Journal of Industrial Engineering and Halal Industries (JIEHIS) E-ISSN 2722-8142
JIEHIS Vol. 1 No. 2 December 2020 P-ISSN 2722-8150
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Service Performance Improvement During Pandemic COVID 19 Using Integrated SERVQUAL and Six Sigma: Telecommunication and Information Industry Case Application

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ABSTRACT

The increase in users of the Wifi.id Corner internet service is not directly proportional to the service satisfaction obtained by the Wi-Fi.id Corner service. In fact, many Wifi.id Corner customers complain and still complain about the quality of Wifi.id Corner services ranging from unstable network problems, slow speeds, to problems with the location. An analysis is needed to find out these problems. The purpose of this study is to assess the level of customer satisfaction with service quality and determine the priority attributes in improving service Wi-Fi.id Corner. The method used in this research is Service Quality (SERVQUAL) and Six Sigma. From the research results, it is found that the services provided by PT X have not fulfilled the wishes of its customers optimally, this can be shown by the high gap value and low sigma value. The following are three attributes that are an important concern for the company because they have the lowest sigma value: environmental cleanliness Wifi.id Corner with gap and sigma values of -1.30 and 1.88, internet speed stability R2 with gap and sigma values Of -1, 27 and 1.85, it is rare for interference in accessing the internet R4 with gap and sigma values of -1.23 and 1.85.

Keyword: Satisfication, Service, Six Sigma, Servqual

INTRODUCTION

In the current era of globalization, the internet has become a necessity for humans to do various things (Isyanto & Nandiwardhana, 2019). The internet is not only used to obtain information and alerts for news and events that occur in the world but many daily activities that use the internet such as Work From Home (WFH) and Study From Home (SFH) which can now be done due to pandemic conditions (Komalasari, 2020). Due to the consumer's needs regarding this telecommunication media, various providers have begun to develop internet services that are good and in accordance with the needs of the community. The government has also started to provide wireless-based internet services throughout Indonesia. PT X as one of the State-Owned Enterprises (BUMN) in the field of telecommunications then expanded its business through Wireless-based internet which is provided in certain locations called Wifi.id Corner.

According to Kotler (2000), customer satisfaction is the level of a person's feelings after the performance or perceived results are compared to expectations. If the quality of service applied in a food company will give its customers morning satisfaction, likewise if the quality of service implemented in a company will not give satisfaction to its consumers (Munita et al., 2018). Therefore the company will provide mature customer service through quality service so that consumers feel satisfied so that the company can meet customer satisfaction (Fadillah et al., 2020).

Wifi.id Corner is an innovative public facility from PT X in the form of a place that provides internet access by providing high speed up to 100 Mbps, by purchasing the voucher that has been offered. With these vouchers, consumers can immediately use the internet service facility for 12 hours so that consumers are expected to be satisfied with a very fast connection. This service can already be enjoyed in various regions such as Bali, Java, Sumatra, and many other regions in Indonesia, this is PT X's effort to provide the best service for the people of Indonesia.

However, expectations are sometimes not always in accordance with the practice, many Wifi.id Corner customers complain and still complain about the quality of Wifi.id Corner services ranging from unstable network problems, slow speed, to location problems. In addition, this can be a factor that encourages customers to switch to other providers that provide wifi id services. Therefore, PT X must always be ready to face the competition that comes from time to time and determine a way out so that customers remain loyal to PT X.

Based on this background, researchers want to research no matter how big the level of customer satisfaction is using the Wifi.id Corner service. In addition, the researcher wants to see the parameters with the most complaints to immediately improve the repair. So from this, researchers can see which parameters need improvement and provide suggestions for improving the quality of Wifi.id Corner services, to meet the company's goals to increase customer satisfaction in order to remain loyal to PT X.

