ANALYSIS OF PASSENGER SATISFACTION LEVEL TOWARDS SERVICE QUALITY AT CLASS 1 KALIMARAU BERAU AIRPORT

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ABSTRACT
This study investigates the correlation between passenger satisfaction and service quality at Class 1 Kalimarau Airport in Berau. Using a quantitative method and questionnaire distribution to 100 respondents, data were analyzed with Spearman's rank correlation. The results show a very strong and significant relationship between the two variables, with a correlation coefficient of 0.873. Key service factors such as empathy, responsiveness, and information accuracy play a crucial role in shaping passenger perceptions. These findings suggest that improving customer service performance can significantly enhance passenger satisfaction.

Keywords: Airport, Passenger satisfaction, Service quality, Customer Service, Slovin

1. INTRODUCTION

The growth of public mobility has significantly increased the demand for air transportation, driven by the need for fast, comfortable, and reliable travel across regions. Compared to other modes of transport, air travel is considered the most efficient due to its speed and safety, making airports a central element in the passenger journey [1]. Airports serve as both the entry and exit points of regions, thereby playing a strategic role in national and regional connectivity.

Kalimarau Airport, a Class 1 airport located in Berau, East Kalimantan, functions as a vital air transportation gateway for both business travelers and tourists, especially those visiting popular destinations like the Derawan Islands. With growing passenger traffic, the airport is expected to maintain high standards of service quality in areas such as terminal facilities, information delivery, cleanliness, and customer service responsiveness [2].

Passenger satisfaction serves as a key performance indicator in airport management. Positive experiences not only enhance the airport's reputation but also build passenger loyalty. Conversely, dissatisfaction may arise due to delays, poor information dissemination, or inadequate treatment of special-needs passengers, thus affecting overall satisfaction [3]. Ensuring optimal service delivery requires airport managers to continuously assess and improve service quality dimensions.

Service quality in airports is often evaluated using the SERVQUAL framework, which includes dimensions such as tangibles, reliability, responsiveness, assurance, and empathy [4]. These dimensions have been widely used to measure service performance in public sectors, including airports. Moreover, modern service models emphasize the use of data and technology in real-time service improvement, such as predictive systems for passenger flow and customer behavior [5].

This study focuses on analyzing the correlation between passenger satisfaction and the quality of customer service at Kalimarau Airport. It aims to identify which aspects of service delivery most significantly influence satisfaction and to provide insights for targeted service improvement.

2. METHODS

This study employed a quantitative descriptive method to analyze the relationship between passenger satisfaction and service quality at Class 1 Kalimarau Airport in Berau. Quantitative research is based on positivism, utilizing measurable data to examine phenomena and relationships between variables using statistical tools.

2.1 Research Variables

This study analyzes the relationship between two primary variables: Passenger Satisfaction as the independent variable (X) and Service Quality as the dependent variable (Y). These variables were adopted based on relevant theoretical frameworks and empirical studies in the aviation sector.

Passenger satisfaction was measured using indicators adapted from Khuong and Uyen [6], such as Perceived Service Quality, Employee Service Factor, Image of Airport, and Timeliness. These indicators capture the passenger's overall impression and emotional response toward the service experience, both before and during airport interactions.

On the other hand, service quality was measured using the SERVQUAL framework proposed by Parasuraman and operationalized in airport [4]. This includes five key dimensions: Tangible, Reliability, Responsiveness, Assurance, and Empathy. These indicators reflect the physical and interpersonal quality of services provided by customer service personnel.

The following table summarizes the indicators and their sources:

Variable	Indicator	Source
Passenger Satisfaction Level (Variable X)	Perceived Service Quality	Khuong dan Uyen (2014)
	Employee Service Factor	
	Image of Airport	
	Timeliness	
Service Quality (Variable Y)	Tangible	Purnomo dan Widowati (2019)
	Reliability	
	Reponsiveness	
	Assurance	
	Emphaty	

Figure 1 Conceptual framework of the study.

Mandated under Ministerial Regulation No. PM 41 of 2023 [7], particularly Articles 14 and 15, airports are required to ensure that comfort-related facilities are available and accessible throughout the passenger journey—from the curbside area, check-in counter, security screening, to the boarding gate. These facilities must meet standards of cleanliness, accessibility, responsiveness, and convenience to enhance the overall passenger experience.

In this study, the dependent variable (Y) is service quality, referring to the perceived level of service delivered by the airport, especially by its customer service personnel. This includes both tangible and intangible components, such as the condition of facilities, information availability, timeliness of service, and how staff interact with passengers. According to [4], service quality in an airport context is influenced by five key dimensions: Tangible, Reliability, Responsiveness, Assurance, and Empathy.

