Analyzing Service Quality Of Pertamina Gas Station In Jabodetabek Using Multivariate Analysis

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Abstrak

Akhir-akhir ini, krisis minyak dunia dan persaingan globalisasi menjadi masalah besar bagi dunia industri. Kenaikan harga minyak dunia di pasar global memaksa Pertamina sebagai produsen minyak Indonesia untuk menaikkan harga bahan bakar untuk transportasi. Sebaliknya, kenaikan harga bahan bakar secara psikologis akan menyebabkan konsumen meminta kualitas pelayanan SPBU (Stasiun Pengisian Bahan Bakar Umum) yang lebih baik. Untuk meningkatkan pelayanan, maka, survey dilakukan untuk mengidentifikasi kebutuhan dan kepuasan pelanggan. Survey dapat menjelaskan kebutuhan konsumen di SPBU yang dapat dianalisa dengan analisis multivariat dan Importance Performance Analysis. Importance Performance Diagram sebagai hasil dari Importance Performance Analysis menunjukkan atribut pelayanan dan performa pelayanan yang diperlukan untuk ditingkatkan kualitasnya agar dapat memenuhi kebutuhan pelanggan. Setelah itu, House of Quality sebagai dasar Quality Function Deployment didesain untuk memastikan bahwa kebutuhan konsumen yang utama telah diprioritaskan dan diatur secara akurat. Dalam hal ini, pembuatan House of Quality berdasarkan strategi dan kemampuan perusahaan. Hasil dari studi ini diharapkan dapat membantu Pertamina untuk meningkatkan performa pelayanan dan kepuasan pelanggan.

Kata kunci: Kepuasan pelanggan , SPBU, analisa multivariat, peta persepsi dan rumah kualitas.

Abstract

In recent years, crisis of oil and global competition have become big problems for industries. Rising of oil prices in global market may affect Pertamina as an Indonesian oil industry to escalate gasoline price for transportation. However, psychologically increment of gasoline price causes customer requesting more attractive and effective service quality at gas station. For improving service performance, customer needs and customer satisfaction is necessary to be identified by conducting a survey. This survey which will describe customer needs of gas station will be analyzed using Multivariate Analysis and Importance Performance Analysis. Importance Performance Diagram as a result of Importance Performance Analysis displays the service attributes and service performance that required to be improved to fulfill customer needs. Afterwards, House of Quality as the basis of Quality Function Deployment is designed to verify that prominence customer needs have been prioritized and managed accurately. In this study, the 'House of Quality' is based on company strategy and ability. This study is hopefully able to help Pertamina to enhance its service performance and achieve its customer satisfaction.

Keywords: Customer satisfaction, gas station, multivariate analysis, perceptual mapping and house of quality.

1. Introduction

As consequences of globalization era, many foreign investors invested in Indonesia and made the competition in Indonesia became more competitive. They were the new competitors for local industries. Anticipating its competition, local companies developed the new strategists for its products and services delivered to its customer in order to win the fight against their competitors.

Now, this situation is also faced by Pertamina, although in the past Pertamina controlled the gasoline sales in Indonesia. By the oil and gas act number 22/2001, the government of Indonesia opened the downstream business of gasoline for private. Its business related to manufacture, transport, and deposit the gasoline in retail market [1]. As a result, Pertamina has to compete with private companies, especially foreign companies in procurement of gasoline in retail. It consists of transportation sector and household sector. Following the economic growth, the gasoline consumption was increase. Although in 2005 the gasoline price was escalated significantly, demand of gasoline is inelastic, means that the increment does not decrease the gasoline consumption [2], indeed the gasoline consumption in that year still increase.

Growth of gasoline consumption will enlarge the amount of gas station in Indonesia. As there are big opportunities in gas station business, many foreign investors surely will crowd the competition. So that, Pertamina must start to improve its gas station in order to win the market. It is a big challenge for Pertamina as it never has experience in business competition of gas station. Gas station is a service industry; therefore the service quality for customer is important. Customers are main assets for companies [3]; consequently customer satisfaction is a focus to be achieved by Pertamina.