LITERATUR REVIEW

Service Quality

Service quality is defined as a measure of how well the level of service provided is in accordance with customer expectations. Based on this definition, service quality can be realized by meeting the needs and desires of customers and the accuracy of delivery to match customer expectations. (Tjiptono, 2005)

Thus, there are two main factors that influence service quality, namely: Expected service and Perceived service (Tjiptono, (2005); Ulkhaq & Barus, (2017)). If the perceived service matches the expected service, the service quality will be perceived as ideal. Conversely, if the perceived service is worse than the expected service, then the quality of the service is perceived as bad or negative. Therefore, whether or not quality depends on the ability of service providers to consistently meet customer expectations (Mardikanto et al., 2016).

Service Quality Dimensions

The service quality model that is the most popular and until recently used as a reference for service quality research is the SERVQUAL (Service Quality) model. According to the method was developed by Parasuraman, et al., (1985) in a series of studies on several service sectors such as banking, credit cards, and insurance.

Built on a comparison of two main factors, namely the perception of customers of the service they actually receive (perceived service) and what is actually expected (expected service). The three experts in Tjiptono (2014) reveal that service quality consists of five main dimensions, namely:

a. Tangibles
   Tangibles are the ability of a company to show its existence to external parties. The appearance and ability of the company's physical facilities and infrastructure that can be relied on in the surrounding environment are one of the ways service companies provide quality service to customers. Among them include physical facilities (buildings, books, bookshelves, tables, and chairs, etc.), technology (tools and equipment used), and employee appearance.
b. Reliability
   Reliability is the company's ability to provide services according to what is promised, accurately, and reliably. Performance must be in accordance with customer expectations which include punctuality, the same service for all customers without errors, sympathetic attitude and high language.
c. Responsiveness
   Responsiveness is the ability to help customers and provide services quickly and precisely by delivering clear information. Ignoring and letting customers wait for no apparent reason and lead to negative perceptions of service quality.
d. Assurance
   Assurance is the knowledge, courtesy, and ability of company employees to foster customer trust in the company. This dimension includes several components, such as communication, credibility, security, competence, and courtesy.
e. Empathy
   Empathy, namely giving sincere and individual or personal attention to customers by trying to understand consumer desires where a company is expected to have an understanding and knowledge of customers, understand customer needs physically, and have a comfortable operating time for customers.

Six-Sigma

According to Nasution (2015), six sigma is defined as a business strategy to eliminate waste, reduce costs due to poor quality, and improve the effectiveness of all operating activities so that they can meet customer needs and expectations. Six Sigma is a technique or method of controlling and improving quality dramatically that has been implemented by the Motorola company from 1987. This method was first developed by William B. Smith, Jr. Dan Mikel J. Harry of Motorola in 1981, when Bob Galvin was CEO of Motorola. This method aims to make continuous improvements until the Six Sigma target is achieved (Nasution, 2015). The approach frequently used in the Six Sigma method is the DMAIC approach (Define, Measure, Analyze, Improve, Control).

1. Define
   According to Nasution (2015), the purpose of define is to identify a product or process to be improved and determine what sources are needed in project implementation. Before determining and stepping into the defined process, first determine a potential project that is feasible.

2. Measure
   At this stage, the DPMO (Defect per Million Opportunities) and the sigma level will be calculated. To be able to know the company's current performance, the DPMO and the sigma level are calculated. The formula used to calculate DPMO and Sigma levels is as follows (Gaspersz, 2002):

$$DPMO = \frac{Number\ of\ Defects}{Number\ of\ Samples \times Number\ of\ Defect\ Probability\ per\ unit} \times 1.000.000 \quad (1)$$

   Or service-level DPMO can use this formula:

$$DPMO = \left(1 - \frac{Actual\ Satisfication}{Satisfication\ Target}\right) \times 1.000.000 \quad (2)$$

$$Level\ Sigma = normsinv\left(\frac{10^6 - DPMO}{10^6}\right) + 1{,}5 \quad (3)$$