The independent variable (X) is passenger satisfaction, which represents the subjective evaluation of airport services from the passenger's perspective. [6] explain that satisfaction is shaped by multiple factors, including perceived service quality, employee performance, airport image, and timeliness. Satisfaction reflects how well passenger expectations are met or exceeded throughout their time at the airport.

The population in this study consists of all domestic departing passengers from Kalimarau Airport in Berau during the year 2024. Based on operational records, a total of 201,565 passengers were recorded for that year.

Considering the wide diversity in age, travel purpose, and demographic background, the study did not use categorical segmentation. Instead, the research focused on capturing general perceptions of service quality and satisfaction through random respondent selection. To ensure objectivity and eliminate bias, the study implemented simple random sampling, which, according to [8], gives each member of the population an equal chance of selection.

To calculate the minimum number of samples required, the study used the Taro Yamane formula, which is suitable for large populations. By applying a 10% margin of error, the sample size was calculated as follows:

$$n = \frac{N}{1 + (N\,.\,e^2)}$$

$$n = \frac{201.565}{1 + (201.565\ x\ 0,1^2)}$$

$$n = \frac{201.565}{2016,65}$$

$$n = 99,97 \rightarrow 100$$

2.2 Research Instrument

This study utilized a structured, closed-ended questionnaire to measure passenger perceptions of service quality and satisfaction at Kalimarau Airport. The questionnaire was developed based on validated indicators from previous research, specifically the dimensions of service quality and passenger satisfaction factors.

Each item in the questionnaire was assessed using a 5-point Likert scale, which allows respondents to express their level of agreement or disagreement with each statement. This approach is effective for measuring attitudes, feelings, and experiences in service-related research. According to [9], the Likert scale is commonly used in quantitative studies to measure social phenomena such as perceptions, opinions, and satisfaction levels. This scale allows respondents to indicate their level of agreement with each statement, with the following score ranges:

Table 1 Likert Scale for Questionnaire Assessment

Code	Score	Description
SA	5	Strongly Agree
A	4	Agree
N	3	Neutral
D	2	Disagree
SD	1	Strongly Disagree

The questionnaire consisted of two main sections. The first section measured passenger satisfaction through indicators such as Perceived Service Quality, Employee Service Factor, Image of Airport, and Timeliness. The second section focused on the service quality dimensions, including Tangible, Reliability, Responsiveness, Assurance, and Empathy. Each indicator was represented by 3 to 5 items, allowing for a comprehensive assessment of passenger perceptions.

Prior to data collection, the instrument was reviewed by academic experts to ensure clarity, relevance, and content validity. It was then distributed directly to 100 domestic passengers at Kalimarau Airport using random sampling. The responses were processed and analyzed to evaluate the correlation between the two variables studied.

2.3 Data Analysis Techniques

This research applied several quantitative data analysis techniques to ensure that the collected data were both valid and reliable, and to measure the correlation between the variables under study. The analysis was conducted using IBM SPSS Statistics 26, following standard procedures for instrument validation and inferential statistics in social research.

2.3.1. Validity Test

To determine the validity of the questionnaire items, the Pearson Product-Moment Correlation was used. An item is considered valid if the significance value (sig.) < 0.05 and the calculated correlation coefficient (r count) exceeds the critical value of r table at a 95% confidence level. In this study, the r table value for n = 100 and α = 0.05 was 0.195. All questionnaire items for both the independent and dependent variables achieved significance values less than 0.05 and correlation coefficients greater than 0.195, indicating that each item was statistically valid. According to [10], validity testing using Pearson correlation is appropriate for measuring item consistency with its respective indicator.

2.3.2. Reliability Test

Reliability testing was conducted using Cronbach's Alpha. A variable is considered reliable if the Cronbach's Alpha coefficient is ≥ 0.7, which indicates good internal consistency among the items in the instrument. The test results in this study showed that all variables, including both Passenger Satisfaction and Service Quality, had alpha values above 0.7. Therefore, the questionnaire was deemed reliable and consistent for further analysis. As suggested by [9], a high Cronbach's Alpha coefficient reflects the stability and coherence of items in measuring a specific construct.

2.3.3. Spearman's Rank Correlation

To measure the relationship between Passenger Satisfaction (X) and Service Quality (Y), this study applied the Spearman's Rank Correlation test, which is a non-parametric statistical method used for ordinal data and when assumptions of normality are not met. This method is suitable for analyzing Likert-scale data, as it does not require the variables to follow a normal distribution.

