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Improvement of Service Quality for Customer Satisfaction with Lean Six Sigma Method and Development Quality Function Deployment. Case: Telecommunication Company in Indonesia

Dwiyana Puji Lestari*, M. Dachyar[2]
Industrial Engineering Department
Universitas Indonesia, Kampus Baru UI, Depok, Indonesia
[1]*dwiyana.puji@ui.ac.id*, [2]mdachyar@yahoo.com

Abstract

Growth of tight competition in the telecommunication industry and digital era, the company should focus on any aspects in the whole organization, especially on customer engagement & operation and strategy development in order to manage and maintain a good journey and experience to the end customer. Company strategy to achieve better quality for service and customer satisfaction, the company should refer to the customer's expectation and develop a new strategy. The Six Sigma method and the Quality Function Deployment (QFD) method will provide a systematic technique used to process and translate the voice of customer (VOC) into a main concern of service quality for the customer perceived value and behavior intention. The aim of this research is to increase the customer satisfaction and loyalty inside the service quality based on level of importance from VOC that translate to House of Quality (HOQ) by using the Six Sigma method and the QFD method. VOC and QFD generated important parameter for support company's strategy. There are 10 main attributes of service quality and 30 voice of customer. Results of this research suggests that the most important attribute must be improved and increased in order for the service quality to comply with customer satisfaction.

Keywords: *Service quality, Six Sigma, Telecommunication, Quality Function Deployment, Voice of Customer*

1. Introduction

The service quality and level of customer satisfaction is one of the supporting factors for a company to be in demand by customers and to increase their customer loyalty. This increasingly fierce competition makes telecommunication provider companies to focus on how to retain customers and reduce churn from customer by improving their customer satisfaction. As one of the business indicators, improving the service quality to achieve customer satisfaction and customer loyalty is a factor directly impacted with a company's business performance. Customer satisfaction provides a clearer direction for organizations to develop and maintain the industry, create better strategies, analyse, prepare for future conditions including overall sales and company profitability, and to understand the gap between operating results and planned performance [1]. By following a company strategy to improve service quality and customer satisfaction, it is necessary to implement improvements in accordance with the voice of customers, service quality and also behavioral intention analysis that with the Six Sigma (DMAIC) method and quality function deployment as a reference to improve the service quality and customer satisfaction based on various aspects of service quality, network quality that need to be applied according to inputs from customer involvement and voice of customer. The research framework applied is in accordance with the influential factors from previous studies which are in accordance with the current condition of Indonesian telecommunications companies.

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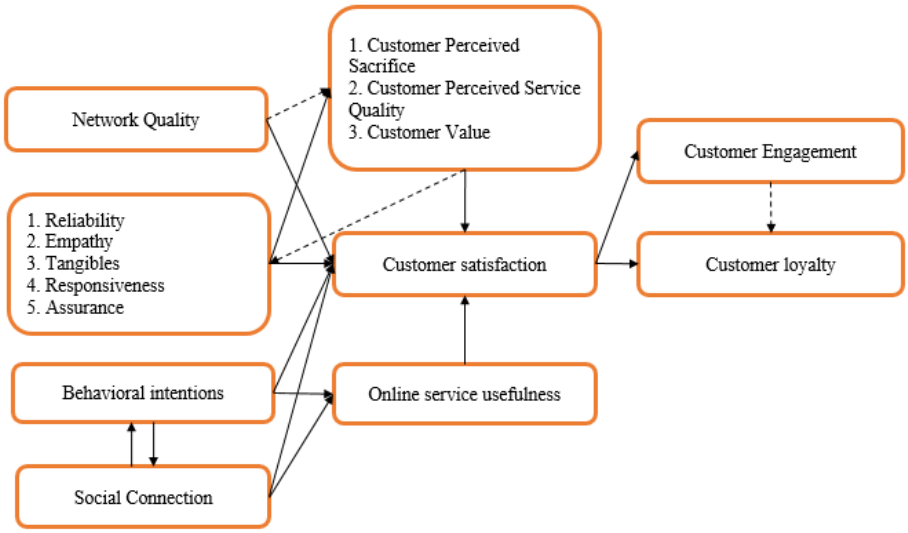

