CHAPTER I

INTRODUCTION

1.1 Background

Micro, Small and Medium Enterprises (UMKM) have an important role in the absorption of labor and development of the community. Data provided 2017 by the ministry cooperatives and UMKM of Indonesia, UMKM have a market share of around 99.99% with 62.9 million units of the total business actors in Indonesia. This thing shows how big the role of UMKM is in building the economy of the Indonesian people (Hadinugroho, et al., 2020).

In its development, UMKM have become one of the holders of an important role in the development of economic globalization. With the occurrence of economic globalization, it is necessary to make changes in business actors as indicated by the increase in various factors such as production competence, investment in national industrial (Budiarto, et al., 2015). To assist the development of small and medium enterprises, it is necessary to improve various aspects such as management, quality of goods, and service systems.

Sutoyo Farm is a small and medium-sized enterprise engaged in layer farming. This business was established since 2018 in the village of Tumbreb, Central Java. With the development of SMEs and increased competition between similar SMEs, it is necessary to make improvements to these SMEs. During the observation, there are a lot of customer complaints about the performance of this SME, that lead the decrease the loyality of the customer and resulted in reduced sales. The customer complaints related to the quality of service provided by Sutoyo SMEs such as, frequent delays in egg delivery, difficulty for consumers in contacting these SMEs to place an order because there is no business number available to place an order. Because of this, it is necessary to make improvements to the service sector at Sutoyo SMEs by using Servqual Calculation and quality function deployment (QFD).

Servqual is a method developed by Parasuraman which is used to measure the level of customer satisfaction by comparing performance with expectations (Fauzia, Hanif, & Maiciptaani, 2019). In the servqual model, service attributes will be classified into 5 dimensions, such as tangible, reliable, responsiveness, empathy and assurance. Furthermore, the results of the servqual analysis will be used to improve the current service quality using Quality Function Deployment (QFD). QFD is a method used to interpret what the customer wants in the form of technical response.

1.2 Problem Statement

Based on the problem and description of the background, a Problem Statement can be formulated as follows:

1. What are the important attributes in determining service quality at Sutoyo SMEs?
2. What service attributes must be prioritized to improve service quality at Sutoyo SMEs?
3. How to response the prioritized attributes to improve the service quality in Sutoyo SMEs?

1.3 Objectives

With the approach to the problem statement, the objective of this research is to

1. Identifying service attributes of Sutoyo SMEs
2. Measure and determine the current service quality of Sutoyo SMEs and decide what service attributes need to be prioritized to improve service quality in Sutoyo SMEs Animal Husbandry.
3. Identify the technical response priorities that affect the current service attributes of the Sutoyo SMEs Animal Husbandry

1.4 Scope

To prevent the expansion of the problem and to achieve the research, it is necessary to limit the problems in the research as follows.

1. The research was conducted on egg purchase requests by Sutoyo SMEs Animal Husbandry consumers
2. Observations were conducted from 1 May 2022 to 15 May 2022.
3. Service quality measurement will use servqual analysis by integrating quality function development and the House of quality.
4. The research did not reach the stage of analyzing the results of achieving the target after the implementation of service quality with the QFD method on Sutoyo SMEs Animal Husbandry.

1.5 Assumption

The Assumption Used in this final project are:

1. All respondents are aware of the services provided by Sutoyo SME.
2. All respondents have accepted the services provided by Sutoyo SMEs.

1.6 Research Outline

Chapter 1 Introduction

The introduction is a chapter that describes the situation and background on which the research is based. This chapter discusses the formulation of the problem and research objectives and determines the research's limitations.

Chapter II Literature Study

This chapter explains the theoretical basis used in the research process, as well as the theory needed in the data processing process to solve the problems studied. In this study, the theory is related to service quality, quality function deployment methods, and the House of quality.

Chapter III Research Methodology

This chapter explains the sequence and stages of the research carried out, starting with problem identification, problem formulation, setting research objectives, determining research boundaries and scope, collecting data, analyzing data obtained, and finally, conveying research conclusions.

Chapter IV Data Analysis

In this chapter, the data obtained regarding service quality is processed and then processed using the quality deployment and House of quality methods.

Chapter V Conclusion

This chapter is the last chapter of this research, containing the conclusions and results of the successfully completed problem statement and suggestions and recommendations for business development in Sutoyo SMEs Animal Husbandry.

CHAPTER II

LITERATURE STUDY

2.1 Service

Service is one of the main things to get customer loyalty in every business, both services and goods. If a business produces a product in the form of goods or something that can be touched, then the service can be provided in an invisible/intangible form. However, services can not only be seen as intangible products, especially in businesses engaged in services. However, services can not only be seen as intangible products, especially in businesses engaged in services (Tjiptono & Chandra, 2011).

Services can be defined as actions that are given or offered that are intangible and do not produce something proprietary (Kotler & Keller, 2016). In addition, according to Parasuraman (1985), service is defined as an intangible action seen through the service provider's performance. Thus, the notion of service is not only limited to the provision of intangible products by business actors to consumers but can be interpreted as a process between business actors and consumers who are given and used together with the products produced by the company or business actor.

