

# Integration SERVQUAL and QFD For Improved Quality of Service (Case Study: Mass Transport Trans Padang)

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## Abstract

This study was carried out to the user community transport services Trans Padang which aims to determine what attributes are needed to identify the perceived service quality as well as how big the gap perceived quality of society as a passenger in order to take specific measures to improve service quality Trans Padang. The method used to analyze the level of inequality is SERVQUAL method and then the consumer voice (Voice of Customers) obtained is integrated with the Quality Function Deployment method of forming a quality home (House of Quality).

From the data processing obtained 35 attributes that can identify the quality of service perceived users are divided into 5 dimensions, then of processing SERVQUAL known that there is a gap on the perceptions and expectations of respondents where each attribute has a negative value (-), so that made 13 attempts to improve service quality Trans Padang.

In an effort to improve the quality of services Trans Padang, there are several proposed procurement of additional facilities which need to be held soon. Therefore, it is expected that the UPT Trans Padang and Padang City Government to synergize in order to add the necessary facilities.

**Keywords:** House of Quality, Servqual

## Abstrak

Penelitian ini dilakukan kepada masyarakat pengguna jasa angkutan Trans Padang yang bertujuan untuk menentukan atribut apa saja yang diperlukan untuk mengidentifikasi kualitas layanan yang dirasakan serta seberapa besar tingkat kesenjangan kualitas yang dirasakan masyarakat sebagai penumpang sehingga dapat dilakukan upaya tertentu untuk meningkatkan kualitas layanan Trans Padang. Metode yang digunakan untuk menganalisis tingkat kesenjangan adalah metode SERVQUAL dan kemudian suara konsumen (Voice of Customers) yang didapat tersebut diintegrasikan dengan metode Quality Function Deployment sehingga terbentuklah rumah kualitas (House of Quality).

Dari hasil pengolahan data didapatkan 35 atribut yang dapat mengidentifikasi kualitas layanan yang dirasakan pengguna yang terbagi menjadi 5 dimensi, kemudian dari pengolahan SERVQUAL diketahui bahwa terdapat kesenjangan terhadap persepsi dan ekspektasi responden yang mana setiap atribut memiliki nilai negatif (-), sehingga dilakukan 13 upaya guna meningkatkan kualitas layanan Trans Padang.

Dalam upaya peningkatan kualitas layanan Trans Padang, terdapat beberapa usulan pengadaan fasilitas tambahan yang perlu untuk segera diadakan. Oleh karena itu diharapkan pihak UPT Trans Padang dan Pemerintah Kota Padang untuk saling bersinergi guna menambahkan fasilitas yang diperlukan tersebut.

**Kata Kunci:** House of Quality, Servqual

## 1. Introduction

Congestion in the city of Padang increasingly showing an increase especially at peak hours such as early morning and employee hours back home. According Dishubkominfo, security and *convenience* of public transportation in the city of Padang is still low. And cultural modifications excessive public transportation such as the bottle of liquor, and the sound system is too noisy to make the comfort of passengers disrupted. As a result, passengers feel uncomfortable, do not have the certainty of travel time (unreliability), a low level of safety, and safety is not guaranteed.

The need for a means of transport that meet the standards of safety, security and comfort for passengers to make the government of Padang who assisted the Ministry of

Transportation and the Provincial Government provides mass transit bus rapid transit (BRT) called Trans Padang, with a goal as the bus by means of safety, comfort and convenience for passengers.

But during the operation of the Trans Padang has so far experienced a variety of problems and complaints with many expectations and reality there are differences that passengers accepted. The number of passenger complaints makes the manager of Trans Padang difficult to identify the important things that need to be immediately addressed.

By integrating methods Service Quality (SERVQUAL) that can measure the quality of service based on five dimensions of quality and the method of Quality Function Deployment (QFD) authors can analyze the gaps that occur on customer expectations and perceptions in services received as well as aspects of what becomes of complaints and the focus of quality improvement for the management of Trans Padang.

