 e-ISSN: 2830-0408

IMPROVING QUALITY OF SERVICE BASED ON CUSTOMER SATISFACTION USING SERVQUAL AND QFD METHODS AT SEJAHTERA BUANA TRADA PULOGADUNG (ATPM X)

Mohammad Rachman Waluyo[a]

[a]Program Studi Teknik Industri, Universitas Pembangunan Nasional "Veteran" Jakarta, Jakarta Selatan
* Corresponding author: mrw@upnvj.ac.id

ABSTRACT

This study discussed the assessment of service quality provided by Sejahtera Buana Trada Pulogadung. The purpose of this research was to design an effective service model that could be used by the company to enhance its existing service standards. The scope of the study included measuring customer satisfaction levels and identifying service attributes that require improvement. The research employed the Service Quality approach and Quality Function Deployment method based on the House of Quality model. The integration of these two approaches was used to analyze and design service quality improvements at Sejahtera Buana Trada Pulogadung. The results showed that reliability was the main service variable that needed to be prioritized for improvement. Based on the integration of the Service Quality and Quality Function Deployment methods, the company needed to ensure timely service delivery according to expected work schedules. Furthermore, the findings indicated that implementing a customer relationship management system, conducting regular employee training, applying standard operating procedures, managing human resources, and improving service facilities were essential technical actions to enhance and maintain service quality sustainably.

Keywords: *House of Quality, Customer Satisfaction, Quality Function Deployment, Reliability, Service Quality*

1. Introduction

Companies must compete effectively and be prepared for potential risks in an increasingly stringent business environment. To combat the intense level of competition, a company's ability to provide high-quality products and services is critical to its ability to thrive. This competition applies to all types of industries, including the automotive industry.

Customer satisfaction is a term used to describe how a person feels when comparing the results of a product or service with their expectations [1]. Companies must consider customer satisfaction to improve performance [3]. The automotive industry must continuously provide its customers with high-quality products and excellent service. It is hoped that automotive companies can satisfy their loyal customers by offering superior service and product quality.

Car Service is a dealer of ATPM X cars in Indonesia, where many companies are also engaged in this field. Currently, there are 22 companies in Indonesia engaged in the car industry. With so many companies in the same industry, customers will be more selective when choosing their preferred dealer. Therefore, companies can do one important thing to deal with the increasing number of competitors and to keep their customers loyal in the long term by continuing to improve the quality of their services [2].

In its service, some problems affect customer satisfaction, such as the existence of several complaints received from services performed by employees at Car Service. Types of complaints about services carried out in the past year (August 2021 – July 2022), namely, the estimated time elapsed (high risk), expensive service fees (high risk), less clean car wash (medium risk), the facilities provided are lacking (low risk), as well as damage to one part of the car after service (high risk). This complaint is supported by the results of interviews with 20 customers. The most common complaint is the estimated delay time of 12 people. In contrast, the fewest complaints were damage to one part of the car by one person.

Seeing these problems, to improve service quality and provide customer satisfaction, we need a method that can analyze service quality. This study uses the Service Quality (SERVQUAL) method, whose main objective is to involve customers as early as possible in the service repair and improvement process. Then, it will be integrated with the Quality Function Deployment (QFD) method. Companies can use the QFD method to prioritize customer requests, identify creative solutions for their needs, and improve workflow until maximum efficiency is achieved [4]. In comparison, the SERVQUAL method assists companies in learning information about the level of customer satisfaction based on their perceptions and expectations. So, it is expected to provide results for service design that can satisfy customer needs by. This research is expected to produce recommendations and solutions to companies regarding service quality that need to be improved to increase customer satisfaction.

2. Research Methodology

This research was conducted at a car service company with the primary focus of measuring service quality, identifying service attributes that should be prioritized for improvement, and designing strategies to enhance service performance using the Service Quality (SERVQUAL) and Quality Function Deployment (QFD) methods. The data used in this study consisted of both external and internal sources. The external data were obtained from questionnaires distributed to 99 customers who had used the company's services within the past year (August 2021–July 2022). Meanwhile, the internal data were collected through discussions with Service Advisors and Service Relations Officers who are directly involved in operational processes and customer

e-ISSN: 2830-0408

interactions. These internal insights provided essential input for the development of the House of Quality framework, which was utilized to evaluate and improve the overall service quality within the company.