2.2 Quality

Quality is related to products produced by business actors. Quality is one of the factors necessary to continuity. According to Parasuraman (1985), Quality is the overall dimension of meeting customer needs and satisfaction. The tendency of consumers to choose a product based on its quality. Quality is assessed not only based on the function of an item or service but also on the suitability and needs of consumers.

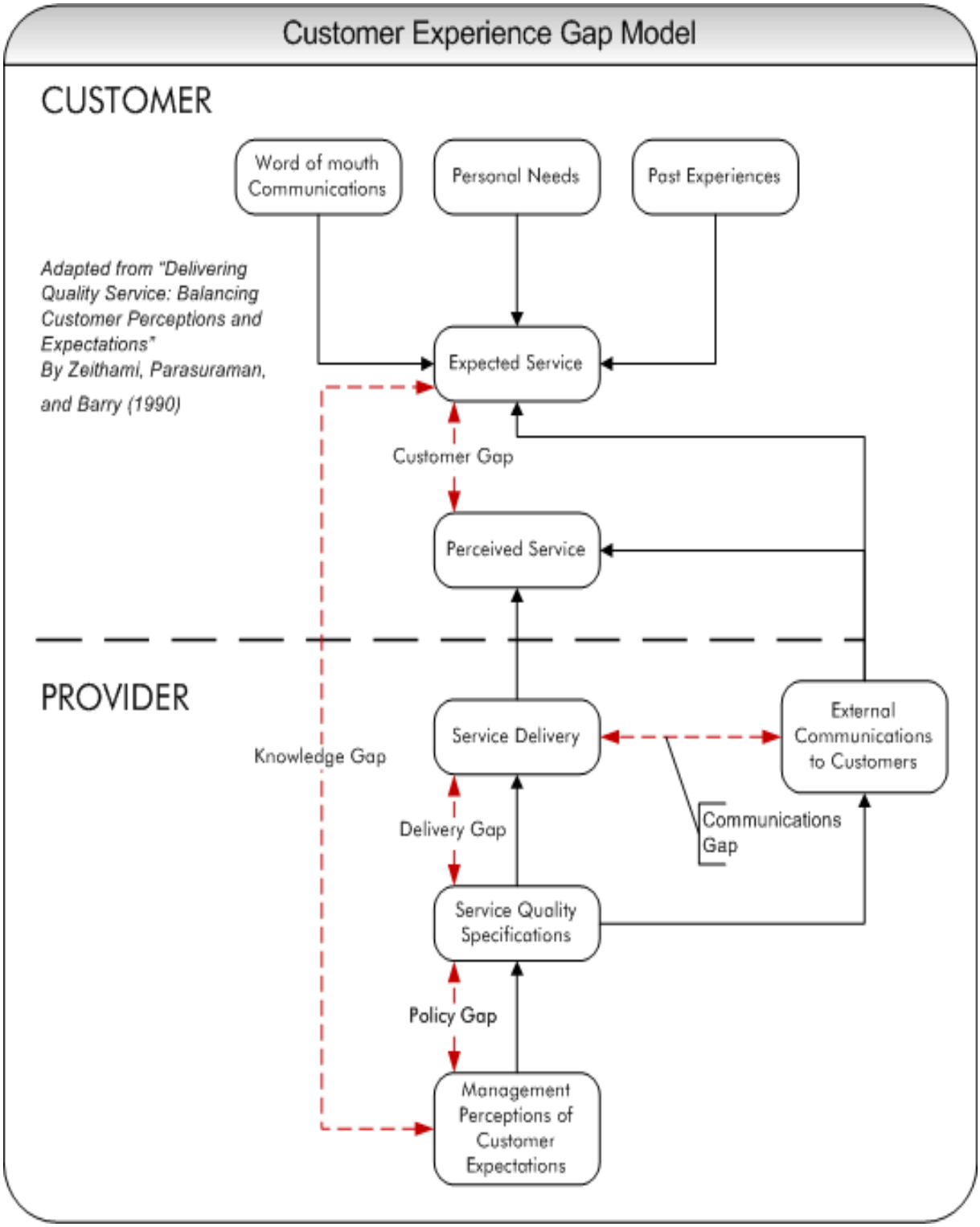
According to Tjiptono & Chandra (2011), quality is a condition that has a strong relationship with a product, service, human, process, and environment that meets or exceeds expectations. Thus, quality is related to a product with conditions that meet or exceed customer criteria and expectations, so business actors are required to provide goods or services following consumer criteria to meet or exceed consumer expectations.

2.3. Service Quality.

Consumers have hopes and expectations related to goods or services in a business, so business actors are required to meet and even exceed consumers' expectations by improving the quality of goods or services followed by service improvements. The efforts of business actors in meeting the expectations of the consumer. According to Tjiptono & Chandra (2011), service quality can be interpreted as an effort to fulfill desires and efforts to fulfill the delivery of these fulfilments to balance customer expectations. In addition, service quality can also be defined as a statement or attitude of business actors resulting from a comparison between expectations and results (Usmara, 2008).