Customer satisfaction is feeling of comfortable or disappointed that was appeared after comparing the perception with the expectation of product performance [4]. The achievement of high customer satisfaction awards the competitive advantage for companies to win the competition and elevate the market share. Companies focus on high customer satisfaction, because a customer who is very satisfied hardly changes its decision [5]. Moreover, he will promote the product and its services to his relatives mouth to mouth and disinterest with competitors.

For achieving the customer satisfaction, Pertamina has to synchronize the customer expectation with service performance delivered by the product. However, many companies created the value gap as they failed to match the brand value and customer value [6]. There are two steps which can be operated by Pertamina to improve the customer satisfaction. The first step is identifying the customer characteristics, which is can be described by multivariate data analysis consisting of factor analysis, discriminant analysis, and multiple regression analysis. Survey has to be conducted to obtain the information of customer perception.

The second step, Pertamina do the measurement of customer satisfaction with importance-performance analysis. With those steps, the company is able to evaluate the customer satisfaction compared with its service performance. Suited with its ability and put side by side with other companies, Quality Function Deployment (QFD) analysis and House of Quality (HOQ) can be performed. After that, Pertamina is able to decide the next step to improve its customer satisfaction by matching the service with the customer needs.

2. Methods

For knowing the service quality and customers' satisfaction of Pertamina Gas Station, questionnaire was designed and distributed as a media to collect primary data.

From the data processing phase, it was collected data about customers' characteristics, customers' importance level and customers' satisfaction of Pertamina Gas Station. There were 15 customers' characteristics of Pertamina which were consisted of customers' demographic and customers' knowledge. On the other hand, there are 26 service attributes that questioned to the respondents.

The data that had been collected was processed by multivariate data analysis. Multivariate data analysis is a statistical method to process several measurements related individual or several objects simultaneously [7]. Discriminant analysis is

a statistical technique for grouping dependent variable based on independent variables. The main purpose of discriminant analysis is classified the customers of Pertamina Gas Station based on theirs satisfaction with the Pertamina service quality. As a result, the characteristic of customers and expectation of customers can be identified.

Factor analysis is a statistical procedure used to simplify data by classifying a large number of data into some factors based on its correlation. The main purpose of factor analysis was simplifying data about customers' satisfaction by grouping of service attributes into some factors. In this research, factor analysis was used to classify 26 service attributes into 6 service factors based on customers' satisfaction. After 6 service factors was recognized, multiple regression analysis was executed. This analysis purpose was identifying the correlation each service factors with the service performance of Pertamina Gas Station. With the regression analysis, the weight of service factors related with customers' satisfaction could be identified.

Afterward, importance-performance diagram was designed to show the position of each service factors and also the position of each service attributes by comparing the importance level and performance level. The factors were the service factors formed by the analysis factor. Then perceptual mapping was also made and could be made with many analyses such as factor analysis, discriminant analysis, or correspond analysis. In this research, perceptual mapping was made by factor analysis. With importance performance diagram and perceptual mapping, the service attributes that were very important to the customers could be identified.

Quality Function Deployment or QFD is a structured process for planning the design of a new product or service or for redesigning an existing one [8]. QFD first emphasizes thoroughly understanding what the customers' wants or needs. Then those customers' wants are translated into characteristics of the product or service [9].

The benefit of QFD process was QFD shortens the design time and reduces the costs of achieving product or service introduction [10]. With QFD, characteristic quality that is important and service level that is needed to satisfy customers could be identified. The main methods and tools from QFD is House of Quality (HOQ). Building the house of quality starts with analyzing information about what the customer wants explained in voice of customer table then related with the characteristics of product quality. HOQ diagram is able to develop the suggestion to improve service quality of Pertamina Gas Station appropriate with the customers' requirements.

