Improving Service of Quality using Quality Function Deployment

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Abstract

AdiTeknik is one of the garages in Sidoarjo, East Java, Indonesia, engaged in repairing services industry tools. This garage recently has problems in attracting customers. Prior studies suggest that one of the things that affect the number of customers is customer satisfaction. After listening to complaints from several consumers, consumers said that they are less satisfied with the quality of the garage. This phenomenon become the trigger for us to investigate the customer satisfaction especially on the *AdiTeknik* garage. One method that can be used to help companies to improve the quality according to customer point of view is Quality Function Deployment (QFD). We find that there are twelve attributes of the desires and needs of consumers to improve the quality of garage service of *AdiTeknik*. Those are the quality of repair, cleanliness and neatness of the garage, complete facilities for customer, employee performance, repair results in accordance with demand, timeliness of completion, the ability to analyze problems, clarity fees and the completion time, warranty repair results, employee friendliness, ease of contacting a workshop, and a willingness to give feedback.

Keywords: Service of quality, quality function deployment, customer satisfaction

1. Introduction

AdiTeknik is one of the garages in Sidoarjo, East Java, Indonesia, engaged in repair services industry tools. This garage is lack of development particularly because of lack of customers. According to Asadabadi (2017), one of the things that affect the number of customers is customer satisfaction. After listening to complaints from several consumers, we find that consumers are less satisfied with the quality of *AdiTeknik* garage. Because customer satisfaction is very influential in the success of business services, the workshop should try to improve the quality of the service in accordance with the wishes of the consumer (Brueckner and Flores-Fillol, 2019). For that, we need to do research on the wishes of customers and customer satisfaction on the quality of services. Once it can be determined the steps to be taken to improve service quality and increase customer satisfaction so that the workshop can develop further. Specifically, we need to investigate customer satisfaction on the quality of services. One method that can be used to help companies determine the appropriate steps to improve the quality of consumer desire is a method of Quality Function Deployment (QFD) (Büyüközkan and Çifçi, 2012).

2. Method

The method used in this research is the QFD. According to Heizer and Render (2015), QFD is a structured method that can be used in the planning and development of products to meet specifications desires and needs of consumers and evaluate systematically the product or service to meet the desires and needs of consumers (Büyüközkan and Çifçi, 2012). In this method the identification of attributes wants and needs of customers for the product or service provided, then measured the level of customer

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satisfaction on every attribute desires and needs. After that, knowable attributes priority customer needs and requirements that need to be improved. Further technical formulated responses to improve customer satisfaction on these attributes. The fulfillment of each attribute needs and desires of consumers will have a different effect on customer satisfaction.

3. Results and Discussion
Profile of the garage
AdiTeknik was founded in 1991 and is engaged in engineering work in the form of services lathe, milling machine, scrap machine, welding machine, and others. In the development of *AdiTeknik* has been able to compete in order to make the machinery needs of industry, agriculture, SME, and appropriate technology. *AdiTeknik* has experienced in the field of machining and manufacturing services machinery and construction. This job is accomplished particularly with the establishment of the new division, the division that specializes in the manufacture of construction machinery.

AdiTeknik as individual business entities that has been registered in the licensing bodies and other certification bodies. The holding company run by *AdiTeknik* is to serve the turning process, the process of welding, milling, scrap with products in the form of spare parts of industrial machines. *AdiTeknik* had some partnerships with several companies either national level or abroad, such as PT. Agrindo, PT. Guntur, PT. Meco Inoxprima, PT. Aweco INDOSTEEL Perkasa, PT. Perkebunan Nusantara, PT. Rubber, Jothi Traders, and others.

Consumers' desire attributes
The first step is to conduct an interview to the consumer to determine the wishes of consumers regarding the quality of service workshop according to the five dimensions of service quality (Brueckner and Flores-Fillol, 2019). After conducting an interview with thirty customers, we obtain twelve attributes of consumer desires as follows: quality repair, cleanliness and neatness of the workshop, complete facilities of customer, employee performance, results of reparations according to the demand, the timeliness of processing, the ability to analyze problems, the clarity of the cost and time of execution, warranty repair results, friendliness of staff, ease of contacting a garage, and a willingness to give feedback. Having obtained the attributes of consumer desire, we then perform the preparation and distribution of questionnaires (Hara, 2018). A questionnaire was used to determine the level of interest, the level of satisfaction of each attribute. A questionnaire distributed consists of two parts: a questionnaire level of importance and satisfaction levels.