2.3.2 Service Quality Model

The service quality model is the relationship between customers and business actors based on consumer perceptions and expectations. The failure of service quality is mainly caused by differences in perceptions between consumers and business actors, creating a gap between consumers and business actors. According to Parasuraman, Berry, & Zeithaml (1985), the quality model can be described as follows.



Parasuraman (1985)

Figure 2. 1 The Customer Service quality model

Based on the picture above, there is five main gaps in the service quality model as follow :

1. The knowledge Gap is the gap between consumer expectations and perceptions of business actors
2. The policy gap is the gap between the perceptions of business actors and the specifications of service quality
3. Delivery gap is the gap between service quality that is given without being fulfilled in the delivery process
4. A communication gap is a failure in communication and interaction of external parties with services provided by business actors
5. Customer gap, this is the gap between the perceived service and the expected service. This indicates that the perceived service is inconsistent with the expected service.

Based on this, five gaps illustrate that each attribute has its gap. The more significant the gap between these, the more failed the service quality provided.

2.3.3 Dimensions of Service Quality

In service quality several dimensions form the basis for assessing service quality. Based on research conducted by Parasuraman, Berry, & Zeithaml (1985), there are five dimensions of quality in services.

1. Tangible

   aspects including physical, equipment, employees, and communication facilities
2. Reliability

   Dimension that measures the ability to provide services accurately, appropriately, and satisfactorily.
3. Responsiveness

   Aspect dimension that includes employee self-awareness in helping consumers and providing maximum service.
4. Assurance

   Dimension that includes knowledge, abilities, and other characteristics possessed by employees. This aspect also means being free from danger or doubt.

5. Empathy

   Dimension that includes ease of communication, attention to oneself, and consumer needs.

2.3.4 Calculation of SERVQUAL

Calculation of SERVQUAL stands for service quality, and this method is used to measure the service quality provided by business actors to customers. Parasuraman developed this method with the team by measuring service quality based on five dimensions, tangible, reliability, responsiveness, assurance & empathy, which then obtained a gap between the services provided by business actors and consumer perceptions.

From calculations using servqual, three types of information will be obtained: servqual score, weighted servqual score, and actual servqual score.

1. Servqual score

   servqual score calculates the gap in each dimension with service attributes. From the calculation result, it can be searched for attributes with a fairly large gap value so that business actors can determine the priority of attributes that need to be improved. The calculation of the servqual score is obtained using the following formula

$$Mean\ Importance\ Score\ (MIS) = \frac{\sum Xi}{N} \tag{2-1}$$

$$Mean\ Satisfaction\ Score\ (MSS) = \frac{\sum Yi}{N} \tag{2-2}$$

$$Servqual\ score = MSS - MIS \tag{2-3}$$

Where :

Xi = Importance Value of i attribute

Yi = Satisfaction Value of i attribute

2. Wieght Factor (WF) and Weight Score (WSi)

   This calculation aims to determine the weight of each service attribute. WF and WSi can be obtained using the following formula

$$WF = \frac{MISi}{MIS} \times 100 \tag{2-4}$$

$$WSi = WFi \times MSSi \tag{2-5}$$

3. Customer Satisfaction Index (CSI)

   This calculation aim to determine the percentage of customer. CSI calculation is obtained using the following formula

$$CSI = \frac{\sum WSi}{k} \times 100\% \tag{2-7}$$

Where

k = Number of scale parameter

2.4 QFD

Quality function deployment is a concept developed in the 1960s by Yoji Akao and Shigeru Mizuno. In its development, QFD ensures that the products produced are under consumer expectations by prioritizing the attributes of consumer needs. QFD can be interpreted as a systematic method to determine consumer demands that will be processed into design, manufacturing, and planning.

QFD can also be used as a brainstorming medium to identify consumer expectations and demands (Sutawidjaya & Asmarani, 2018). Furthermore, according to Sahuri (2017), quoted from Sutawidjaya & Asmarani (2018), QFD that is carried out correctly can provide satisfactory results such as

1. Improving the quality of communication between divisions
2. Able to identify consumer demands appropriately
3. Changes to a better system gradually
4. The resulting product's quality is integrated and per consumer expectations.
5. More efficient and shorter product manufacturing time
6. Improved understanding of the complex relationship between perceptions and higher service and attribute integration
7. Able to resolve identified.

2.5 House of Quality

The House of quality is a tool to support the QFD approach. In the House of Quality, the matrix is used to connect the technical actions taken with the consumer's wishes so that priority attributes that need improvement can be found (Alexander, Wahjudi, & Budiman, 2015).

The House of quality is the first step in making QFD. In general, the House of Quality consists of two main parts, namely the consumer table in the horizontal plane, which contains a matrix of information about consumers, the second is the Technical table in the horizontal section. It can be seen in the image below to find out the structure of the House of quality more clearly.