The correlation coefficient (ρ) produced by the Spearman test ranges from -1 to +1, where:

Table 2 Interpretation of Correlation Coefficient (KK)

Correlation Coefficient (ρ)	Interpretation
0.00 – 0.25	Very Weak Correlation
0.26 – 0.50	Moderate Correlation
0.51 – 0.75	Strong Correlation
0.76 – 0.99	Very Strong Correlation
1	Perfect Correlation

3. RESULTS AND DISCUSSION

This section presents the results of data testing conducted to examine the validity and reliability of the research instrument as well as the strength of the correlation between passenger satisfaction and service quality at Kalimarau Airport, Berau.

3.1. Validity Test

The validity test was conducted using the Pearson Product Moment correlation technique. An item is declared valid if the significance value (sig.) < 0.05 and the calculated r count > r table, where the r table value for n = 100 at a significance level of 5% is 0.195.

Based on a total of 100 respondents, the critical value of r table at a two-tailed significance level of 0.05 is 0.1946. The calculated r values (r count) were then compared with this benchmark to determine the validity of each questionnaire item.Each item in the questionnaire, coded as X1 to X8 (for the Passenger Satisfaction variable) and Y1 to Y10 (for the Service Quality variable), is considered valid if the r count > r table at a significance level of 0.05. Conversely, if the r count < r table, the item is deemed invalid.The results of the validity test indicate that all items X1 to X8 and Y1 to Y10 have r count values greater than 0.1946, confirming that the items are statistically valid and suitable for further analysis in this study. The following are the results of the validity test:

Table 3 Validity Test Results for Variable X (Passenger Satisfaction)

Item No (X)	r Count	r Table (n=100, α=0.05)	Criteria
1	0.729	0.1946	Valid
2	0.769	0.1946	Valid
3	0.714	0.1946	Valid
4	0.781	0.1946	Valid
5	0.75	0.1946	Valid
6	0.787	0.1946	Valid
7	0.697	0.1946	Valid
8	0.773	0.1946	Valid

Table 4 Validity Test Results for Variable Y (Service Quality)

Item No (Y)	r Count	r Table (n=100, α=0.05)	Criteria
1	0.779	0.194	Valid
2	0.788	0.194	Valid
3	0.728	0.194	Valid
4	0.75	0.194	Valid
5	0.69	0.194	Valid
6	0.771	0.194	Valid
7	0.798	0.194	Valid
8	0.661	0.194	Valid
9	0.788	0.194	Valid
10	0.69	0.194	Valid

The results show that all statement items from both the independent variable (Passenger Satisfaction) and the dependent variable (Service Quality) have sig. values less than 0.05 and r count values greater than 0.195. This confirms that all the items used in the questionnaire are valid and eligible for further analysis.

3.2. Reliability Test

The reliability test aims to evaluate the internal consistency of the instrument used to measure both the independent variable (Passenger Satisfaction – X) and the dependent variable (Service Quality – Y). The test was conducted using Cronbach's Alpha, a commonly used reliability coefficient in quantitative studies.

According to [9], a variable is considered reliable if the Cronbach's Alpha value is ≥ 0.7, which indicates that the questionnaire items consistently measure the intended construct. In line with this threshold.

The results showed that both variables achieved Cronbach's Alpha values greater than 0.7, confirming that the instrument is reliable for use in further statistical analysis.

Table 5 Reliability Test Results for Passenger Satisfaction (Variable X)

No	Variable	Cronbach's Alpha	N of Items	Reliability Status
1	Passenger Satisfaction (X)	0.874	8	Reliable

Table 6 Reliability Test Results for Service Quality (Variable Y)

No	Variable	Cronbach's Alpha	N of Items	Reliability Status
1	Service Quality (Y)	0.925	10	Reliable

These results are consistent with the reliability criteria. Cronbach's Alpha above 0.7 reflects good internal consistency and acceptable instrument reliability. Therefore, it can be concluded that the research instrument used in this study is statistically reliable for measuring passenger satisfaction and service quality at Kalimarau Airport.

3.3. Spearman's Rank Correlation

The results of the Spearman's rank correlation analysis show a correlation coefficient (ρ) of 0.873 between the variables of Service Quality (Y) and Passenger Satisfaction (X). This value indicates a very strong positive correlation, as it falls within the range of 0.76 – 0.99, based on the classification of correlation strength proposed by [9].

Furthermore, the significance value (Sig. 2-tailed) is 0.000, which is less than the alpha level of 0.05, indicating that the relationship between the two variables is statistically significant. This means that higher service quality is associated with higher levels of passenger satisfaction at Kalimarau Airport.