## **2. Basis Theory**

### **2.1. Service Quality**

Measuring the quality of services in SERVQUAL models are based on multi-item scale designed to measure customer expectations and perceptions, as well as the gap among both the five main dimensions of service quality (reliability, responsiveness, assurance, empathy, and tangibles). Evaluation of service quality SERVQUAL model includes calculation of the difference between the value given by the customer for each pair of statements relating to expectations and perception. SERVQUAL scores for each pair of statements, for each customer can be calculated by the following formula (Zeithaml, et al. Tjiptono and Gregory Chandra (2011).

### **2.2. Quality Function Deployment (QFD)**

Quality Function Deployment (QFD) is a methodology in the process of designing and developing a product or service that is able to integrate the voices of consumers' into the design process. QFD is actually a way for companies to identify and meet the needs and desires of consumers for products or services that it produces (Tjiptono and Anastasia Diana, 2003).

The main focus of this QFD that involve customers in the product development process as early as possible. The underlying philosophy is that the customer will not be satisfied with a product although a product produced was perfect, as it was yesterday said to be posted before about the quality of that product that is superior or perfect is not necessarily needed by consumers.

QFD seeks to translate what the customer needs to be what the company produced. This is done by involving customers in product or service development process as early as possible. QFD thus allows a company to prioritize the needs of customers, finding innovative responses to those needs, and improve processes to achieve maximum effectiveness.

## **3. Research Methodology**

### **3.1 Preliminary Study**

Preliminary study is needed to find out more about what would be a problem . Preliminary studies can be done with the literature study and direct observation in the field.

### **3.2. Identification of Problems**

Prior to this research further, first set out what the problem is. In this report the problem is that there are differences in perceptions and perceived expectations of the public against Trans Padang, then efforts need to be done to improve the quality of service Trans Padang based Voice of the Customer.

### **3.3. Purpose**

The purpose of writing is the answer of the things that exist in the formulation of the problem and what you want to achieve when the report is completed.

### 3.4. Problem Formulation

At this stage, the problem formulation obtained from direct observations.

### 3.5. Places and Objects Research

The study was conducted in Padang Trans users, both inside the bus, stop, or the area around the impassable Trans Padang.

### 3.6. Population and Sample

Population derived from the English language, namely population, which means the population. While the sample is a procedure in which only part of the population are taken and used to determine the nature and the desired characteristics of a population. The technique used is the approach of Isaac and Michel, by the formula:

$$n = \frac{(Z_{\alpha/2})^2 \cdot p \cdot q}{e^2}$$

### 3.7. Research Instruments

Instrument of research is one tool that can be used to acquire, process and interpret information obtained from the respondent data is done is by using the same measuring pattern. To be able good research, not least to meet several criteria such as validity and reliability.

### 3.8. Research Methods

In this study, the shape of the research is descriptive method with quantitative approach in data processing respondent through the spread or filling the questionnaire and a qualitative descriptive approach.

### 3.9. Data Collection Techniques

Data collection techniques to be performed in this study can be:

1. Observation is by direct observation of the employees who are working, the buses are in operation, and other things.
2. Interview namely by interviewing the structural officials, professional staff and executive employees to obtain information.
3. Questionnaire or questionnaires namely by handing out questionnaires to users Trans Padang.

### 3.10. Data Processing

Processing of the data obtained from the processing of questionnaires, which are included in the questionnaire respondents identifying data, the attributes of the dimensions of service quality, followed by the manufacture of the House of Quality.

### 3.11. Analysis of Results

Analysis of the results shows that efforts must be made in improving the quality of services based on the processing of data and information obtained.

### 3.12. Conclusions and Recommendations

Based on the results of making the House of Quality and its technical response will be concluded, and the conclusion will be given a few suggestions .