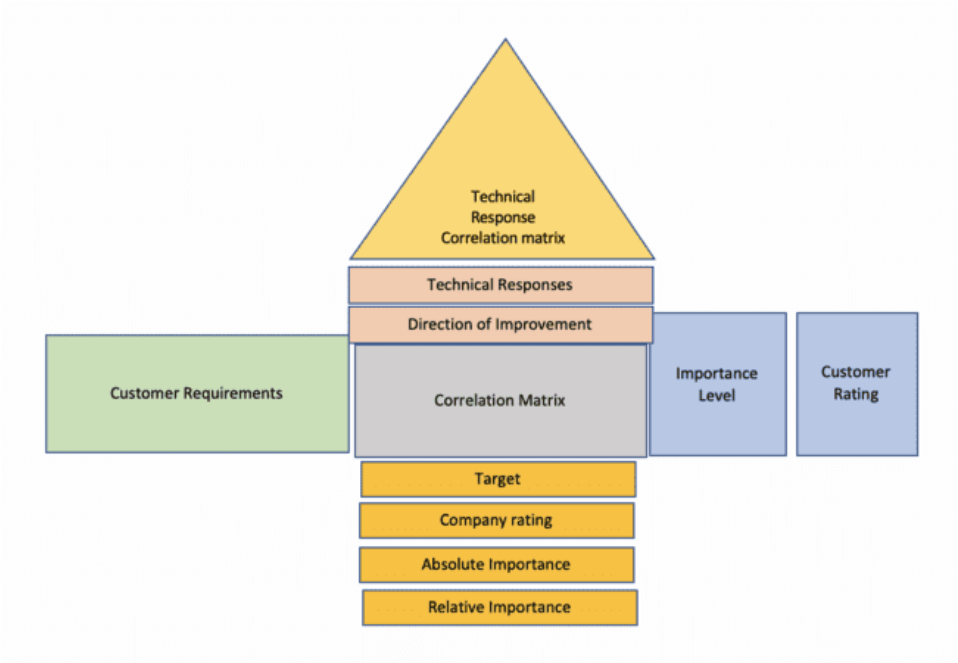


Figure 2. 2 House of quality

From the picture above, it can be seen that the House of quality consists of several matrices. The following parts of the matrix make up the House of quality.

- Customer's requirement (what)

This matrix is located on the left of the HoQ; this matrix contains some of the desires and needs of consumers for services, commonly referred to as the voice of the customer.

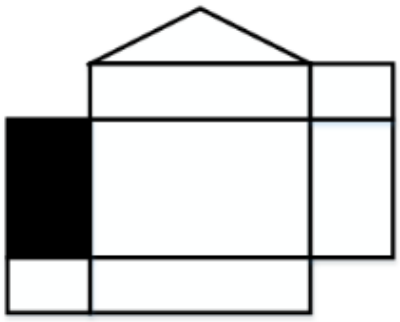


Figure 2. 3 Customer Requirements

- Technical Responses (How)

The technical response is located just below the triangle in the Figure above. This matrix contains responses to consumer needs given by the company to fulfill consumer desires.

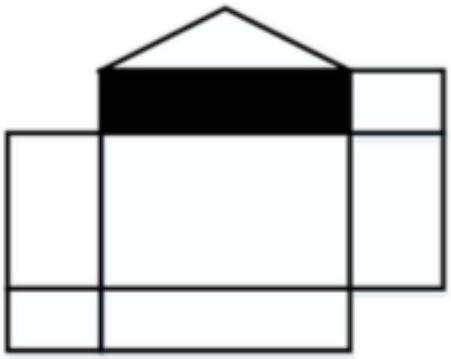
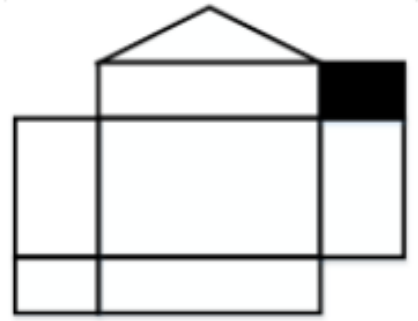


Figure 2. 4 Technical Responses

- level of importance (why)

This matrix is located on the right side of the House of quality. This matrix contains the importance level based on consumer assessment service attributes.



-Technical Importance (How Much)

This section contains matrix information about the importance of technical responses, technical importance contains absolute importance values and relative importance values. The information in this section shows which technical responses will be prioritized to meet customer desires.

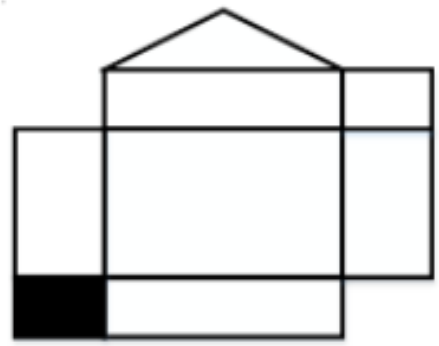


Figure 2. 5 Technical Importance

-Relationship Matrix (What vs. How)

This matrix is located in the middle of Hoq. Contains a relationship between the attributes of consumer needs with the technical response.