3. Results and Discussion

3.1 Customer Expectation Score

The results of respondents' responses to the service attributes listed in the distributed questionnaire provide the information needed to calculate the expected value.

Table I. Customer Expectations Score

Attribute	ΣY	Y
The appearance of employees who are neat and politely dressed while on duty	364	3.677
Cleanliness and comfort of customer facilities (waiting room, workshop area, and toilets)	373	3.768
Ease of access to Car Service	366	3.697
Cleaning the vehicle after service	374	3.778
The convenience of making service reservations through the application or directly	362	3.657
Level of knowledge of employees in answering customer questions	356	3.596
Easy service procedures	357	3.606
Availability of spare parts needed by consumers	363	3.667
Timeliness of service according to the estimated time of work	386	3.899
Affordable service fees	358	3.616
Waiting time to be served by service personnel	365	3.670
The ability of service personnel to quickly and responsively resolve customer complaints	369	3.727
Dexterity Of employees in performing services	369	3.727
Availability of service personnel when needed by customers	360	3.636
The ability and knowledge of service personnel to determine car damage	363	3.667
Service results per customer requests	386	3.899
Warranty for the vehicle after service	358	3.616
Convenient operating hours for customers (07.30 – 18.30)	365	3.687
Remember customer problems and preferences	365	3.895
Quickly provide solutions to customer complaints	369	3.727
Good response in receiving criticism and suggestions	369	3.727
Average (Ȳ)	3.711	

Source: Primary Data Processed, 2025

3.2 Customer Expectation Score

The results of respondents' responses to the service attributes listed in the distributed questionnaire provide the information needed to calculate the perceived value.

Table II. Customer Perception Score

Attribute	ΣX	X
The appearance of employees who are neat and politely dressed while on duty	282	2.848
Cleanliness and comfort of customer facilities (waiting room, workshop area, and toilets)	250	2.525
Ease of access to Car Service	243	2.455
Cleaning the vehicle after service	223	2.253
The convenience of making service reservations through the application or directly	263	2.657
Level of knowledge of employees in answering customer questions	277	2.798
Easy service procedures	262	2.646
Availability of spare parts needed by consumers	241	2.434
Timeliness of service according to the estimated time of work	192	1.939
Affordable service fees	199	2.010
Waiting time to be served by service personnel	194	1.955
The ability of service personnel to quickly and responsively resolve customer complaints	248	2.505
Dexterity Of employees in performing services	250	2.525
Availability of service personnel when needed by customers	267	2.697
The ability and knowledge of service personnel to determine car damage	265	2.677
Service results per customer requests	275	2.778
Warranty for the vehicle after service	277	2.798
Convenient operating hours for customers (07.30 – 18.30)	263	2.657
Remember customer problems and preferences	267	2.483
Quickly provide solutions to customer complaints	265	2.677
Good response in receiving criticism and suggestions	275	2.778
Average ($\bar{x}$)	2.258	

Source: Primary Data Processed, 2025

3.3 SERVQUAL Score

Calculating the value of the gap between customer expectations and perceptions is needed to determine priority improvements to be made by the company.

Table III. SERVQUAL Score Each Attribute

Attribute	SERVQUAL Score/GAP	Priority
Timeliness of service according to the estimated time of work	-1.960	1
Waiting time to be served by service personnel	-1.715	2
Affordable service fees	-1.606	3
Cleaning the vehicle after service	-1.525	4
Remember customer problems and preferences	-1.412	5
Cleanliness and comfort of customer facilities (waiting room, workshop area, and toilets)	-1.242	6
Ease of access to Car Service	-1.242	7
Availability of spare parts needed by consumers	-1.232	8
The ability of service personnel to quickly and responsively resolve customer complaints	-1.222	9
Dexterity Of employees in performing services	-1.202	10