Figure 1. Proposed research framework

1.1 Customer satisfaction

Customer satisfaction and customer loyalty have a correlation with each other which are interrelated and also give impact to each other. And this also makes customer satisfaction one of the main elements for customer retention to old customers[2]. In the service industry they have concerns on how to improve their customer satisfaction and maintain customer satisfaction [3]. Customers that are in the factor of satisfaction can be used by the company to implement promotions, and this is one of the advantages of word of mouth. Consequences of dissatisfied customers become a very serious challenge for a company that must overcome later, related with modern business strategies that customer satisfaction is the key to the company's success in the business world competition.

1.2 Service quality

Service quality is the difference gap between customer expectations and their perception of service performance. Development of SERVQUAL which is a scale with 5 dimensions to assess service quality: Tangibles, Reliability, Responsiveness, Assurance, and Empathy [4]. Service quality coming from the customer's needs and maintenance for customer's perception, the perception of the customer about the quality of service received by the customer is one of the determinants of the success of marketing a product or service by the company [5]. Service quality is also considered as one of the competitive advantages in the telecommunications industry and other service sector is always identified with the quality of the business itself [6].

1.3 Customer engagement

A good relationship that occurs between the customer and the company will have a good impact on customer satisfaction and also make customers have a high level of loyalty[7]. Customer involvement is a two-way relationship by involving the customer or company and also the surrounding environment (other customers and the community) involves the cognitive attitude of the customer, physical & emotional attachment. In an increasingly transparent digital era, customer involvement is an important factor to make customers loyal to a brand [8].

1.4 Lean six sigma (DMAIC)

The use of Six Sigma aims to increase customer satisfaction, so that the main principle of this methodology is to focus on customers, we will look at Voice of the Customer (VOC) and ways to determine what customers really want from a product or process so that it is easier for companies to achieve customer desires [9]. To achieve the six sigma support with 5 stages: define, measure, analyze, improve, and control. VOC can be used as a means to clarify the customer's needs and expectations, clarify certain problems directly to the customer, or as part of routine activities used for repairs, service to customers, and also the marketing process. And the six sigma is a methodology where DMAIC is a set of tools used to identify, analyze, and eliminate sources of variation in a process [10].

1.5 Quality Function Deployment

Quality Function Deployment (QFD) which is one method for implementing improvements to the quality of a product or service [11]. By using this QFD approach utilizing a comprehensive quality system and focusing on how the right strategy to improve service quality is expected to increase customer satisfaction [12].

2. Methods

This research was conducted by applying the six sigma methods: define, measure, analyze, improve and control and supported with quality function deployment in analyze phase.

2.1. Define

This phase is defined as the process that needs to be done for identifying the problem is and which part in the company's strategy is seeking for improvement, based on the voice of customer. Main points in the define phase are:

- Business core problem identification
- Critical to quality based on voice of customer and customer's preference

2.2. Measure

This phase is defined to measure the company performance based on customer perspective and customer expectation. By doing this, the company is able to develop a strategy by using result which attributes from VOC that will give a best effort. Main points in the measure phase are:

- Define measurement for the company's performance & customer's expectation
- Develop and validate the measurement
- Quality function deployment – House of Quality

By using the QFD and HOQ in each variable and attributes based on questionnaire VOC, it is known to which is the attributes that need to be improved and will affect the increase in customer satisfaction because improvements according to customer expectations. In this research, the measure phase is also defined for the questionnaire purpose. This questionnaire was made based on VOC and 5 expertise on customer engagement & operation, that divided become 10 attributes with total 30 questionnaires. Questionnaires that were given to the

respondents have 2 aspects, customer satisfaction performance and customer expectation that need to be rated with Likert scale[13].