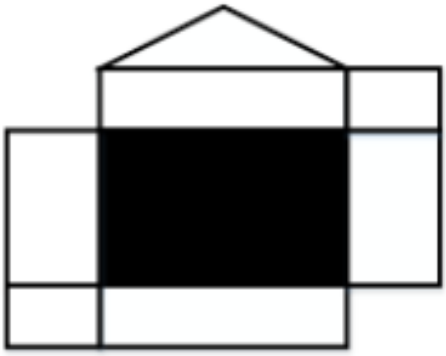


Figure 2. 6 Relationship Matrix

- Correlation Matrix (How vs. How)

This matrix is triangular and located at the top of the HoQ, which contains the relationship between one technical response and another.

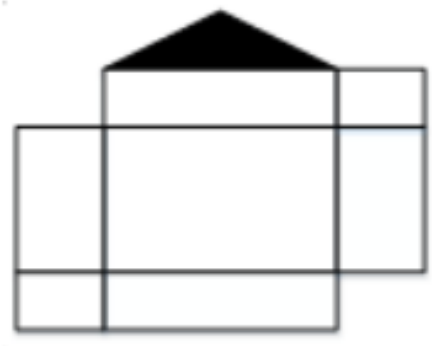


Figure 2. 7 Correlation Matrix

To fill the House of Quality, some data is needed. Data is obtained through the data collection stage and then processed to compile a house of quality. Some of the data needed to compile the House of Quality include:

1. Customer requirements

   Customer requirements are data that contain attributes of consumer desires and expectations. It can be done to determine customer requirements by using all service attributes in each dimension of the questionnaire.

2. Level of Importance

   This is the next step after determining customer requirements. This stage determines the level of importance of each service by calculating data from the questionnaire in the expectations section.

3. Goal

   Goal is a goal to be achieved by a business actor or company. The weight of this goal is determined using a scale of 1 to 5. Starting from 1, indicating unsatisfactory, to 5, with the maximum value indicating very satisfactory. The value of the goals can be used in calculating the importance ratio.

4. Sales Point

   The determination of sales points is used to determine the impact if there is a change in the existing service attributes. The determination of the sales point value is carried out by the internal business entity. Determination Value sales point using the Cohen standard, with a value of 1.0 indicating that attribute changes do not have a good effect on service quality. A value of 1.2 indicates that attribute changes have a small effect on improving service quality. Finally, a value of 1.5 indicates that attribute changes positively impact improving service quality.

5. Improvement ratio

   This calculation aims to determine the desires of the customer. Calculations are obtained through the following formula.

$$Improvement\ ratio\ (IR) = \frac{Goal}{Costumer\ Satisfaction\ (MSS)} \tag{2-8}$$

6. Row Weight & Normalized Weight

   Ro weight is the sum of the results of customer requirements that are influenced by satisfaction point, level of importance and improvement ratio. To determine the row weight, you can find the following formula:

$$Row\ Wight = ITC\ (MIS) \times Sales\ Point \times IR \tag{2-9}$$

   After determining the row weight, you can also determine the Normalized weight, Normalized row weight is the row weight given a scale of 0 to 1. To determine

$$Normalized\ Row\ Weight = \frac{Row\ Weight}{\sum Row\ Weight} \tag{2-10}$$

7. Technical Response

   Technical response is a form of company business to meet consumer needs. Technical responses are usually determined from interviews and the results of discussions with business actors.

8. Technical Correlation

   Technical correlation is the relationship between each technical response, it is used to determine the extent of influence between each technical response. Here 's the symbol symbols used in filling in the technical correlation

Table 2.1 Technical correlation Symbols

Correlations	
Positive	+
Negative	−
No Correlation	

9. Relationship Matrix

This matrix is used to see the relationship between technical response and customer requirements. There are 3 symbols used to express the relationship between technical response and customer requirements. The full circle symbol indicates a strong relationship and has a weight of 9, the empty circle symbol indicates a moderate relationship with a weight of 3 and the last inverted triangle symbol indicates a weak relationship and has a value of 1.

Table 2.2 Relationship matrix Symbols

Relationships	
Strong	●
Moderate	○
Weak	▽

10. Improvement Direction

is a matrix that used to determine the direction of technical response development, the direction is based on consumer. In this section, symbol arrow uptechnical response the higher the arrow down indicates that consumers like if the technical response is getting smaller, while the denial indicates that the technical response development is at a certain point.

Table 2.3 Direction improvement symbols

Direction of Improvement	
Maximize	▲
Target	◇
Minimize	▼

11. Impact Score

The impact value is an indicator of the strength of the relationship between technical responses and service attributes. The impact value can be determined from the relationship between customer requirements and technical response. The value for each relationship is show in table below.