3. Analyze
   At this stage, several things are done, such as determining priority improvements, identifying the sources and root causes of failure of a process. There are a number of tools used at this stage, namely Pareto and Fishbone diagrams.
4. Improve
   At this stage, proposals for improvements or action plans are made after knowing the source and root causes of existing problems. The development of an action plan is one of the important activities in carrying out quality improvement through the six sigma method, therefore the action plan must provide reasons why the action plan is important to do, how to implement the action plan, where the action plan will be implemented, who will be the person in charge of the action plan if implemented, and how much it will cost to implement the action plan, as well as what positive benefits the company can receive by implementing the action plan.
5. Control
   At this stage, the results of quality improvement are documented and used as a guideline for work standards, as well as ownership or responsibility transferred from the Sigma team to the owner or person in charge of the process to ensure the quality of the product or service has reached the standard process according to the improved work guidelines.

METHODS

Research Object

This research was conducted at PT X, by analyzing the Wifi Corner service which is characterized by the company whether it has met customer desires, and what service attributes need to be developed and improved by applying the Servqual-Six Sigma method. Data collection is done by distributing questionnaires to 30 service users.

Research Flow

Procedures outlined in this study were divided into three phases: preliminary, retrieval phase and data processing, and the discussion stage of the discussion, conclusions, and suggestions.

