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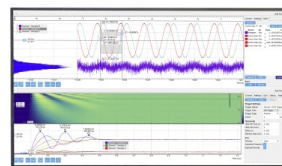
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SERVQUAL Method in Developing Customer Satisfaction System: PT Angkasa Pura I (Persero)

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Abstract. I Gusti Ngurah Rai International Airport is a public service company that must pay attention to customer satisfaction. Therefore, A Strategic Business Unit has to manages the customer satisfaction system. However, this unit only has a system that can be use to input and display satisfaction and complaints from customers. The development of customer satisfaction system needs to be applied by applying the dimensions of the SERVQUAL method which is expected to facilitate PT. Angkasa Pura I (Persero) improves service quality. The waterfall method is used in research for the development of the system, while the structured method is used to analyze and design the system. The results show that the five dimensions of service satisfaction are in the quite satisfied range. The score is in the range of 2-3. The score implication shows that I Gusti Ngurah Rai airport service quality is quite satisfying for consumers.

INTRODUCTION

Government agencies are demanded to always develop technology to make time efficient in term of community service. Management of services to the community that is done manually have been replaced to be computerized. Changes in the management of public services aim to improve the effectiveness and efficiency of work, as well as accuracy in making a decision. Technology developments that have been carried out at government agencies include systems that help record customer satisfaction and complaints.

The level of customer satisfaction cannot be judged from the company's point of view but must be viewed from the customer's point of view. Therefore, in formulating service strategies and programs, companies must be oriented to the interests of customers by taking into account the quality of service components. In order to improve service quality, the company can develop an information system that can be used to help measuring the quality of its service. Measuring customer satisfaction in this case is very beneficial for the company in order to evaluate the company's current position compared to competitors and end users, and find out which parts need improvement. Feedback from customers directly or from focus groups or from customer complaints is a tool to measure customer satisfaction.

SERVQUAL is a framework that is widely used to measure customer satisfaction developed in 1980 [1]. In the context of measuring service quality variables, Zeithaml, Parsuraman and Leondard identified five dimensions of service quality measures namely reliability, responsiveness, assurance, tangibles (direct evidence), and empathy (empathy). This kind of measurement is known as the Service Quality (SERVQUAL) model. The SERVQUAL framework can be implemented in the development of information systems to measure service quality at airports.

The quality of services provided by Angkasa Pura I is very important for consumers who use airport services. Consumers must feel comfortable with the services provided by the airport, so that the company's image will be good in the eyes of consumers. An airport that has a variety of facilities with good service has received a response from SKYTRAX. SKYTRAX awards annually to airports that already have World Class Airport standards [2].

I Gusti Ngurah Rai Airport has an system for complaints reports and airport user suggestions, or what is called Voice of Customers System, where this website-based system is used as recording reports on complaints or

suggestions from airport users that are recorded by the GRO (Greeting Relations Officer) unit. GRO is a unit managed by Gusti Ngurah Rai airport whose job is to welcome passengers who are around the airport as well as asking and recording complaints and suggestions from passengers. Complaints and suggestions recorded by GRO are classified according to services available at the airport, for example food & beverage, toilets, ATMs, and so on.

Weaknesses of existing systems are that the display has not been responsive, does not yet have the output of data management results and there is only one menu that can be accessed, namely the report menu. Data complaints and suggestions from airport consumers that have been available in the system at this time still can not be used optimally to analyze the shortage of servants available at the airport. In accordance with the description of the problem, the purpose of this study is to develop an information system for measuring the quality of services at the international airport I Gusti Ngurah Rai, Bali. The SERVQUAL method will be implemented in the development of customer satisfaction parameters for PT. Angkasa Pura I. The results of the study are expected to make it easier to record complaints or suggestions from consumers and provide information on service quality that is less than optimal.

Literature Review

SERVQUAL was developed by Zeithaml [1] using a user-based approach, which measures the quality of services quantitatively in the form of a questionnaire and contains dimensions of service quality namely tangibles, reliability, responsiveness, assurance, and empathy. This method is broadly divided into 2 parts, namely 1) The expectations section, which contains questions to find out with the expectations or general expectations of consumers for a service,

2) Perception section, which contains questions to measure consumer perceptions about the services provided by a company with certain categories. The two methods in this framework will be implemented in the development of an airport service quality measurement system.