#### 4. Data Processing

##### 4.1. Gap Score

Table 1. Score Servqual (Gap Score) Attribute Service

Number	Attribute	Perception	Expectation	Gap Score
1	AC works fine	3,348	4,22	-0,872
2	Audio / sound system in a well lit bus	3,24	4,2	-0,96
3	Display in a state of functioning and lit	3,272	4,18	-0,908
4	Sufficient seating capacity	2,748	3,86	-1,112
5	Insufficient capacity of the hanger arm	2,92	3,94	-1,02
6	The distance between the hanger arm conducive	2,928	4,028	-1,1
7	Sufficient passenger capacity in the bus	2,884	4,032	-1,148
8	Bus in a clean state	3,4	4,244	-0,844
9	Adequate number of buses at this time	2,944	3,996	-1,052
10	The existence of a clear timetable	2,816	3,944	-1,128
11	The availability of facilities for people with disabilities	2,78	4,012	-1,232
12	Affordable ticket prices	3,388	4,164	-0,776
13	The stop has a good standard	3,004	4,02	-1,016
14	The stop is within reach of the passenger	3,144	4,1	-0,956
15	Convenient stop for passengers	2,916	3,944	-1,028
16	Employee well-dressed	3,428	4,028	-0,6
17	Employee receives complaints and suggestions	3,052	4,172	-1,12
18	Clerks are friendly and polite	3,244	4,22	-0,976
19	Comfortable bus is occupied	3,204	4,212	-1,008
20	The noise level does not disturb the passengers in the bus	3,156	4,18	-1,024
21	Provide comfort during travel	3,264	4,184	-0,92
22	Employee follow up complaints or suggestions	2,94	3,824	-0,884
23	Clerks prepared and responsive when asked for help	3,164	4,116	-0,952
24	Employee providing clear information	3,144	4,168	-1,024
25	Employee immediately respond to the call of passengers	3,32	4,212	-0,892
26	Queue bus passengers to take place quickly and smoothly	3,092	4,12	-1,028
27	Right bus arrival schedule	2,784	3,8	-1,016
28	Bus departure schedule right	2,988	4,032	-1,044
29	Stable bus speed	3,24	4,26	-1,02
30	Employee is able to control the situation in the event of accidents	3,056	4,144	-1,088
31	Employee to provide services carefully and precisely	3,056	4,16	1,104
32	Provide security during the trip	3,208	4,084	-0,876
33	Provide insurance coverage in case of accident	3,056	4,192	-1,144
34	The existence of an evacuation route in case of fire	2,968	4,152	-1,184
35	The existence of a clear boundary between male and female passengers	3,036	4,084	-1,048

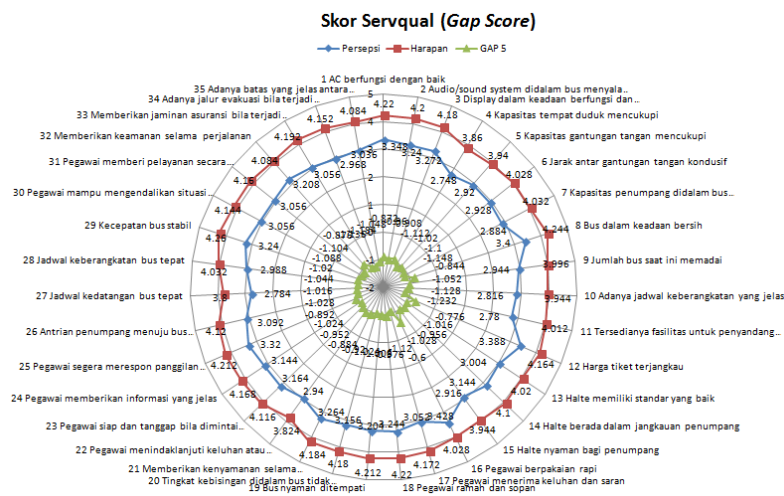


Figure 1. Skor Servqual

#### 4.2 Preparation of House Of Quality

In the manufacture of the House of Quality, there are several stages consisting of:

a. Analysis of Voice of Customers (What's Matrix)

In the planning matrix are the steps consisting of:

1. Important to Customers. This value is obtained based on the average level of importance of each attribute in the Voice of Customers.
2. Customers Satisfaction Performance (CSP) is the value of satisfaction or perception of respondents is based on questionnaires distributed.
3. Expected Satisfaction Performance (ESP) expected value or expectation of respondents is based on questionnaires distributed.
4. Improvement Ratio is a measure of the effort required to change the level of satisfaction of respondents currently on the attributes of respondents need to achieve the desired goal.
5. Raw Weight is a value that describes the level of the overall importance of each requirement of the respondents were based Importance to Customers and Improvement Ratio.
6. Normalized Raw Weight is expressed in percent or fractions of 0 to 1 or 100%.