Validity and Reliability
Having obtained the data from the questionnaire, we then test the validity and reliability using SPSS software. Validity test was conducted using Pearson Product Moment Correlation, by comparing the *r* count with *r* table. While *r* table obtained by viewing the table *r* with α = 5%, df = N-2 = 100-2 = 98. After viewing *r* tables, we see 0.197. Reliability test is used Cronbach Alpha method. We obtain Cronbach Alpha value of 0.634. Because 0.634> 0.6, the results of the questionnaire for the level of interest has been reliable. For the level of satisfaction, obtained Cronbach Alpha value of 0.642. Because 0.642> 0.6, the results of the questionnaire for the level of satisfaction has been reliable as well.

Matrix Consumer Needs
After the questionnaire data through validity and reliability test, the data results of the questionnaire can be used for analysis. Based on the results of the questionnaire, we obtain the degree of importance and satisfaction level of each attributes. The level of importance of each attribute is obtained from the average response of consumers on the importance of each attribute, while the level of satisfaction obtained from the average response of consumers regarding the level of satisfaction of each attribute. After that the gap can be calculated that by reducing the rate of interest (the expectation) with the level of satisfaction (perception).

There are six attributes of consumer desires workshops that do not meet the expectations and the six attributes that have met consumer expectations. These six attributes that have not met the expectations are: cleanliness and neatness of the workshop, completeness of customer facilities, quality of reparations, reparations compatibility with demand, timeliness workmanship, clarity of costs and working time. While the six attributes that have met the expectations are: appearance employees neatly,

ability to analyze problems, warranty repair results, hospitality employees, ease of contact workshop, willingness to give input on the matter.

Matrix Response Technical

Once known attributes of consumer desires which will be enhanced, determined responses are technical to answer consumer desire. Technical responses obtained by conducting discussions with the owner of *AdiTeknik* garage. From the discussion, we obtain some technical response that can be taken such as the addition of a customer's facility, checking the repair results, specialization of tasks, work environment improvement, and improvement of administration.

Matrix Technical Response Relationships

Between technical responses can occur either positive or negative relationship. After discussions with the owner of the garage, we found that the relationship between technical responses is:

- Response technical specialization of work positively related to an improvement of working environment, due to the specialization of work, tools, and working facilities are used by people.
- Response technically improved administration has positively related to a specialization of work due to improving the administration of the division of labor in the specialization.

Matrix planning

Planning matrix shows how perceptions of customer satisfaction garage on each attribute. The perception of each attribute can be seen from Table 1. The following is the consumer perception of each attribute that needs to be improved:

Table 1. Perception of Each Attribute

No	Attribute	Perception
1	Completeness of customer facilities (waiting room, toilet)	3.45
2	Reparations Quality	4.32
3	Compatibility with demand	4.38
4	Timeliness construction	3.69
5	Clarity cost and time of execution	3.73

Priority technical response

Priority technical response is obtained by multiplying the adjusted value of the matrix of importance to the relationship between consumer needs and technical response. In the matrix of relationships, the value of nine suggests that the relationship is very strong, three suggests a strong relationship, while three suggests a weak relationship.

Table 2. Priority Technical Response

No	Technical Response	Interest	% of interest
1	Addition customer facilities	19.44	11
2	Checking the repair results	37.2	22
3	Job specialization	53.35	31
4	Repairing work environment	20.61	12
5	Repairing administration	41.04	24

Based on the table 2, is obtained priority technical response that can be taken are specialization of work, improvement of administration, checking the repair results, the working environment landscaping, and addition of customer facilities.

4. Conclusions

AdiTeknik garage is less developed because consumers are less satisfied with the quality of his services. The garage needs to improve the quality of the service in accordance with the wishes of the

consumer. In order to improve the quality of services in accordance with the wishes of consumers, we need to know the attributes of consumer wants. Once the attributes of consumer want and needs is known, it can be formulated measures to be taken the workshop using QFD.

There are twelve attributes of the desires and needs of consumers on the quality of service workshop *AdiTeknik*. Those are the quality of repair, cleanliness and neatness of the workshop, completeness customer facilities, employee performance, results of reparations according to the demand, the timeliness of processing, the ability to analyze problems, clarity of the costs and time of execution, warranty repair results, employee friendliness, ease of contacting a workshop, and a willingness to give input on the matter. Attributes are used in the preparation are attributes that do not meet consumer expectations. These attributes are the completeness of customer facilities, the quality of the repair, repair results conformity with the request, timeliness workmanship, and clarity of the cost and time of execution. Having arranged the order of priority obtained technical response that specialization of work, improved administration, rechecking repair results, structuring the work environment and increase customer facilities.

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