Table 2. 1 Impact Value

Relationships		Impact Value
Strong	●	9
Moderate	○	3
Weak	▽	1

To calculate the impact score can be done using the following formula.

$$Impact\ Score = ITC \times Impact\ Value \tag{2-11}$$

12. weight value of the technical aspect

In this section the absolute importance and relative importance are calculated The absolute value indicates the technical aspects needed to improve service. Medium relative importance is a number in the form cumulative percentage. To find the two values, the following formula is used:

$$Absolut\ Importance\ (AI) = \sum (Impact\ Score) \tag{2-11}$$

$$Relative\ importance = \frac{AIi}{\sum AI} \tag{2-12}$$

Where:

AIi = Absolute importance value of I technical response

2.7 Questionnaire

In a study needed information about the object that is the subject of research. To obtain information, there are various methods to collect data related to the object of research, either through observation, interviews or by distributing questionnaires. The questionnaire is a method of collecting data that contains a collection of structured questions with alternative answers that function to collect information related to research (Arikunto, 2006).

Regarding this research, the questionnaire will contain questions regarding the quality of service provided by Sutoyo SMEs to consumers expected from the answers given by consumers. It can be seen what deficiencies need to be improved. The questionnaire will later be distributed to consumers from the Sutoyo Animal Husbandry UKM. Later, questions will be given using a Likert with a value scale of 1 to 5.

2.7.1 Preparing Questionnaire Questions

A questionnaire researcher must understand the steps in compiling a questionnaire. Questionnaires that are made carelessly will produce data that could be more optimal, so it is very important to make a good questionnaire to obtain the desired data. Here are some steps that need to be taken in preparing the questionnaire

1. Determine the information needed to be related to the research
2. Identify the questions to be given in the questionnaire
3. Determine the number of questions to be written in the questionnaire
4. Create questions that are easy to understand by respondents and research participants
5. Determine the order of questions in the correct order
6. Determines the type of question, whether it is a closed or open question.

The questions in the questionnaire can be divided into two, namely open and closed questions. Closed questions are questions that free the respondent to answer the question according to the choice of words from the respondent.

Closed-ended questions are questions with a choice of answers provided to respondents. For closed-ended questions, several types of questions are often given, including:

1. Multiple choices are questions with more than two answer choices.
2. A dichotomous question is a question with two answer choices
3. Choice with a scale is a question with a choice of answers using a scale of likert

2.7.2 Determining the number of samples

In distributing the questionnaire, a certain number of respondents is needed so that the amount of data obtained is appropriate. To determine the required number of samples, the statistical sampling method is used to determine the number of respondents according to the research needs. In this study using the Slovin method using the following formula

$$n = \frac{N}{1 + Ne^2} \tag{2-12}$$

Where

n= minimum sample size

N= Population

e = Standard error

One method for determining the sample is the saturation sampling method. This site method is used in research because of the small population. According to Sugiyono (2017)**,** the saturation or census method is a sampling technique that is used when the population is small or less than 30.

2.8 Testing data

After collecting data through a questionnaire, the data that has been collected will be tested through several methods, including Test validity and reliability.

a. Validity Test

   A validity test is a test of all data in a research questionnaire to determine the reliability and validity of a variable under study.

b. Reliability Test

   The reliability test is a data test conducted to determine the extent to which the questionnaire distributed has a high reliability and trustworthiness value. Data can be reliable if the results of the questions are consistent and stable. Reliability testing can be done in several ways, but the most widely used Cronbach's alpha can be obtained using statistical software such as SPSS or manually using the formula.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology is a framework and thinking systematically arranged that guides research by explaining the steps in identifying, processing, analyzing, formulating problems, and concluding solutions to a problem.

3.1 Research Methodology framework

The flowchart of this research is shown on the diagram below.

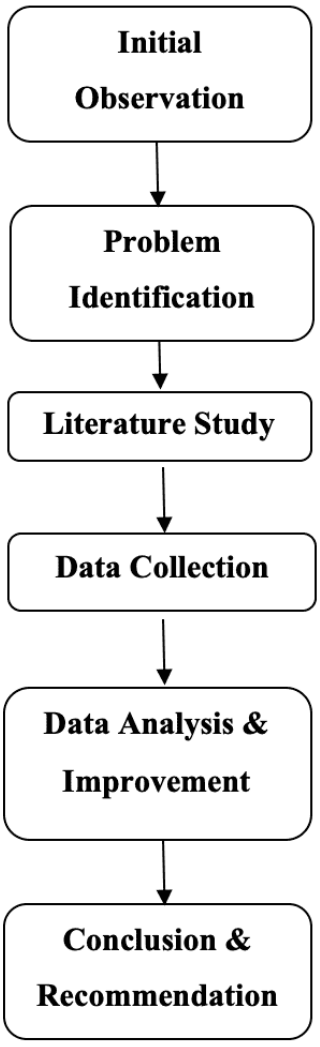


Figure 3. 1 Research Methodology Framework

Initial Observation
- Observe the business process at Sutoyo SMEs

Problem Identification
- Identify object of research and problem background
- Determine the objective of research
- Determine the scope and limitations of research
- Determine the assumption of research