$$NRW = \frac{RW}{\sum RW}$$

b. Determination of Technical Responses (Matrix How's)

Technical Responses or technical response is a response to the Voice of Customers or needs of the respondents attribute obtained in the questionnaire, where the results of the technical response to a translation of consumer needs and the proposals that need to be upgraded or attempted procurement.

c. What's Relationship Matrix and Matrix How's

What's the relationship matrix and matrix How's a correlation between the strength of appraisal forms for each attribute of the Voice of Customers that of the matrix Technical Responses What's with that of the matrix How's. Attributes that are interconnected to be rated/weight, and which are not interconnected not rated/weight. Value/weight in the range of 0 to the attributes and technical response unrelated to 9 to the attributes and related technical response stronger.

d. Correlation Technical Responses (How's matrix)

Correlation technical response (Technical Responses) function unt determine the extent of the relationship between technical response Do correlated positively or negatively.

e. Technical Matrix

At this stage the Technical Matrix consists of:

1. Contribution, the function of the sub-matrix to find out how big the role of every technical response. Contribution value derived from the total value of the relationship of each technical response to the Raw Weight.
2. Normalized Contribution, the percentage value of the Contribution.
3. Priorities, a sequence based on the value Normalized Contribution largest to the smallest.

Table 2. Attributes Technical Responses

Number	Technical response
1	The addition of passenger amenities
2	Procurement of additional facilities on the bus
3	The schedule of arrival - departure bus
4	Improved security in bus
5	Increased comfort in the bus
6	Socialization security to passengers
7	Service training for employees
8	Consumer ballot box
9	Improved reliability of employees
10	Increased friendliness and courtesy of employees
11	Employee uniforms
12	Procurement of additional facilities at the bus stop / shelter
13	Procurement Smart Card