Table 1. Variable and Attributes Voice of Customer

Variables	Attributes Voice of Customer
Tangibles	Offline store facilities
	Social media engagement
	Employee appearance
Reliability	Fast response
	Interactive service & feedback
	Informative feedback
Responsiveness	Support with good responses
	Good manage complaint handling
	Fast responses during interaction through social media
Assurance	Estimation problem solving time
	Verification customer personal data
	Accurate information for complaint
Empathy	Support with best service
	Service quality meets customer expectation
	Customer care support with personal attention to customer
Network Quality	Internet connection stable
	Telephone connection quality stable
	Rarely occurs signal blank when making a call
Customer Perceived Service Quality	Overall the internet & telephony networks are stable
	Product & promotion for loyal customer
	Products easy to buy & used by customer
Customer Value	Service & network in accordance with the value paid by customer
	Service from customer service in accordance with expectation from customer
	Internet data package & telephone price affordable
Customer Satisfaction	Customers are very satisfied with the service & quality
	Customers are very happy with promo & offers
	Customers helped by mobile application functionality
Customer Behavioural Intention	Monthly payment routine
	Recommendation to others
	Complaint & engage with social media or offline customer service

2.3. Analyze

The analyze phase is a process to look for and determine what the root cause of problems is which could be impacted to having a better performance. Knowledge of the problems and voice of customer could help the improvement process much easier execute and will give a positive impact. Main points in the analyse phase are:

- Identify customer expectation that impacted for customer satisfaction

- Formula improvement phase based on measure phasw

2.4. Improve

After knowing all the impacted attributes, the company could try to improve by increasing the support that is required and needed based on VOC that given through questionnaire. This improvement phase also to reduce the gap expectation from customer point of view.

- Generate and identify potential improvement from attributes
- Evaluate and final solution
- Improve based on technical & division responses from HOQ

2.5. Control

For the final stage, controlling procedure could be really effective and required for increasing improvement stability and performances. Control all improved attributes service quality based on VOC could help company achieve their goals to increased customer satisfaction.

3. Result and Discussion

This research used the questionnaire method, in which questionnaires were given to customers who use 2 different providers and have more than 1 year's usage to receive a head to head evaluation directly from the customer. Before the questionnaire was shared to all the respondents, a pilot was required to test, identify, and reduce the potential problems in research. Pilot test is given to 30 customers, then the results are tested for validity and reliability. Based on the pilot test and validation & reliability test questionnaire shared to customer to achieved minimum data, the number of total respondents were completed this survey are 298 respondents. To identify the gap analysis for customer satisfaction company X & company Y, and to get improvement ratio for each provider company using Geo Mean for all attributes to get more accurate than normal average.

Table 2.GAP Customer Satisfaction Company X and Company Y

Attributes Voice of Customer	Customer Satisfaction Company X	Customer satisfaction Company Y	GAP	Improvement Ratio
Tangible	2,78	3,54	-0,76	1,27
Reliability	2,81	3,72	-0,92	1,33
Responsiveness	2,73	3,43	-0,70	1,25
Assurance	3,41	3,89	-0,48	1,14
Empathy	2,83	3,75	-0,92	1,33
Network quality	1,99	3,91	-1,92	1,96
Customer perceived service quality	2,48	3,58	-1,10	1,44
Customer value	2,96	3,45	-0,49	1,17
Customer satisfaction	2,81	3,53	-0,72	1,26
Customer behavioral intention	2,79	3,51	-0,72	1,26

Based on the gap data, company X's customer satisfaction has a lower performance than company Y. The gap for 30 VOC grouped into 10 attributes. Gap score for tangible is -0,76; reliability is -0,92; responsiveness is -0,70; assurance is -0,48; empathy is -0,92; network quality is -1,92; customer perceived service quality is -1,10; customer value is -0,49; customer satisfaction -0,72 and customer behavioral intention is -0,72. In conclusion, there are 3 major aspects that need improvement based on gap customer satisfaction from 2 different providers.