The service quality dimension in the SERVQUAL model is based on a multi-item scale designed to measure customer expectations and perceptions, and the gap between the two in service quality dimensions. The service quality dimension in the SERVQUAL model is based on a multi-item scale designed to measure customer expectations and perceptions, and the gap between the two in service quality dimensions. Initially, Parasuraman [1] identified ten main dimensions with 22 variables related to service and then analyzed using factor analysis. It turns out that several criteria can be used to assess the quality of service. These criteria include 10 potential dimensions that are complementary namely tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, understanding and access. Then in subsequent studies, Parasuraman et al [1] in 1988 perfected the dimensions and then reprocessed them so that they were finally simplified into 5 dimensions, namely:

1. tangibles; include physical facilities, equipment, employees, and communication facilities.
2. reliability: namely the ability to provide the promised service immediately, accurately, and satisfactorily.
3. responsiveness: namely the desire of staff to help customers and provide services responsively.
4. assurance; includes the knowledge, abilities, politeness, and trustworthiness of staff, free from danger, risk or doubt.
5. empathy; includes ease of relationships, good communication, personal attention, and understanding the needs of customers

Parasuraman et al. [1] developed the conceptual model of service quality. This model will be used in the development of the airport service quality measurement system. They formulated a service quality model that highlighted the main requirements in order to deliver the desired quality of service. According to this model, there are five gaps that make a company unable to provide quality services to its customers. The five gaps can be explained as follows:

1. The gap between customer expectations and company management perceptions; the gap is created due to company management misunderstanding what the customer expects.
6. The gap between the company's management perceptions of customer expectations and service quality specifications; This gap occurs due to an error in translating the perception of the company's proper management of the expectations of the company's customers in the form of service quality benchmarks.
7. The gap between service quality specifications and service delivery to customers; the existence of these gaps is more due to the inability of the company's human resources to meet established service quality standards.

8. The gap between providing services to customers and external communication; the gap was created because the company was unable to fulfill its promises that were externally communicated through various forms of promotion.
9. The gap between customer expectations and the reality of the service received; the gap exists as a result of not meeting the expectations of customers.

The gap that occurs between consumer expectations and perceptions of company management regarding the services available at the airport will be processed in the process of measuring service quality in the system being developed.

METHOD

The study uses the SERVQUAL method to measure the satisfaction of I Gusti Ngurah Rai International airport services and uses the waterfall method to develop its customer satisfaction measurement system [3]. The stages of research are shown in Figure 1.

Collecting Data

The data used in the study are data of consumer complaints in 2017 - 2018 recorded by GRO International Airport I Gusti Ngurah Rai. This study used 146 data in the form of suggestions and complaints from consumers. Fill in the complaint data that has been obtained in the form of a description of complaints provided by consumers regarding the facilities available at the airport.

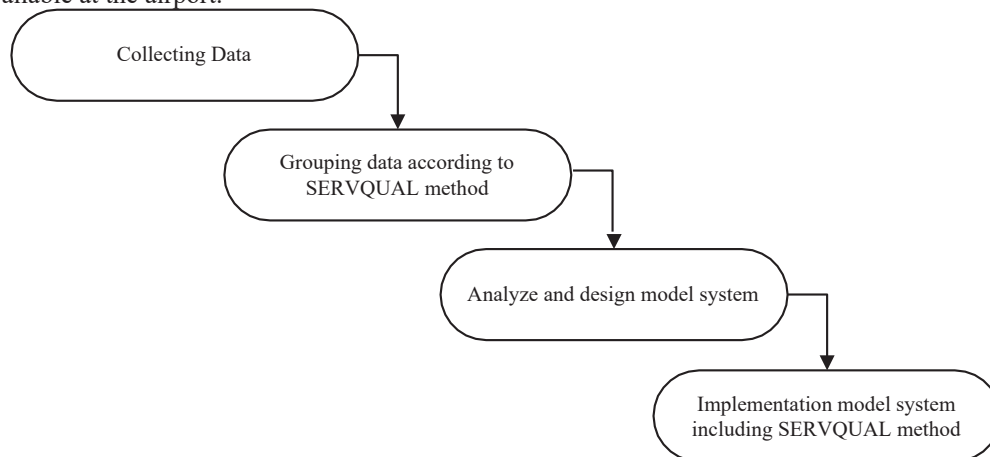


FIGURE 1. Implementation phase of the SERVQUAL method

Grouping Data According to SERVQUAL Method

The dimensions of measuring customer satisfaction used in this study are the five dimensions of the SERVQUAL method. Definitions of service quality dimension according to Zeithaml, Bitner dan Germler [4]:

1. Reliability : This is related to the adequacy of flight information, such as displaying information about the location of baggage and the availability of reliable officers.
2. Responsiveness : This includes fast airport access, effective and efficient security permits, as well as circulation space for smooth baggage collection.
3. Assurance : knowledge and courtesy of employees and their ability to inspire trust and confidence
4. Empathy : caring, individualized attention the firm provides its customers.
5. Tangibles : appearance of physical facilities, equipment, personnel, and communication materials.