3. Result and Discussion

After all of the information has been collected by the questionnaire and the data collection is enough, reliable, and valid, then multivariate data analysis can be processed. In this research, the data processing used SAS 9.1 software. Table 1 and table 2 are the result of the discriminant analysis data processing.

From the result of discriminant analysis in table 1, type of gas station, age, and residents of customers significantly affected the customers' satisfaction. Type of gas station that had the highest discriminant coefficients was able to discriminate the customers' satisfaction. Customers of Pertamina Gas Station that had tried the product of Non Pertamina Gas Station felt less satisfied than the customers that had never experienced with Shell or Petronas services. Customers of Pertamina Gas Station that had never tried Shell or Petronas felt satisfied with the Pertamina services. And from table 2, the reasons of customer used Shell Gas Station or Petronas Gas Station were because they wanted faster service time, better accuracy of change and octane quality contained in gasoline.

Data processing with factor analysis produces six service factors that simplified 26 service attributes. The simplification into six factors was based on the highest score of factor loadings among the attributes. Table 3 shows the six service factors affected the

customers' satisfaction of Pertamina Gas Station. Afterward, the regression coefficients that is generated by multiple regression analysis in table 4, explained the affection of service factors. The regression equation is:

$Satisfaction = 2,78 + 0,15 \times factor1 + 0,34 \times factor2 + 0,32 \times factor3 + 0,37 \times factor4 + 0,26 \times factor5 - 0,01 \times factor6$

Table 1.
Discriminant Analysis of Customer Characteristics

Variable	p-value	Discriminant Coefficient 1	Discriminant Coefficient 2
Type of Gas Station	0.0103	-1,400695246	1,51283657
Age	0.0059	0,520158789	0,478845579
Residents	0.0026	0,365142637	0,223624007

Table 2.
Discriminant Analysis of Gas Station Types

Variable	p-value	Discriminant Coefficient
Service Time	0.0450	0,869521675
Precise Change	0.0402	-0,842906929
Accuracy of Gasoline Octane	0.0242	1,066804221

Table 3.
Service Factors of Pertamina Gas Station

Variable	Factors Name
Factor1	Supporting Facility of Gas Station
Factor2	Product Service of Gas Station
Factor3	Appearance of Gas Station
Factor4	Service Time of Gas Station
Factor5	Main Facility of Gas Station
Factor6	Location of Gas Station

Table 4.
Result of Multiple Regression Analysis

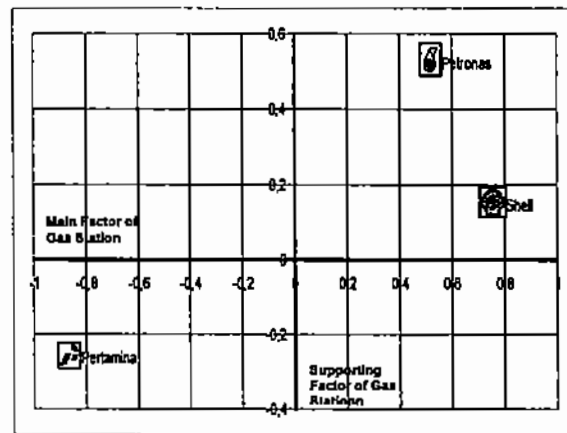| Variable	Parameter Estimate	p-value
Intercept	2,77586	<,0001
Factor1	0,15401	0,0005
Factor2	0,3388	<,0001
Factor3	0,31707	<,0001
Factor4	0,36926	<,0001
Factor5	0,26307	<,0001
Factor6	-0,01377	0,7486