Table 7 Spearman's Rho Correlation Test Result

Correlations				
			Passenger Satisfaction	Service Quality
Spearman's rho	Passenger Satisfaction	Correlation Coefficient	1	.873**
		Sig. (2-tailed)		0
		N	100	100
	Service Quality	Correlation Coefficient	.873**	1
		Sig. (2-tailed)	0	
		N	100	100
**. Correlation is significant at the 0.01 level (2-tailed).				

The strength of this relationship supports the findings of [6], who emphasized that perceived service quality, including responsiveness, employee interaction, and airport image, significantly shapes passenger satisfaction. Similarly, that dimensions such as reliability, empathy, and tangibility are essential contributors to positive service perceptions in airport environments.

Thus, the data confirms that service quality plays a critical role in determining how satisfied passengers feel with the services provided by airport personnel, especially those involved in direct customer interaction.

One of the key indicators of passenger satisfaction is Perceived Service Quality, which includes passengers' perceptions of cleanliness in service areas, facility comfort, and the accuracy of information provided. When services are delivered completely and satisfactorily, this reflects in a positive perception of the overall airport experience. In contrast, deficiencies in these areas can result in a less favorable impression, ultimately impacting satisfaction levels.

In the context of service quality, the Tangible dimension such as the physical appearance of customer service personnel and the overall atmosphere of the terminal plays a vital role. When staff present themselves in a neat, professional manner and consistently display friendly attitudes, passengers tend to perceive the service more positively, directly contributing to higher satisfaction.

Additionally, the Employee Service Factor under the satisfaction variable indicates that communication skills, responsibility, and staff readiness in dealing with passenger concerns are essential. This corresponds closely with the Empathy and Assurance indicators under service quality, which reflect the ability of service staff to provide not only accurate information but also reassurance and understanding tailored to individual passenger needs.

Moreover, Image of Airport and Timeliness are critical in shaping satisfaction, especially when addressing the needs of vulnerable groups such as elderly passengers or those with disabilities. These indicators are strengthened by Responsiveness and Reliability, which reflect the airport's ability to provide accurate, prompt service. Collectively, the findings demonstrate that enhancing service across both tangible and intangible dimensions is crucial for improving satisfaction. Therefore, airport management should prioritize ongoing staff training and regular performance evaluations to ensure that passenger expectations are met and exceeded.

4. CONCLUSION AND RECOMMENDATION

4.1. Conclusion

There is a correlation between passenger satisfaction and service quality at Class I Kalimarau Airport in Berau, as shown by the results of the Spearman's Rank Correlation test in this quantitative study. The correlation test indicates that passenger satisfaction has a very strong influence on service quality, with a correlation coefficient of 0.873 or 87.3%, demonstrating a very strong correlation between the two variables.

4.2. Recommendation

Based on the respondents' feedback on the variables of Passenger Satisfaction and Service Quality, especially on the indicators Image of Airport, Timeliness, and Empathy, which received relatively lower scores, the following recommendations are proposed to improve the quality of service:

1. Image of Airport

   At Kalimarau Airport in Berau, several passengers reported that the first impression of the airport was not fully positive. This perception is mainly due to the departure service staff being seen as less professional and not reflecting sufficient hospitality.

To build a positive image of the airport, improvements must be made in the attitude and professionalism of front-line personnel. Customer service officers, as the face of the airport, should receive regular training on hospitality, effective communication, and cultural awareness. A warm and respectful welcome from the moment passengers enter the terminal enhances their overall experience.

In addition, a culturally responsive service approach can be adopted such as staff greeting passengers in local language or wearing accessories that reflect the local identity of Berau (e.g., pins or scarves). This personal touch can strengthen the airport's image as a culturally rooted gateway.

2. Timeliness

Some passengers noted that customer service staff were not consistently present on time, especially during early morning hours. This delay impacted the delivery of timely information and caused confusion among passengers.

To address this issue, airport management is advised to implement strict supervision of staff schedules and punctuality. A real-time attendance system, such as fingerprint scanning or ID card login, should be used to track arrivals and departures. Staff who are frequently late should receive formal warnings and be given coaching sessions to improve discipline and service performance.

3. Empathy

There were complaints from elderly passengers, pregnant women, persons with disabilities, and those with health conditions, who felt they did not receive sufficient priority assistance. This indicates that the level of empathy among customer service officers needs further improvement, particularly in quickly identifying and addressing special passenger needs.

Customer service personnel must demonstrate high sensitivity and proactive initiative in assisting passengers who visibly require help. Empathy should not only be reactive but also reflected through active engagement and clear communication with those in need.

It is recommended to conduct regular soft skills training focused on empathy for all customer service officers. Such training should include not only theoretical components but also practical simulations of scenarios involving passengers with various special needs. This will better equip staff to handle real-life situations with confidence and compassion.

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