Tangible Airport dimensions can be seen from the cleanliness of toilets, car parking facilities, the comfort of the waiting room, and the appearance of airport employees.

These five dimensions will be used to map the quality of airport services that consumers have experienced. Descriptive analysis methods are used to analyze grouping and interpreting data so as to get a clear picture of customer

satisfaction in using the services available at airports. Data analysis results are mapped according to the dimensions of the SERVQUAL method. The amount of data used after analysis is 138

Parasuraman, et al [1] conveys five gaps in the SERVQUAL model, in this study only gap 5 was measured. This concerns the customer's perceptions and expectations of the service delivered; while the other four gaps are first identified as a function of the way in which the service is delivered, namely regarding perceptions and expectations in service providers: management.

Likert scale is a scale used to measure a person's attitudes, opinions, and perceptions about social events or phenomena. The name of the scale is taken from the name of Rensis Likert, who published a report explaining its use [5]. When responding to a question on a Likert scale, respondents determine their level of agreement with a statement by choosing one of the available choices. This study uses five scale options (1-5) the format such as. strongly disagree, disagree, disagree, agree, and strongly agree.

SERVQUAL scores can be calculated based on the following formula:

$$\text{Score SERVQUAL} = \text{Score Perception} - \text{Score Expectation} \quad (1)$$

Analyze and Design Model System

System analysis is the stage to analyze a problem in the research object in order to be able to determine the features and tasks of the system. Structured methods are used to analyze and design service quality measurement system models. The conceptual data model was created to implement the five measurement dimensions of the SERVQUAL framework in information system development PT. Angkasa Pura I (Persero).

Implementation Model System Including SERVQUAL Method

Implementation is the stage for coding the system and implementing what has been explained in data modeling and process modeling. Making the system will be done by coding using the PHP programming language. SERVQUAL methods are also implemented in making programs.

RESULT AND DISCUSSION

Validated consumer satisfaction data is then mapped to the five dimensions of the SERVQUAL method. The results of mapping 138 data to five dimensions are shown in Figure 2. The percentage description of data for each dimension based on the largest sequence of the percentage is as follows: reliability dimension of 34%, empathy dimension of 28%, tangibles dimension of 20%, responsiveness dimension of 12%, and dimensions 9% assurance. The percentage of the reliability dimension has the highest percentage of the five dimensions, this shows the amount of input from consumers with regard to willingness to help customers and provide prompt service. While the assurance dimension has the smallest percentage, this shows that the assessment of customer satisfaction with respect to knowledge and courtesy of employees and their ability to inspire trust confidence. The data from the airport service quality mapping from consumers will be used as data that is input into the service quality measurement information system.

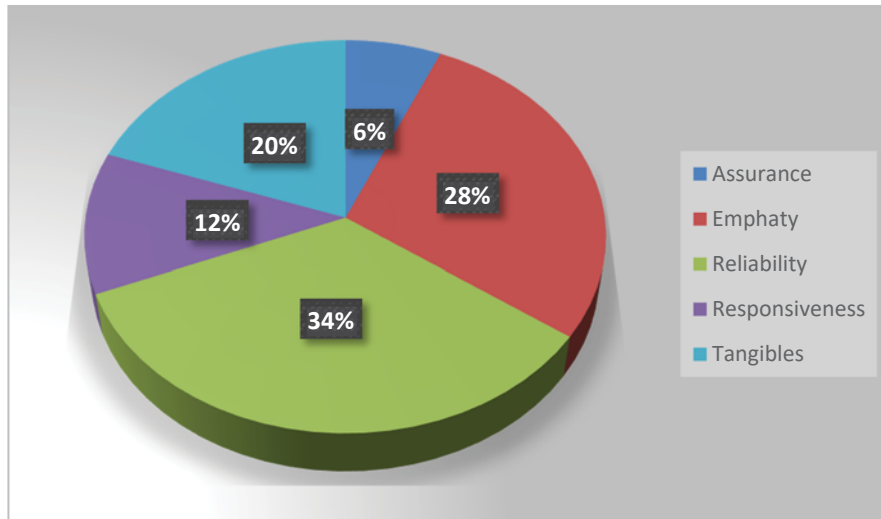


FIGURE 2. Customer Satisfaction Data

Data Modelling

Data modeling that will be used for the development of airport service satisfaction measurement systems is shown in Figure 3. The data model depicted in the form of a conceptual database design has four entities namely Pic, log_GRO, repair and user. Pic is an entity that stores GRO staff data. User entity is an entity that stores system user data. Log_GRO is an entity that stores service satisfaction data, SERVQUAL method dimensions, service satisfaction scores and expected service satisfaction scores. A repair entity is an entity that stores repair facilities available at an airport. The system built in this study was not only used to measure service satisfaction but was also supplemented by recording improvements made by technical staff adjusted for damage to airport facilities.