Figure 1.
Perceptual Mapping of Gas Station

Perceptual mapping in figure 1 illustrated the position of service quality of Pertamina, Shell, and Petronas Gas Station. Shell Gas Station had good service quality in main factor, whether Petronas Gas Station had good service quality in supporting factor. However, Pertamina had bad service quality in both factors.
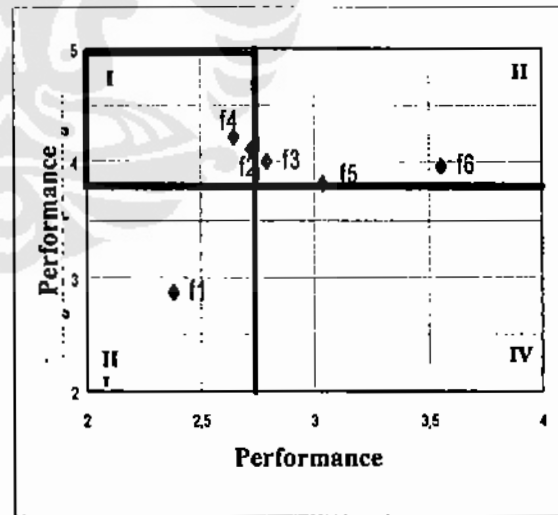

Figure 2.
Importance-performance Diagram of Service Factor of Pertamina Gas Station

Importance-performance diagram in figure 2 explained the position of service factors and also the position of service attributes in a service factor by comparing importance and performance. The

importance service attributes that had to be developed were the attributes located in first quadrant (concentrate here). The attributes in that area meant that they had high importance level but had low performance level. These attributes were:

1. Facility of non cash payments in Gas Station

2. Accuracy of Gasoline Volume
3. Accuracy of Gasoline Octane
4. Precise Change
5. Cleanliness of Gas Station Area
6. Cleanliness of Gas Station Facility
7. Service Time of Gas Station
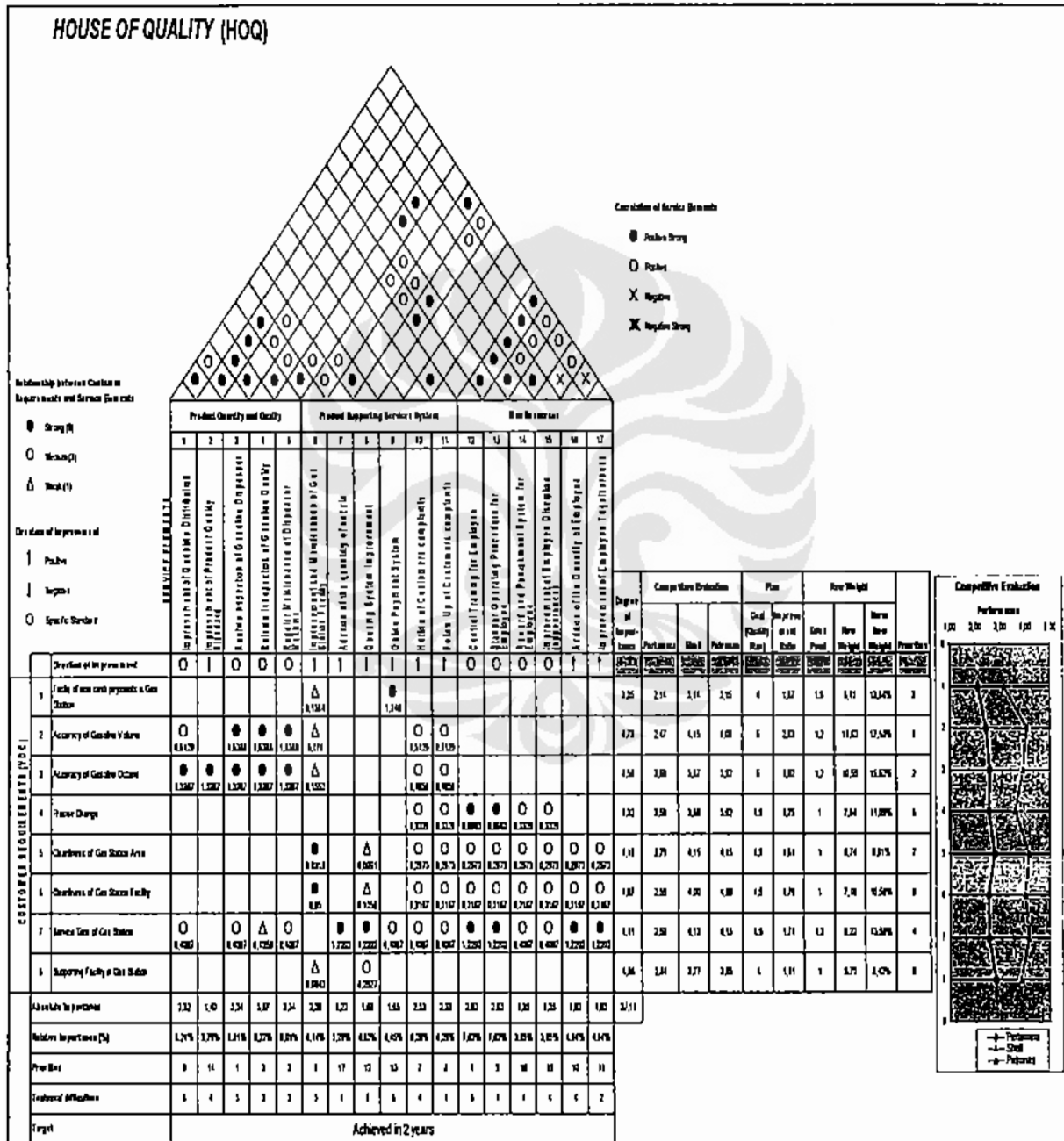8. Supporting Facility in Gas Station