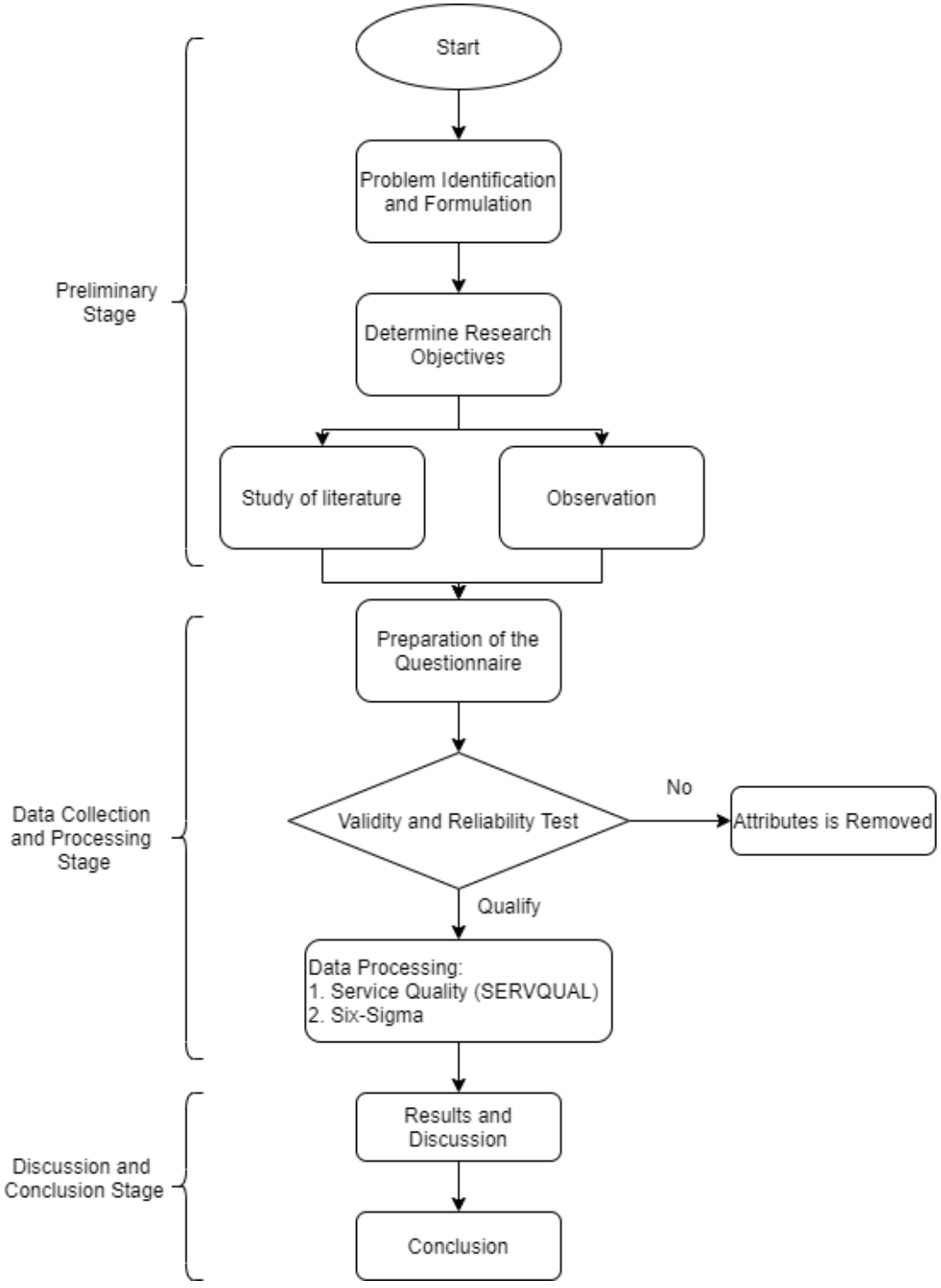

Figure 1 Research Flow

Questionnaire Data

Collecting data in this study using a list of questions or questionnaires. The questionnaire was distributed to 30 users of Wifi.id Corner PT X. The attributes in the questionnaire were divided into five parts according to the five dimensions of service quality. The list of attributes on the questionnaire is shown in table 1

Table 1. Attributes of Each Dimension

Dimension	Attribute	Code
(Reliability)	1. Wifi.id Internet access speed is in accordance with the offer	R1
	2. Internet speed stability	R2
	3. Easy and fast wifi.id registration process	R3

Dimension	Attribute	Code
	4. Interruption when accessing internet	R4
	5. Easy wifi.id network to connect to various devices (smartphone / laptop / etc)	R5
(Assurance)	1. Employees understand well the Wifi.id device	A1
	2. Giving guarantees/compensation if wifi.id cannot be used	A2
	3. The suitability of the wifi.id card price with what is stated on the voucher	A3
	4. Customers feel safe when accessing the internet at wifi.id corner	A4
	5. Reliable wifi.id corner officer	A5
(Tangibles)	1. The appearance of employees wifi.id is neat and clean	T1
	2. Environmental Hygiene Wifi.id Corner	T2
	3. The physical appearance of the wifi.id corner	T3
	4. The location of wifi.id corner is good and strategic	T4
	5. Wifi.id corner has adequate facilities (chairs, lighting, sockets, etc.)	T5
	6. Implement health protocols (keep a distance and wear a mask)	T6
(Emphaty)	1. Friendly staff serving customers	E1
	2. Officers treat customers with full attention	E2
	3. The clerk provides additional information if any (such as if there is a promotion)	E3
(Responsiveness)	1. The speed of the officers in handling complaints	Rs1
	2. The speed of the officers to repair the damage at the wifi.id Corner	Rs2
	3. Employee responsiveness in handling customer needs	Rs3

RESULT AND DISCUSSION

To see the attributes that need improvement, a calculation is needed to measure the distance and sigma of each attribute. The following are the calculation steps:

1. Add up all the scores from the actual performance and the expectations of each item then divided them by the total number of respondents.
2. Gap = actual performance score - expected performance score.
3. Calculating the level of satisfaction.

$$evel\ of\ Satisfication = \frac{Actual\ Satisfication}{Satisfication\ Target} \times 100\% \quad (4)$$

4. The level of satisfaction in the Six Sigma method is 100% or a score of 5 on a scale of 1-5.

$$DPMO = \left(1 - \frac{Actual\ Satisfication}{Satisfication\ Target}\right) \times 1.000.000 \quad (5)$$

5. Values can be obtained by looking at the Sigma table based on Motorola 6-Sigma Process.

Table 2. Gap and Sigma Values of Each Attributes

Attribute	Actual Satisfaction	Expected Satisfaction	Gap	Satisfaction Target	Satisfaction Level	DPMO	Sigma
R1	3,33	4,33	-1,00	5	67%	333333	1,93
R2	3,20	4,47	-1,27	5	64%	360000	1,85
R3	3,83	4,30	-0,47	5	77%	233333	2,23
R4	3,20	4,43	-1,23	5	64%	360000	1,85
R5	3,70	4,37	-0,67	5	74%	260000	2,14

