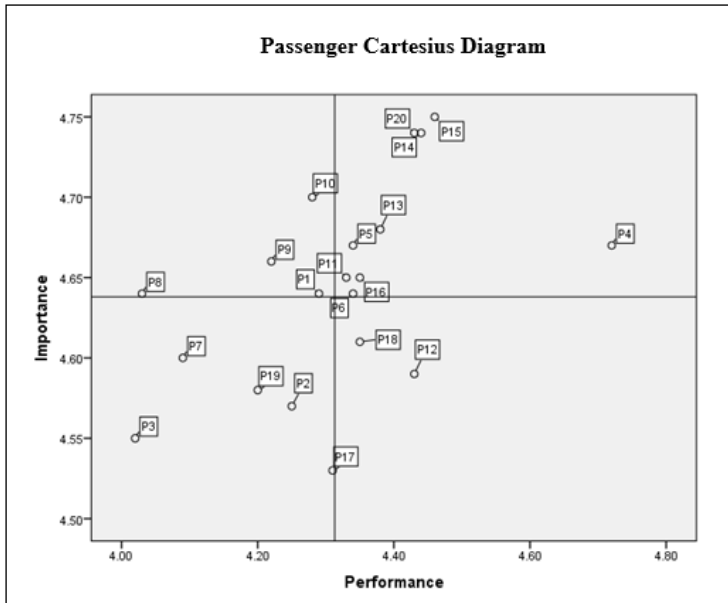


Fig. 2. Passenger Cartesius Diagram

3.1.2. Importance Performance Analysis (IPA) Method for Airline Ground Staff.

Table 2. Attributes for Analysis Airline Ground Staff Satisfaction

Codes	Attributes
P1	A. A. Bere Tallo Airport has flight safety and security equipment/facilities as well as other supporting facilities that are adequate, well maintained and always ready for use both on the land side and the air side
P2	The Airport provides counter check-in facilities and check-in areas which have a fairly large area and are clean/comfortable, good circulation of passengers and baggage, sufficient light, signs and information screens for airline aircraft, internet and other IT networks.
P3	The Airport provides a baggage area and baggage circulation area that is clean, and comfortable and also has sufficient circulation for baggage, conveyor belts and trollies that function properly to move baggage items, and baggage weighing equipment that is maintained and functions properly.
P4	The Airport provides special facilities/areas for airlines (service rooms, administrative office rooms, meeting rooms, briefing rooms, and staff break rooms).
P5	Airport officers always provide accurate and accountable information to airlines, including information regarding flight delays due to special cases, availability, and emergency rescue equipment in danger (fires, accidents, and natural disasters).

- P6 The Airport has enough technicians or officers and is always on standby or ready to help airline staff when there are problems with equipment or facilities related to flight security and safety.
- P7 Airport officers or technicians always ensure that the equipment and facilities used by airline staff are always in good condition, well-maintained, and ready to use so that flight security and safety can be carried out.
- P8 The airport manager is responsible if there is damage or loss of the airline staff's belongings or the airline's equipment related to flight security and safety.
- P9 Complete Clarity of procedures and regulations, easy to understand and comply with as well as clear signs that show directions well
- P10 Airport officers or technicians always take the initiative to help airline staff who encounter difficulties/problems in operating equipment related to flight security and safety.
- P11 Airport officers and technicians are always alert and quick to respond to needs or complaints from airline staff.
- P12 Airport officers and technicians are always at the appointed place and are not too busy so they always respond quickly when airline staff are needed
- P13 Officers and technicians at the Airport always carry out routine checks and maintenance according to the SOP that applies to airline equipment and facilities related to flight security and safety.
- P14 The technicians and officers at the Airport have good knowledge, skills, and abilities to carry out their duties and will also take firm action against anything that can interfere with flight security and safety.
- P15 Airport officers and technicians have appropriate work attitudes and behaviors in working on, assisting, and guaranteeing the security and safety of airline staff in carrying out their duties.
- P16 Airport officers and technicians always ensure that equipment and facilities related to flight security and safety are always in good condition, ready to use at any time, and can operate the equipment based on predetermined procedures or SOPs.
- P17 Airport officers are friendly and friendly to airline staff who are carrying out their duties.
- P18 Airport officers and technicians understand well the specific needs of airline staff, especially needs to be related to flight security and safety, both equipment and facilities.
- P19 Airport staff offers personal assistance to airline staff and airport staff to help and serve with courtesy, friendliness, and wisdom.
- P20 Airport officers always maintain and foster good relations with airline staff.