e-ISSN: 2830-0408

Attribute	SERVQUAL Score/GAP	Priority
Service results per customer requests	-1.121	11
Quickly provide solutions to customer complaints	-1.051	12
Convenient operating hours for customers (07.30 – 18.30)	-1.030	13
The convenience of making service reservations through the application or directly	-1.000	14
The ability and knowledge of service personnel to determine car damage	-0.990	15
Easy service procedures	-0.960	16
Good response in receiving criticism and suggestions	-0.949	17
Availability of service personnel when needed by customers	-0.939	18
The appearance of employees who are neat and politely dressed while on duty	-0.828	19
Warranty for the vehicle after service	-0.818	20
Level of knowledge of employees in answering customer questions	-0.798	21

Source: Primary Data Processed, 2025

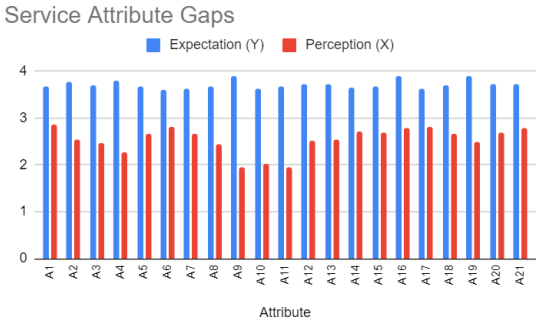


Figure I. Gap Each Attribute
Source: Primary Data Processed, 2025

Based on the calculation of the SERVQUAL score table, it is known that there are gaps in each service attribute. Priority improvements based on the SERVQUAL score to improve services are:

1. Timeliness of service according to the estimated time of work
2. Waiting time to be served by service personnel
3. Affordable service fees
4. Cleaning the vehicle after service
5. Remember customer problems and preferences

Table IV. SERVQUAL Score Each Dimension

Dimension	Y	X	SERVQUAL Score/GAP
Responsiveness	3.690	2.420	-1.270
Reliability	3.673	2.414	-1.259
Tangibles	3.730	2.520	-1.210
Empathy	3.783	2.646	-1.137
Assurance	3.717	2.727	-0.990

Source: Primary Data Processed, 2025

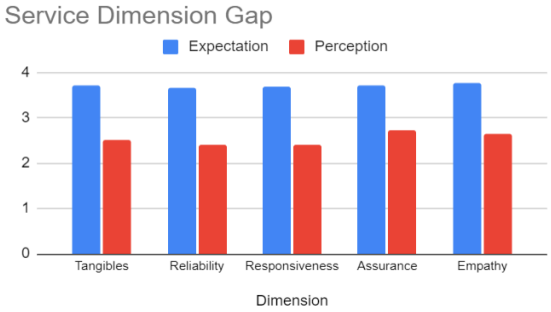


Figure II. Gap Each Dimension
Source: Primary Data Processed, 2025

3.4 Service Quality Improvement Priority

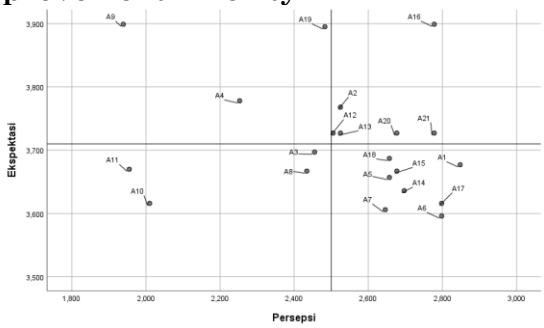


Figure III. Service Quality Improvement Priority
Source: Primary Data Processed, 2025

The Cartesian diagram is an analytical tool used to develop service improvement plans by looking at the relationship between customer expectations and perceptions. This diagram consists of four quadrants, each bounded by two lines that intersect perpendicularly at the mean x and y points.