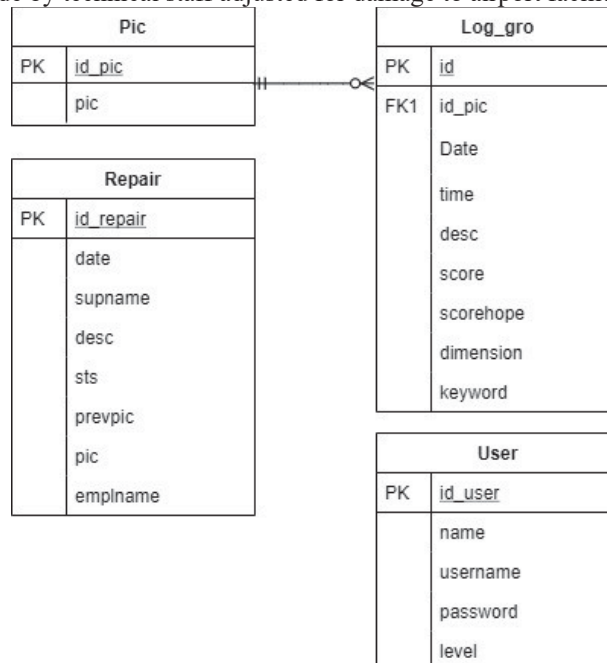


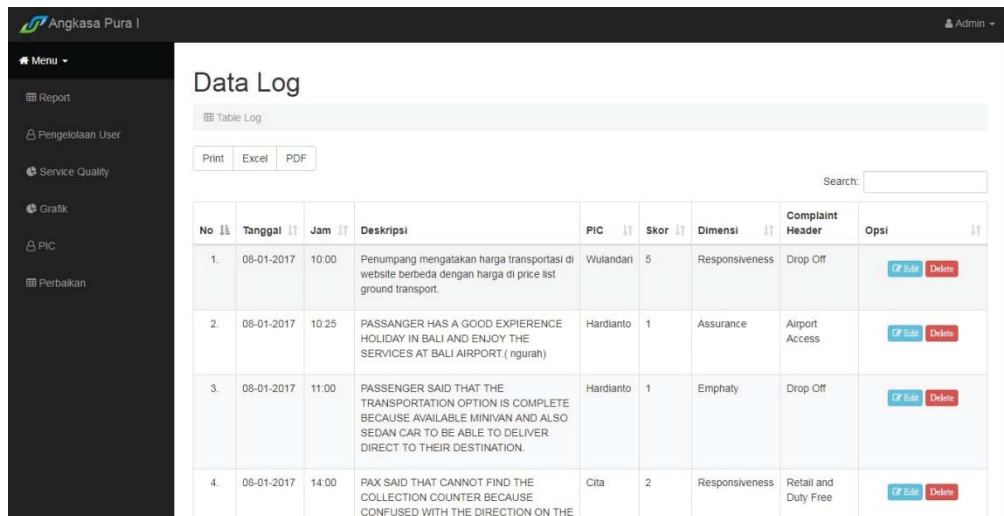
FIGURE 3. Data Modelling

Implementation of SERVQUAL Method

Implementation of the SERVQUAL method is done by creating web-based systems, this system has three levels of users involved. Each user has different access rights. Admin is a user who has access rights to every menu on the system, but the Admin is not allowed to manipulate data in the Report menu without authorization from the authorities. Supervisor is a user who can access the Report menu and is allowed to manipulate existing data. Supervisors can also add assignments to the repair menu which Officers will later see. The clerk can only see data from the Report menu and also the clerk can upload a picture of evidence that the repair has been done. The system has four processes which are functions owned by the system in managing various kinds of existing data. The user management function is a process that can only be done by the Admin, where the Admin can manipulate data in this process. Manage admin is a process where Admin can manage Supervisors who can input service satisfaction data from consumers. Manage customer service satisfaction is the process by which Admin and Supervisor can manage / manipulate service satisfaction data. Manage improvement is the process by which the Supervisor can input a description of the repair problem that needs to be fixed and the Officer can upload evidence that the repair has been done.