Based on the calculation of 20 attributes which include the Five Dimensions of Service Quality at the level of conformity between airline ground staff importance and airport performance, the overall results obtained have a conformity value of > 80%, which means that airline ground staff feel very suitable between their reputation and the services provided by A. A. Bere Tallo Atambua Airport .

The results of the calculation of service performance at A. A. Bere Tallo Atambua Airport using the Importance Performance Analysis (IPA) method for airline ground staff satisfaction, it is found that the attributes that are important to be improved or repaired by the A. A. Bere Tallo Atambua Airport are attributes that is in Quadrant I, namely: P1, P3, P9, P11, and P12 (see Fig 3).

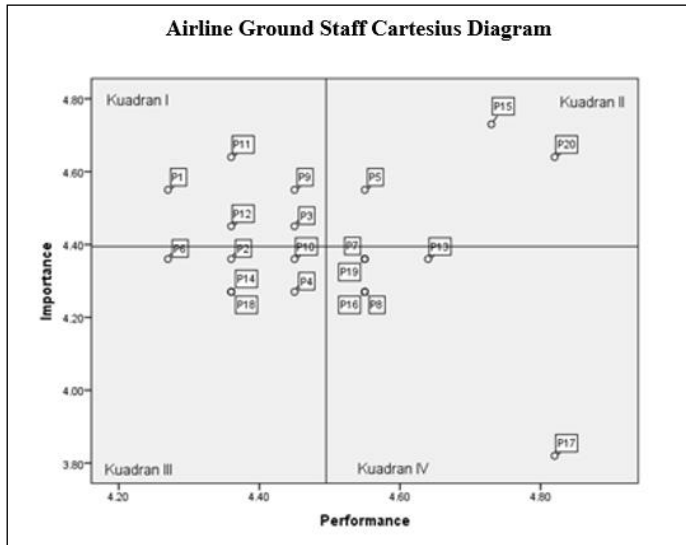


Fig. 3. Airline Ground Staff Cartesius Diagram

3.1.3. Importance Performance Analysis (IPA) Method for Tenant.

Table 3. Attributes for Analysis Tenant Satisfaction

Codes	Attributes
P1	A. A. Bere Tallo Airport looks clean and beautiful, has complete physical and supporting facilities, is well maintained and ready to use at any time
P2	The Airport provides an adequate internet network so that it can carry out online transactions or those that require an internet network, as well as transaction support facilities such as ATM machines.
P3	The Airport provides a selling area that is clean, comfortable, and safe for tenants, sufficient areas for buyers to eat and rest, as well as sufficient circulation.
P4	The Airport has clear procedures and regulations that are complete, easy to understand, and obey, as well as clear signs indicating good information and directions