Table 3. GAP Score Customer Satisfaction - Customer Expectation Company X

Attributes Voice of Customer	Customer Satisfaction	Customer Expectation	GAP	Improvement Ratio
Tangible	2,78	3,72	-0,94	1,34
Reliability	2,81	4,09	-1,29	1,46
Responsiveness	2,73	4,06	-1,32	1,48
Assurance	3,41	4,22	-0,81	1,25
Empathy	2,83	3,99	-1,16	1,42
Network quality	1,99	4,30	-2,31	2,17
Customer perceived service quality	2,48	4,01	-1,53	1,67
Customer value	2,96	4,00	-1,05	1,36
Customer satisfaction	2,81	3,93	-1,12	1,41
Customer behavioral intention	2,79	3,40	-0,61	1,23

Table 3 shown details gap and improvement ratio for each provider company X based on customer satisfaction and customer expectation perspective. To get the value of the improvement ratio do a comparison between customer expectations and customer satisfaction. Improvement ratio is parameters that used to defined which attributes that should have highest important role that will be impacted to customer satisfaction. From improvement ratio in mean all aspects in attributes service quality need improvement to meets customer needed or customer expectation. From all attributes, there are three attributes that have high improvement ratio and will impact to customer satisfaction: network quality with improvement ratio in company X score is 2,17 ; customer perceived value is 1,67 and responsiveness with improvement ratio is 1,48. It shown that service quality from provider does not meet the expectation from customer and need to improved.

Based on table 4, it can be seen that the value of improvement ratio of service quality at each service criteria based on voice of customer is described by the value of the gap between customer satisfaction and customer expectation. Negative gap values indicate the service quality a poor criterion that needs to improve. Based on the improvement ratio in company Y the highest improvement ratio is the dimension of customer perceived service quality is 1,15; followed by customer value is 1,13 and customer satisfaction that have same value improvement ratio is 1,13. This three should be a concern to eliminate gaps or at least minimize gap and achieve improvement ratio.

Table 4. GAP Score Customer Satisfaction - Customer Expectation Company Y

Attributes Voice of Customer	Customer Satisfaction	Customer Expectation	GAP	Improvement Ratio
Tangible	3,72	4,04	-0,31	1,09
Reliability	4,09	4,50	-0,41	1,10
Responsiveness	4,06	4,36	-0,30	1,07
Assurance	4,22	4,62	-0,40	1,10
Empathy	3,99	4,32	-0,33	1,08
Network quality	4,30	4,73	-0,43	1,10
Customer perceived service quality	4,01	4,61	-0,61	1,15
Customer value	4,00	4,52	-0,51	1,13
Customer satisfaction	3,93	4,44	-0,51	1,13
Customer behavioral intention	3,40	3,81	-0,41	1,13

Gap and improvement ratio will used to analyze technical responses that need to be implemented for quality function deployment. After that, from QFD and HOQ result to focus on how to determine attributes parameter and define technical responses, division matrix and correlation. Implementation plan for improvement of the 10 attributes from improvement ratio and HOQ must be done by 4 division that should support improvement with technical responses. There are customer engagement & operation division, commercial & marketing division, technical division and IT division. Afterwards, to improved attributes used the main gap and improvement ratio in company X and company Y.