The system of the SERVQUAL method can be seen on the Report Page, shown in Figure 4. This page is a page that displays a table of service satisfaction that is in the database which is also the main page for the user. Service satisfaction data from consumers entered into the system are given dimension categories. The service satisfaction perception score is given based on a Likert scale that is a score of 1-5. Expectation scores are also entered into the system using a Likert scale of 1-5. After all data is entered in the system, the output displayed by the system is the score of each dimension of the SERVQUAL method.

The results of data processing using these methods are shown in Figure 5. The results show that the five dimensions of service satisfaction are in the quite satisfied range, i.e. the score is in the range of 2-3. The score implication shows that I Gusti Ngurah Rai airport service quality is quite satisfying for consumers.



No	Tanggal	Jam	Deskripsi	PIC	Skor	Dimensi	Complaint Header	Opsi
1.	08-01-2017	10:00	Penumpang mengatakan harga transportasi di website berbeda dengan harga di price list ground transport.	Wulandari	5	Responsiveness	Drop Off	Edit Delete
2.	08-01-2017	10:25	PASSANGER HAS A GOOD EXPERIENCE HOLIDAY IN BALI AND ENJOY THE SERVICES AT BALI AIRPORT.(ngurah)	Hardianto	1	Assurance	Airport Access	Edit Delete
3.	08-01-2017	11:00	PASSENGER SAID THAT THE TRANSPORTATION OPTION IS COMPLETE BECAUSE AVAILBLE MINIVAN AND ALSO SEDAN CAR TO BE ABLE TO DELIVER DIRECT TO THEIR DESTINATION.	Hardianto	1	Emphaty	Drop Off	Edit Delete
4.	08-01-2017	14:00	PAX SAID THAT CANNOT FIND THE COLLECTION COUNTER BECAUSE CONFUSED WITH THE DIRECTION ON THE	Cita	2	Responsiveness	Retail and Duty Free	Edit Delete

FIGURE 4. Service Satisfaction Report

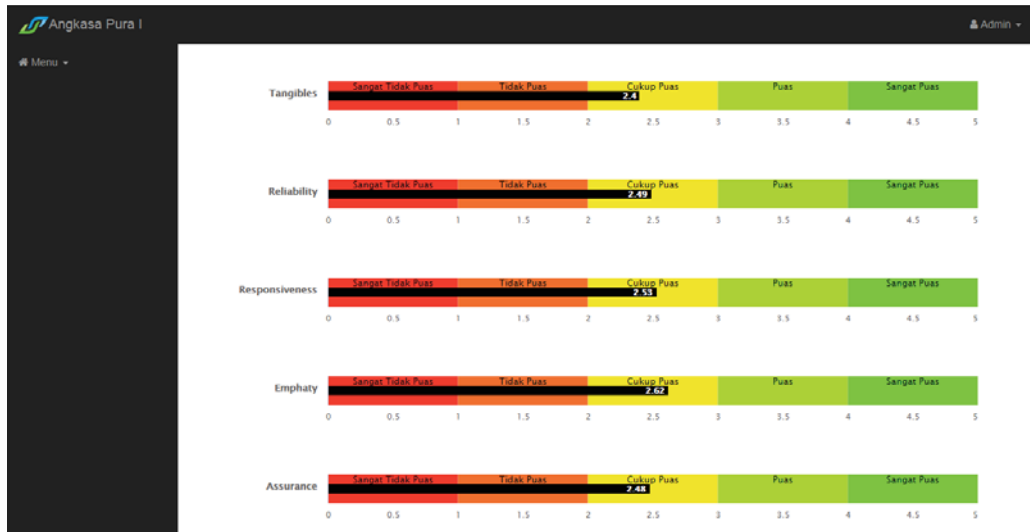


FIGURE 5. Service Quality

Air transport is a transportation that is very popular for consumers who travel a lot, both for work and travel. Therefore, airport services have a very important role in various airports, including the international airport in Ngurah Rai, Bali. The facilities available at the airport must provide satisfaction for consumers [2, 6–13]. Airport managers must understand what is needed and expected by consumers to improve service satisfaction at the airport.

CONCLUSION

Air transport is a transportation that is very popular for consumers who travel a lot, both for work and travel. Therefore airport services have a very important role in various airports, including the international airport in Ngurah Rai, Bali. The facilities available at the airport must provide satisfaction for consumers. This research attempts to develop a system for measuring service satisfaction at airports by applying the SERVQUAL method. The results show that the five dimensions of service satisfaction are in the quite satisfied range. The score is in the range of 2-3. The score implication shows that I Gusti Ngurah Rai airport service quality is quite satisfying for consumers.

For further research, we suggest using other satisfaction measurement methods as a comparison. Subsequent research should pay attention to the more detailed questions given to consumers regarding the facilities available at the airport.

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