- P5 The officers who are on duty at the Airport are always serious about helping tenants when there are problems or problems.
- P6 Officers or technicians at the Airport always ensure that the facilities used by tenants are always in good condition, well-maintained, and always ready for use
- P7 The Airport always participates actively in providing support, guidance, and assistance to tenants and also provides facilities to tenants by the agreed agreement
- P8 Ease and Clarity of leasing conditions at the Airport, which involve reasonable rental prices, good location, terms of agreement, and facilities and equipment that tenants get
- P9 Clarity of information related to the terms of leasing at the Airport which relates to leasing regulations, price details, methods of payment, etc.
- P10 Tenants are served well and quickly when they want to submit their intention to rent a room or facilities at the Airport.
- P11 Officers at the Airport are always willing and alert to help tenants when there are difficulties or problems.
- P12 The Airport always supervises the activities of tenants during their business activities.
- P13 The Airport guarantees that the use of the place is free from demands from other parties.
- P14 The Airport guarantees that the facilities provided are always in good condition, well-maintained, and functioning properly.
- P15 The Airport takes action and provides instructions deemed necessary within the limits of its authority.
- P16 The Airport guarantees that tenants are always safe when carrying out their business activities.
- P17 Airport officers are friendly and friendly to tenants who are carrying out their business activities.
- P18 Airport officers and technicians understand well the specific needs of tenants related to the smooth running of their business.
- P19 Airport officers offer personal assistance to tenants and officers also help with courtesy, friendliness, and tact
- P20 Airport officers always maintain and foster good relationships with tenants.

Based on the calculation of 20 attributes which include the Five Dimensions of Service Quality at the level of conformity between tenant importance and airport performance, the overall results obtained have a conformity value of $> 80\%$, which means that tenants feel very suitable between their importance and the services provided by A. A. Bere Tallo Atambua Airport.

The results of calculating the service performance of A. A. Bere Tallo Atambua Airport using the Importance Performance Analysis (IPA) method for Tenant satisfaction, it is obtained that the attributes that are important to be improved or repaired by

the A. A. Bere Tallo Atambua Airport are the attributes that are on Quadrant I, namely: P1, P2, P8, P9, P10, and P11 (see Fig 4).

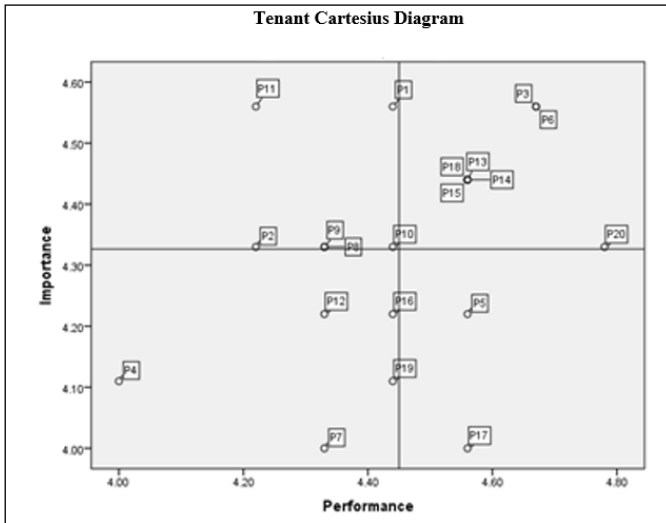


Fig. 4. Airline Ground Staff Cartesius Diagram

3.2 Customer Satisfaction Index (CSI)

Based on the calculation of the value of the Customer Satisfaction Index (CSI) in the data processing that was carried out in the previous chapter, the value of the performance or service that A. A. Bere Tallo Atambua Airport has carried out for passengers is 86.26%, for ground staff The airline is 89.89%. The Tenant is 89.05%, and the index values of each of these users are included in the Very Satisfied criteria, which means that overall user satisfaction with the services at A. A. Bere Tallo Atambua Airport can be said Very Satisfied.

4 Conclusion

Based on IPA calculations, this study's results show that passenger respondents have an average attribute suitability level of 92.84%. In Quadrant I of the Cartesian Diagram of 20 attributes, four attributes need to be improved or repaired. Airline ground staff respondents have an average attribute level of >100%, and in Quadrant I of the Cartesian diagram of 20 attributes, five attributes need to be improved or corrected.

Tenant respondents have an average at-tribute level of >100%, and in Quadrant I of the Cartesian diagram of 20 attributes, six attributes need to be improved or corrected. The results of calculations using the CSI method, the value of the performance or service that the Airport has carried out for passengers is 86.26%, for Airline Ground staff is 89.89%, and for Tenants is 89.05%.

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