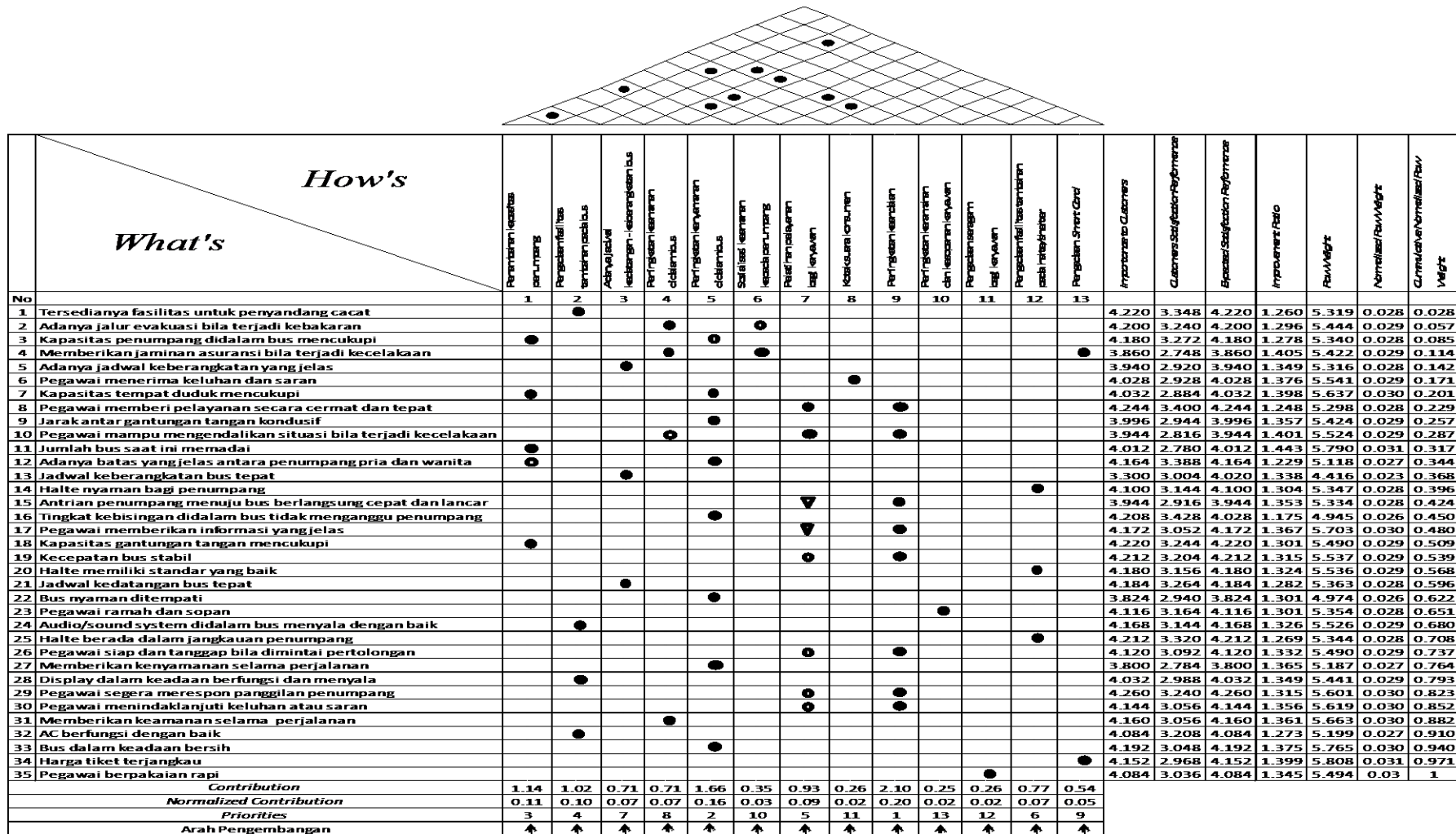


Figure 2. Matric House Of Quality

## 5. Analysis of Results

Efforts to improve the quality of services obtained from the Trans Padang technical response which is a form of proposals for the Trans Padang to do. Technical response is obtained based on sound consumer received. The effort needs to be done is as follows:

1. The addition of passenger capacity.  
Currently operating bus is 15 units. Each bus has 20 seats and the 20 hanger arms for passengers, besides as for additional passenger that can be tolerated is about 40%. With the increasing number of users Trans Padang today certainly makes a crowded bus exceeds a predetermined tolerance limits the Trans Padang. For it is based on sound consumer derived from the matrix of the House of Quality, researchers proposed the addition of the capacity of the existing bus at this time. The provision in question is to of the type size is larger, because the current bus being operated type. With the procurement of large type buses will increase the number of passenger capacity, both passenger sitting or standing passengers.
2. Procurement of additional facilities on the bus.  
Procurement of additional facilities in the bus which will be a support in order to create better bus for each passenger. As for the proposal of additional facilities that need to be procured is as follows:
  - a. Bridges for passengers in wheelchairs, because there is a gap that separates between the entrance to the bus stop.
  - b. Audio system / Sound system located around the bus body, so any information given employee may be well to all passengers.
  - c. Display or writings that are running around the bus, so that information is not conveyed through the audio system can be known to passengers .
  - d. Air conditioning or air conditioning system in the body around the bus , thus increasing the perceived comfort of passengers.
3. The arrival-departure schedule buses.  
Procurement of arrival-departure bus schedule will allow passengers to know at any time the bus will arrive and when to leave. The schedule can be placed on each wall stops.
4. Improved security in bus.  
Increased security system in the bus will reduce the risk of bad things to the passengers.
5. Increased comfort inside the bus.  
Comfort inside the bus is influenced by the state of the atmosphere inside the bus. Procurement of additional capacity as well as the cleanliness of the bus passengers who always maintained will make passengers feel comfortable in using the services of Trans Padang.
6. Dissemination of security to passengers.  
Conduct socialization to the passengers of the importance of security in the bus will reduce the risk of things that are not desirable to passengers.
7. Service training for employees.  
Service training for employees on duty inside the bus will increase the overall performance of employees in serving and carrying out their duties.
8. The voice mailbox consumers.  
Proposed procurement of ballot boxes consumers given that passengers can submit a complaint or suggestion to the manager of Trans Padang. Consumer ballot box can be placed inside the bus or via e-mail that will be provided by the Trans Padang.
9. Improved reliability of employees.  
Improved reliability of the employee in performing their duties will make passengers feel safe and comfortable in using the services of Trans Padang.
10. Increased friendliness and courtesy of employees.  
Increased friendly and courteous attitude shown employees to passengers would increase passenger comfortable feeling when using the services of Trans Padang.
11. Procurement employee uniforms.  
Special uniforms for employees will allow passengers to know the authorities in operating the bus. Moreover, the presence of uniforms would make employees look neat and clean.