Literature Study
- Service quality
- 5 Dimension of Service quality gap
- Servqual calcalulation
- Hierarchy Clustering
- Quality function deployment
- House of quality

Data Collection
- Data of current service quality
- Customer expectation of service quality

Data Analysis & Program Development
- Data test (Validity & Reliability test)
- Servqual Calculation
- QFD Analysis
- Building HoQ

Conclusion & Recommendation
- Conclusion of the result on data analysis and calculation
- Recommendation for further research

3.2 Initial observation

This research was conducted directly at the Sutoyo Animal Husbandry UKM in Tumbrep, Bandar, Batang Regency, Central Java. The observation begins by paying attention to the employee's work process and continues with ordering chicken eggs and the delivery process to consumers of the Sutoyo Farming UKM.

After making observations, interviews were conducted with business owners, employees, and some consumers at the location. During the interview, the focus was more on service to consumers. Interviews were conducted on both sides of consumers and business actors to find out complaints from consumers and internal parties.

3.3 Problem Identification

After conducting initial observations and interviews with related parties, the identification of problems can be carried out. From observations obtained, some information from the internal SMEs and the consumer. The employees complained about the absence of uniforms and a neat work schedule. Besides, the office for transactions was entirely carried out at the owner's House so that it needed to be managed properly, so an office room was needed to transact with consumers. From the consumer side, there are often delays in the egg delivery process. Besides, those business actors are asked to separate the owner's personal number from the business number to transact regarding the chicken eggs.

Based problem, there is an interest in solving problems to help small business actors and solve problems in SMEs. Of the many problems that exist, methods and concepts are needed to be applied to the factor factors. That way, the purpose of this research is to measure customer satisfaction with the performance and services provided by Sutoyo Animal Husbandry SMEs based on existing attributes and then determine what attributes need to be improved, added, or improved. Furthermore, the subject of the discussion is regulated so that the research focuses on server

problems and does not go out of scope—limitations and assumptions to assist the completion of this research.

3.4 Literature Study

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3.5 Data Collection

At this stage, the information and data are to solve the problems that exist in the UKM Farming Mr. Sutoyo. Data collection in this study was carried out with several collections

1. techniques
   Interviews with related parties such as business owners, employees, and consumers research at the site.
2. Observation Techniques Observations
   are carried out directly on Mr. Sutoyo's farm, aiming to find problems at the research site.
3. Dissemination of questionnaires
   To obtain data about existing services distributed to consumers of SMEs on farms, Sutoyo. The questionnaire contains five servqual dimension parameters: reliability, assurance, tangible, empathy & responsiveness

3.6 Data Processing and Analysis data

After the required data is collected successfully, the data is processed for analysis, and then the analysis results can be used as a solution to the problem. The following are the steps in data processing and data analysis carried out:

1. Determine the number of samples needed for this research.
2. Testing the data from the questionnaire results by testing the validity and reliability. This test is conducted to find out how the questions on the questionnaire are valid so that the validity of the data can be trusted. If the data obtained is not valid and reliable, then the data is taken again.
3. Servqual calculation includes
    a. Consumer expectation Value
    b. Business entity's performance value on customer satisfaction
    c. Servqual score calculation.
    d. Weighted servqual score (WSC) calculation.
    e. Actual service quality value calculation.
    4. Perform analysis through quality function deployment (QFD) and House of quality analysis methods.
    a. Analysis Customer requirements
    b. Analysis of importance level
    c. Setting goals
    d. Determining sales points
    e. Calculation of improvement ratio
    f. Determining Row Weight and Normalized row weight
    g. technical requirements
    h. Determining Technical Response
    i. Determining correlation matrix
    j. Determining relationship matrix
    k. Determining the direction of technical response
    l. Analyzing the weight value of technical aspects
    m. Analyzing House of Quality

3.7 Conclusions and recommendations.

The conclusion is the last part of this research, and this section contains the results of data processing and analysis that has been carried out. In this study, the conclusions are the results of consumer assessments from Sutoyo SMEs using the servqual and QFD methods so that in this section, it can be written what service

attributes need to be improved, added, or removed. This chapter also provides recommendations for improving services to Sutoyo SMEs that are constructive.