Attribute	Actual Satisfaction	Expected Satisfaction	Gap	Satisfaction Target	Satisfaction Level	DPMO	Sigma
A1	3,80	4,73	-0,93	5	76%	240000	2,20
A2	3,40	4,33	-0,93	5	68%	320000	1,97
A3	3,50	4,60	-1,10	5	70%	300000	2,02
A4	3,57	4,50	-0,93	5	71%	286667	2,06
A5	3,53	4,53	-1,00	5	71%	293333	2,04
T1	3,57	4,43	-0,87	5	71%	286667	2,06
T2	3,23	4,53	-1,30	5	65%	353333	1,88
T3	3,37	4,17	-0,80	5	67%	326667	1,95
T4	3,43	4,30	-0,87	5	69%	313333	1,99
T5	3,63	4,50	-0,87	5	73%	273333	2,10
T6	3,50	4,37	-0,87	5	70%	300000	2,02
E1	3,77	4,47	-0,70	5	75%	246667	2,19
E2	3,37	4,47	-1,10	5	67%	326667	1,95
E3	3,53	4,37	-0,83	5	71%	293333	2,04
Rs1	3,50	4,37	-0,87	5	70%	300000	2,02
Rs2	3,50	4,40	-0,90	5	70%	300000	2,02
Rs3	3,47	4,37	-0,90	5	69%	306667	2,01

Based on the values that have been obtained, there are three attributes that are of important concern because they have the lowest gap and sigma values. The following are the three attributes:

a. Environmental cleanliness of Wifi.id Corner with gap and sigma values of -1.30 and 1.88.
b. R2 internet speed stability with gap and sigma values of -1.27 and 1.85.
c. Interference in accessing the R4 internet is rare with the gap and sigma values of -1.23 and 1.85.

Cause-Effect Analysis

The third attribute above is Critical to Quality (CTQ) which needs to be improved. Based on the identified Critical to Quality, the next step is to determine the process that will be damaged by mapping the company's business processes to provide an overview of the physical flow and information flow of the observed business processes. The fishbone diagram has been validated by the company, especially the sales and customer care assistant manager

1. Environmental Hygiene Wifi.id Corner

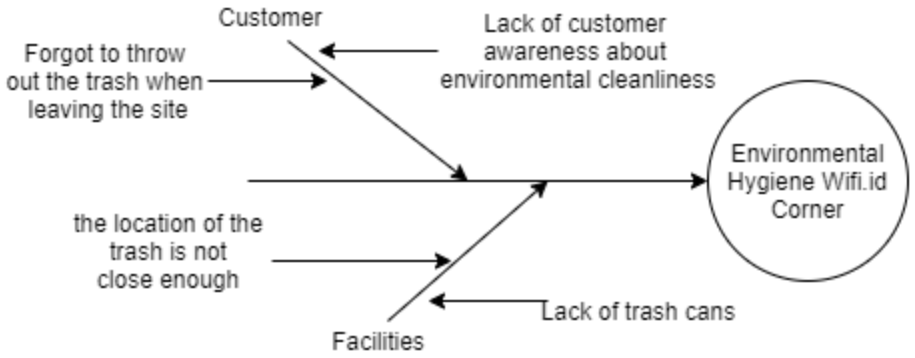

Figure 2. Fishbone Diagram of Interruption When Accessing Internet

Analysis:

- Forgot to throw out the trash when leaving the location, so that there are leftover food/beverage packages on the table when new customers arrive.
- The lack of trash cans and its location is not close enough to make customers lazy to take out garbage directly (waiting for a lot of garbage).

- Lack of customer awareness about environmental cleanliness.

Alternative action plans / recommendations:

- Conducting regular site cleaning by cleaning staff
- Increase the number of trash bins and bring the trash can location closer to the Wifi.id Corner location.
- Making posters about the appeal to keep the environment clean.