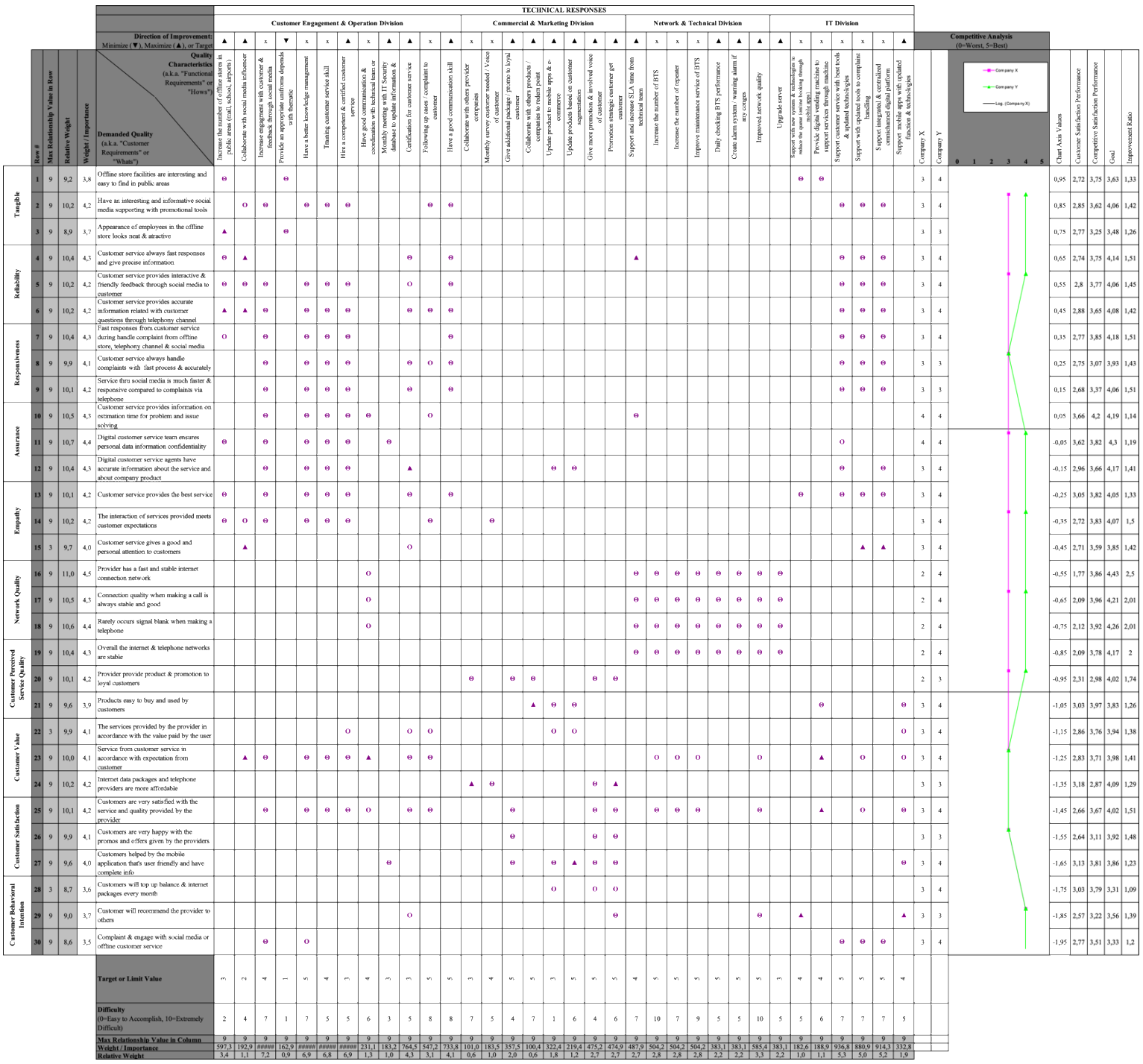

Figure 2. Diagram House of Quality

4. Conclusion

The attributes that are proven through the conducted questionnaires and voice of customer show that there is a needed improvement for customer satisfaction are network quality, customer perceived value, and responsiveness. According to this research, the key service factors that are to be considered, increased and improved is the level of customer satisfaction in the telecommunication service operators are as follows: (1) Good and stabile network quality, (2) Telecommunication providers

that should meet the customer's assurance in terms of providing a service that suits the customer's needs and offer a reliable technology service, (3) The customer notices the network quality (Perceived Quality) offered by telecommunication providers are merged to the customer's needs and (4) customers expect promotions that are appropriated to customer needs and more promotion for loyal customers.

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