Figure 3.
House Of Quality Pertamina

The attributes decided by importance performance analysis became the customers' requirements that were developed by House of Quality (HOQ) Pertamina. Figure 3 explained the HOQ that developed the eight customers' requirements. Afterwards, this following information is gathered:

1. Degree of importance of service attributes.
2. Competitive evaluation is a benchmarking of service quality among Pertamina, Shell and Petronas.
3. Goal is a main objective of customer satisfaction to be achieved by Pertamina.
4. Improvement ratio is the ratio between goal and service performance.
5. Sales point is given to the service attributes that can be promoted.
6. Row weight is a weight of service attribute to determine priorities, calculated by multiplying degree of importance, improvement ratio, and sales point.
7. Normalized row weight calculated by dividing row weight with total row weight.
8. Priorities is the sequence of importance to customer requirements fulfillment based on the row weight

The next step was offering the suggestion or service elements for Pertamina to improve its service quality with Critical-To-Quality diagram. After that, the relation between customers' requirements and technical responses was analyzed by relationship matrix. And based on relationship matrix, absolute importance abd relative importance can be counted. Technical responses that were prioritized are service elements had the highest relative importance. Furthermore, direction of importance, target, and correlation matrix among service elements were decided.

4. Conclusion

The characteristics that significantly affected the customers' satisfaction of gas station were type of gas station, age and customers' residents. Customers of Pertamina Gas Station that had tried the product of Non Pertamina Gas Station felt less satisfied than the customers that had never experienced with Shell or Petronas services. The reasons of customer used Shell Gas Station or Petronas Gas Station were because they wanted faster service time, better accuracy of change and octane quality contained in gasoline.

There were 6 service factors that was important according to customers, which were supporting facility of gas station, product service of gas station, appearance of gas station, service time of gas station, main facility of gas station, location of gas station

Using perceptual mapping, the comparison of service quality among Pertamina, Shell, and Petronas Gas Station was described. With house of quality (HOQ), suggestion of service element could be made to improve the service quality of Pertamina Gas Station. Service Elements that had been prioritized were routine inspection of quality and quantity gasoline and also the training for Gas Station employees.

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