1. Quadrant A = priority of attributes that are considered essential and need to be improved
2. Quadrant B = priority attributes that are considered essential and need to be maintained because the customer is considered satisfied
3. Quadrant C = priority of attributes that are considered less important but the level of consumer perception is quite good
4. Quadrant D = priority attribute that is considered less critical, but the level of customer satisfaction is delighted

3.5 Weighted SERVQUAL Score

Calculating the weighted SERVQUAL score is done by multiplying the SERVQUAL score by the importance level of each service variable.

TableV. Weighted SERVQUAL Score

Dimension	Importance Score	SERVQUAL *Score*	WSC
Tangibles	0.211	-1.210	-0.26
Reliability	0.196	-1.259	-0.25
Responsiveness	0.191	-1.270	-0.24
Assurance	0.203	-0.990	-0.20

e-ISSN: 2830-0408

Dimension	Importance Score	SERVQUAL *Score*	WSC
Empathy	0.199	-1.137	-0.23

Source: Primary Data Processed, 2025

Based on the table, each WSC value has a weight that varies based on how significant the contribution of each service attribute is to the SERVQUAL value. The tangibles variable has the smallest WSC value, namely -0.26.

3.6 Actual Service Quality Score

Table VI. Actual Service Quality Score

Attribute	ΣX	ΣY	Tki
The appearance of employees who are neat and politely dressed while on duty	282	364	77.47%
Cleanliness and comfort of customer facilities (waiting room, workshop area, and toilets)	250	373	67.02%
Ease of access to Car Service	243	366	66.39%
Cleaning the vehicle after service	223	374	59.63%
The convenience of making service reservations through the application or directly	263	362	72.65%
Level of knowledge of employees in answering customer questions	277	356	77.81%
Easy service procedures	262	357	73.39%
Availability of spare parts needed by consumers	241	363	66.39%
Timeliness of service according to the estimated time of work	192	386	49.74%
Affordable service fees	199	358	55.59%
Waiting time to be served by service personnel	194	365	53.15%
The ability of service personnel to quickly and responsively resolve customer complaints	248	369	67.21%
Dexterity Of employees in performing services	250	369	67.75%
Availability of service personnel when needed by customers	267	360	74.17%
The ability and knowledge of service personnel to determine car damage	265	363	73.00%
Service results per customer requests	275	386	71.24%
Warranty for the vehicle after service	277	358	77.37%
Convenient operating hours for customers (07.30 – 18.30)	263	365	72.05%
Remember customer problems and preferences	267	365	73.15%
Quickly provide solutions to customer complaints	265	369	71.82%
Good response in receiving criticism and suggestions	275	369	74.53%

Source: Primary Data Processed, 2025

As seen in the table, the company has provided an average customer satisfaction of 68.64% of what its customers have expected, where Car Service has a customer satisfaction standard of 80% (Car Service, 2022).

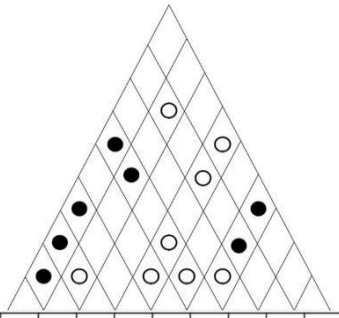
3.6 QFD Integration

The first step in creating a QFD is creating a House of Quality (HOQ). One of the two main sections of the HOQ is the customer table which is located in a horizontal section and contains what the customer wants. The second table is a technical table with technical aspects for responding to each customer's wants, located in the vertical section. Creating a HOQ involves the following steps:

1. Determine customer requirements, where customer requirements are obtained from the attributes on the questionnaire
2. Determine the level of importance, where this value is obtained from the SERVQUAL score
3. Determine the goals and selling points, which are obtained from the results of brainstorming with the company
4. Calculate the improvement ratio, row weight, and normalized row weight
5. Determine the competitive evaluation, which is obtained from the value of customer perceptions at Car Service B
6. Determine the technical response, correlation matrix, relationship matrix, and direction of improvement obtained by discussing with the company
7. Calculate absolute importance and relative importance