12. Procurement of additional facilities at the bus stop/shelter.  
Procurement of additional facilities for the stop so that the standards will make the passengers comfortable while waiting for the bus to come. Currently, not all bus stops have a good standard, in some places there is a stop that does not have important things, such as the absence of a seat, stop the narrow and small, the absence of a roof, and has no lighting.
13. Procurement of Smart Card  
Proposed Procurement Smart Card is done in order to facilitate the passengers in the bus pay admission, thus saving paper used as a ticket. Card Smart cards can also serve as insurance in case of accidents, because every month there is a balance pieces taken by the Trans Padang, where the balance will be used as accident insurance costs.

## 6. Conclusion

### 6.1. Conclusion

The conclusion of this study is based on the formulation of the problem is as follows:

- a. In identifying the quality of service perceived by passengers Trans Padang, researchers conducted a study based on the dimensions of SERVQUAL where there are 35 attributes, each of which is divided in five dimensions, as the following; Tangibles as much as 14 attributes. Empathy as much as 7 attributes. Responsiveness by 5 attributes. Realibility by 5 attributes, and Assurance by 4 attributes.
- b. Based on the calculation Gap Score (Perceptions-Expectations) found that the entire attribute is negative (-), so that further efforts are needed to improve the quality of services as a form of Trans Padang.
- c. There are 13 effort needed to improve the quality of services Trans Padang based technical response, among others:
  1. The addition of passenger capacity.
  2. Procurement of additional facilities on the bus.
  3. The arrival-departure bus schedules.
  4. Improved security inside the bus.
  5. Increased comfort inside the bus.
  6. Dissemination of security to passengers.
  7. Training services to employees.
  8. Voice mailbox consumers.
  9. Improved reliability of employees.
  10. Increased friendliness and courtesy of employees.
  11. Procurement employee uniforms
  12. Procurement of additional facilities at the bus stop / shelter
  13. Procurement of Smart Card.

### 6.2. Suggestions

The advice given in this study are:

- a. Trans Padang parties should make efforts to increase the quality of several aspects, first, to procure the necessary additional passenger facilities, both existing facilities located on or contained in the bus stop/shelter. Second, training services for employees. Third, Improved security and comfort either in the bus or at the bus stop/shelter. Fourth, procurement of additional things for passengers such as the presence of the consumer voice box and the use of Smart Card.
- b. The next researcher to conduct more in-depth research on improving the quality of services and brainstorm with the relevant managers about the things that need to be improved viewed from various aspects



## References

- [1] Halim, Allan Hardika. Nasir W.S. and Rahma Yuniarti. (2012). Improving Customer Service Quality With Integration Service Quality (SERVQUAL) and Quality Function Deployment (QFD). Journal: UB
- [2] Mardalisa. 2015 Public Perception Effectiveness Against Trans Padang in Padang. Thesis: STKIP PGRI Padang.
- [3] Marlina, Sonya. and Rini Dharmastiti. (2012). Integration Servqual And QFD To Improve Quality
- [4] Transport Services Mass Trans Jogja. Journal: Universitas Gadjah Mada.
- [5] Puspasari, Dewi. Nasir W.S. and Grace Hima. (2012). Library Service Quality Improvement Efforts With Integration Service Quality and Quality Function Deployment. Journal of Industrial Engineering and Management Systems Vol. 2 No. 6 Industrial Engineering UB
- [6] Siregar, Syofian. 2012. Descriptive Statistics for Research. Jakarta: PT RajaGrafindo Persada.
- [7] Tjiptono, Fandy. and Anastasia Diana. 2003. Total Quality Management. Yogyakarta: Andi.
- [8] Tjiptono, Fandy. and Gregory Chandra. 2011. Service, Quality & Satisfaction. Yogyakarta: Andi.
- [9] Zulfia, Dewi. 2011. Effect of Dimensions of Service Quality Customer Satisfaction. Thesis: UPI YPTK Padang.