2. Stability of Internet Speed

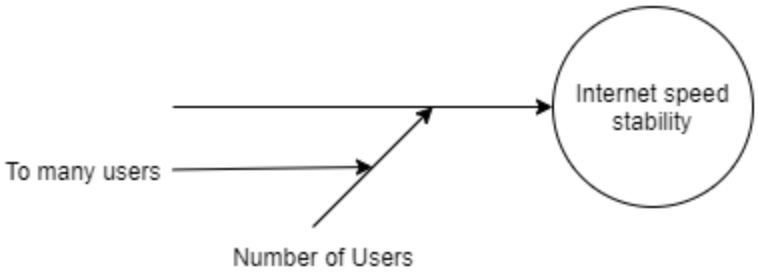

Figure 3. Fishbone Diagram Stability of Internet Speed

Analysis:

- To many users
  Too many wifi.id users can interfere with the speed and stability of the internet network.

Alternative action plans / recommendations:

- Limit the number of users at the same time. With this, it is expected that the quality of the speed and stability of the internet at Wifi.id Corner will be maintained.

3. Interruption When Accessing Internet

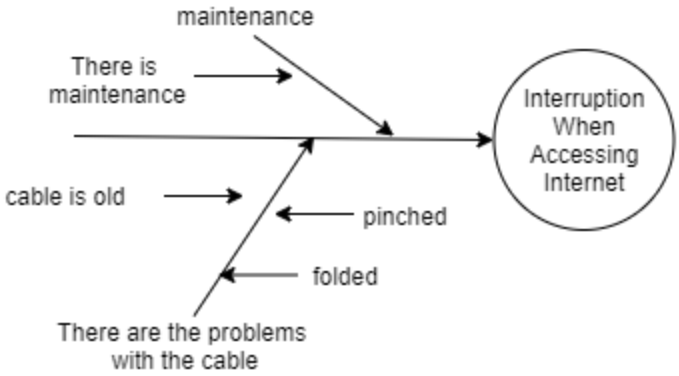

Figure 4. Fishbone Diagram Interruption When Accessing Internet

Analysis:

- There is maintenance.
  When network operators perform maintenance on their devices, often it can affect the stability of the internet connection and also signal strength.
- There are the problems with the cable.
  Old, pinched, or folded cables can also interfere with the stability of the internet speed. Not infrequently, this happens after bad weather such as heavy rain.

Alternative action plans / recommendations:

- Provides notification of time when there is maintenance, so consumers can tolerate and not buy wifi.id vouchers.
- Controlling internet quality on Wifi.id Corner regularly, especially after bad weather such as heavy rain and wind.

CONCLUSION

Based on the results of data processing and analysis that has been carried out, there are several conclusions that can be drawn, namely:

1. The services provided by PT X have not fulfilled the desires of its customers optimally, this can be shown by the high gap value and low sigma value. The following are three attributes that are of important concern for companies because they have the lowest sigma value:
   a. Cleanliness of the Wifi.id Corner with gap and sigma values of -1.30 and 1.88.
   b. R2 internet speed stability with gap and sigma values of -1.27 and 1.85.
   c. Interference in accessing the R4 internet is rare with the gap and sigma values of -1.23 and 1.85.
2. Alternatives that recommended for each attribute are:
   a. Environmental cleanliness Wifi.id Corner
      - Periodic cleaning of the location by employees
      - Increase the number of trash bins and bring the location of the trash closer to the Wifi.id Corner location.
      - Make an announcement like poster or another for customer that keeping enviroment from trash is important.
   b. Internet Speed Stability
      - Limit the number of users at the same time. With this, it is expected that the quality of the speed and stability of the internet at Wifi.id Corner will be maintained.
   c. Interference in accessing the internet is rare
      - Provide a warning when monitoring, so that consumers can understand and not buy wifi.id vouchers..
      - control internet quality on Wifi.id Corner regularly, especially after bad weather such as heavy rain and wind.

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