e-ISSN: 2830-0408

The figure below shows more information from the House of Quality



Customer Requirement	No	Direct of Improvement	↑	O	↑	↑	↑	↑	↑	O	↑	Planning Matrix	Importance to Customer	PT Sejahtera Buana Trada Pulogadung	PT Sejahtera Buana Trada Dewi Sartika	Goal	Sales Point	Row Weight	Normalized Row Weight
			Implement SOP so that customers become standardized	Provision of regular training that can improve employee skills	Control the cleanliness of the room so that the room becomes more comfortable	Complete service facilities to increase comfort	Publish PT Sejahtera Buana Trada Pulogadung site plan and visuals that can help customers	Customer Relationship Management system that can strengthen relationships with customers	Improve the number and timing of spare parts orders so that spare parts are always available when needed	HR Management so that HR is more structured	Providing an absolute guarantee if there is an error in car maintenance so that customers feel guaranteed								
	1	The appearance of employees who are neat and politely dressed while on duty	•	•				○					3.677	2.848	2.768	5	1.2	7.74	0.04
	2	Cleanliness and comfort of customer facilities (waiting room, workshop area, and toilets)	○	Δ	•	•		Δ					3.768	2.525	2.485	5	1.2	8.95	0.04
	3	Ease of access to PT Sejahtera Buana Trada Pulogadung					•						3.697	2.455	2.667	5	1.2	9.04	0.04
	4	Cleaning the vehicle after service	•	•									3.778	2.253	2.303	5	1.5	12.58	0.06
	5	The convenience of making service reservations through the application or directly				•		•					3.657	2.657	2.667	5	1.5	10.32	0.05
	6	Level of knowledge of employees in answering customer questions		•				•					3.596	2.798	2.515	4	1.5	7.71	0.04
	7	Easy service procedures	○	Δ		•							3.606	2.646	2.707	5	1.5	10.22	0.05
	8	Availability of spare parts needed by consumers				○		•	•				3.667	2.434	2.475	4	1.5	9.04	0.04
	9	Timeliness of service according to the estimated time of work	•	•				•	○	•			3.899	1.939	2.121	4	1.5	12.06	0.06
	10	Affordable service fees						•					3.616	2.010	1.980	4	1.5	10.79	0.05
	11	Waiting time to be served by service personnel						•	○	•			3.670	1.955	1.990	4	1.5	11.27	0.06
	12	The ability of service personnel to quickly and responsively resolve customer complaints		•				Δ		•			3.727	2.505	2.394	5	1.5	11.16	0.05
	13	Dexterity Of employees in performing services		•						•			3.727	2.525	2.414	5	1.5	11.07	0.05
	14	Availability of service personnel when needed by customers								•			3.636	2.697	2.616	5	1.5	10.11	0.05
	15	The ability and knowledge of service personnel to determine car damage		•									3.667	2.677	2.596	5	1.5	10.27	0.05
	16	Service results per customer requests		•				•					3.899	2.778	2.626	4	1.5	8.42	0.04
	17	Warranty for the vehicle after service									•		3.616	2.798	2.768	5	1.5	9.69	0.05
	18	Convenient operating hours for customers (07.30 – 18.30)	•										3.687	2.657	2.677	5	1.2	8.33	0.04
	19	Remember customer problems and preferences		•				•					3.895	2.483	2.616	5	1.2	9.41	0.05
	20	Quickly provide solutions to customer complaints	•					•					3.727	2.677	2.596	5	1.2	8.35	0.04
	21	Good response in receiving criticism and suggestions	•					•					3.727	2.778	2.626	5	1	6.71	0.03
		Absolute Importance	2.753	4.099	0.396	1.439	0.400	4.380	0.744	2.465	0.429								
		Relative Importance	0.161	0.240	0.023	0.084	0.023	0.256	0.044	0.144	0.025								
		Priorities	3	2	8	5	9	1	6	4	7								

Figure IV. House of Quality
Source: Primary Data Processed, 2025

The integration of the SERVQUAL and Quality Function Deployment methods outlined in the House of Quality has significant practical implications for the company. Based on the resulting technical priorities, strategic steps that can be immediately implemented include:

1. Implementing a Customer Relationship Management (CRM) system integrated with customer data to monitor service history, complaints, and customer preferences in real time.
2. Rescheduling service processes and optimizing workshop workflows to ensure timely service and reduce customer waiting times.
3. Conducting regular technical and customer service training for employees, focusing on speed of response and effective communication.
4. Standardizing service operating procedures (SOPs) so that all service lines adhere to the same quality standards and are easily audited.
5. Improving the physical facilities and comfort of customer waiting areas, including car wash areas, restrooms, and other supporting facilities, to improve perceptions of service quality.
6. Regularly evaluating service performance using key performance indicators (KPIs) such as service delay rate, customer waiting time, and complaint resolution ratio.

The implementation of these technical steps is expected to not only close the gap between customer expectations and perceptions, but also help the company achieve a minimum service quality standard of 80% as stipulated in the company's internal policies.

4. Summary

Based on the results of the analysis and data processing that have been done, the following conclusions can be drawn from this study:

1. Based on the SERVQUAL score calculation results, it is known that for each service attribute, there is still a gap between customer expectations and customer perceptions. The actual service quality value averaged 68.64%, while the company's service quality standard was 80%. This value shows that not all customers are satisfied or the services offered by the company meet their expectations.
2. Based on the calculation of the SERVQUAL score, it is also known that some attributes have a higher gap than others, so it needs to be repaired first. These attributes are:
    a. Timeliness of service according to the estimated time of work
    b. Waiting time to be served by service personnel
    c. Affordable service fees
    d. Cleaning the vehicle after servicing
    e. Keep in mind customer problems and preferences
3. Priority attributes that are considered essential and need to be improved based on the SERVQUAL calculation results on the Cartesian diagram are as follows:
    a. Cleaning the vehicle after servicing
    b. Timeliness of service according to the estimated time of work
    c. Keep in mind customer problems and preferences

The design of service quality can then be prioritized for improving service attributes based on the absolute importance calculation results, namely:

a. Customer Relationship Management system that can strengthen relationships with customers
b. Provision of regular training that can improve employee skills
c. Implement SOP so that services become standardized
d. HR Management so that HR is more structured
e. Complete service facilities to increase comfort

e-ISSN: 2830-0408

5.Suggestions

Suggestions from the results of this study to improve service quality and for further research are as follows:

1. Regarding customer service, Car Servicecan improve by implementing the service quality improvement plan produced in this study.
2. To learn what customers want and expect, Car Serviceshould routinely conduct research or research on customers at least once a year.
3. For further research, using objects in this study can add to the methods used so that this research can be continued and more in-depth.
4. For further research, it can be more detailed in making statements, especially on the cleanliness and comfort attributes of the facilities, to be made in more detail regarding the waiting room, toilets, and the food and drinks provided.

References

[1] Jing-Hua, L., Lei, X. & Xiu-Lan, W., 2009. New Service Development using GAP-based QFD: A Mobile Telecommunication Case. *IJSTM,* Volume 12, pp. 146-174.

[2] KEMENPERIN, 2021. *Menperin: Industri Otomotif Jadi Sektor Andalan Ekonomi Nasional.* [Online] Available at: https://www.kemenperin.go.id/artikel/22297/Menperin:-Industri-Otomotif-Jadi-Sektor-Andalan-Ekonomi-Nasional [Diakses 17 Agustus 2022].

[3] Nugroho, D. M., 2015. Pengaruh Kualitas Pelayanan, Kualitas Produk Layanan, dan Harga Produk Layanan Terhadap Kepuasan Pelanggan serta Dampaknya Terhadap Loyalitas Pelanggan Prabayar Telkomsel. *Jurnal OE,* Volume VII(2), pp. 158-174.

[4] Susila, G. P. A. J., Yulianthini, N. N. & Andayani, N. L. H., 2014. Implementasi Quality Function Deployment (QFD) Untuk Meningkatkan Layanan Publik di RSUD Kabupaten Buleleng Bali. *Jurnal Ilmu Sosial dan Humaniora,* Volume 3(2), pp. 396-409.