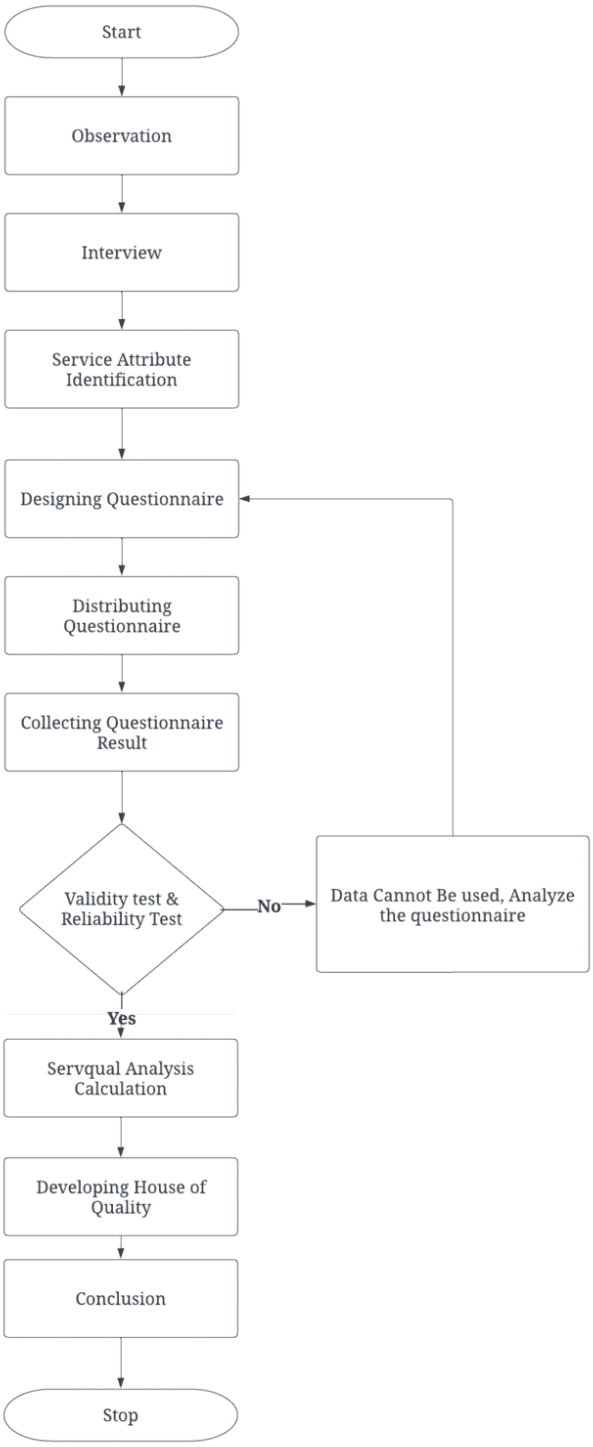

Figure 3. 2 Data Calculation Framework

CHAPTER IV

DATA & ANALYSIS

4.1 Enterprise profile

This egg-laying chicken farm business owned by Mr. Sutoyo is located in Tumbreb Village, Bandar District, Batang Regency, Central Java. The farm stands on 50 hectares of land and has 3 cages with 2 cages having a capacity of 500 chickens and one cage with a capacity of 1000 chickens. The scale of the farm is small with 2000 chickens and an average daily production of 125 kg of eggs.

The number of workers owned by this farm is 3 people with 3 different job focuses. One person is assigned to clean the cage area and deliver the eggs that have been ordered, one person feeds, collects eggs and treats the chickens and one person is assigned to serve customers and take care of administrative matters. To distribute the eggs, Sutoyo SME is supported by a pickup truck to deliver to customers.

4.2 Initial Observation

In this study, observations and initial interviews were conducted directly to business owners, employees and several existing customers. From this it is known that during the months of November 2021 to April 2022 there was a decrease in the number of chicken egg sales.

Table 4. 1 Production and sales of Sutoyo SME

Month	Production (Kg)	Sales (Kg)
Nov-21	3750	3725
Dec-21	3640	3640
Jan-22	3671	3650
Feb-22	3690	3620
Mar-22	3680	3610
Apr-22	3755	3680

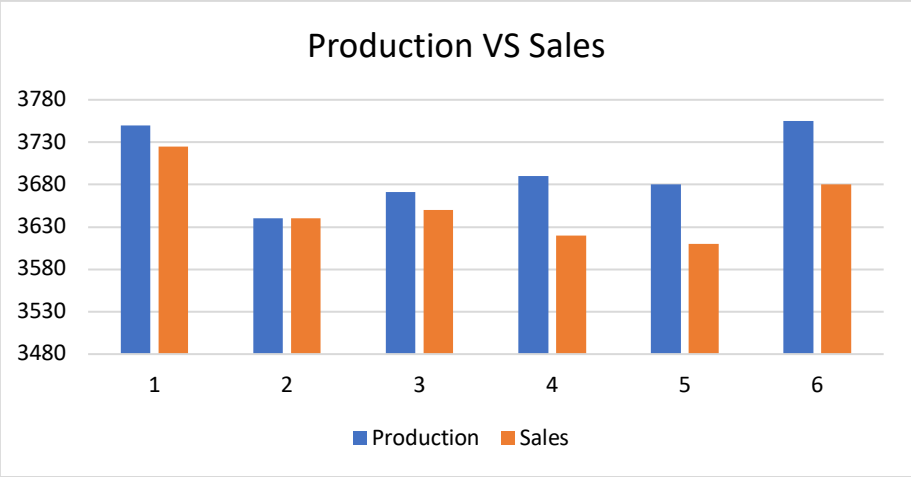

Figure 4. 1 Production VS Sales

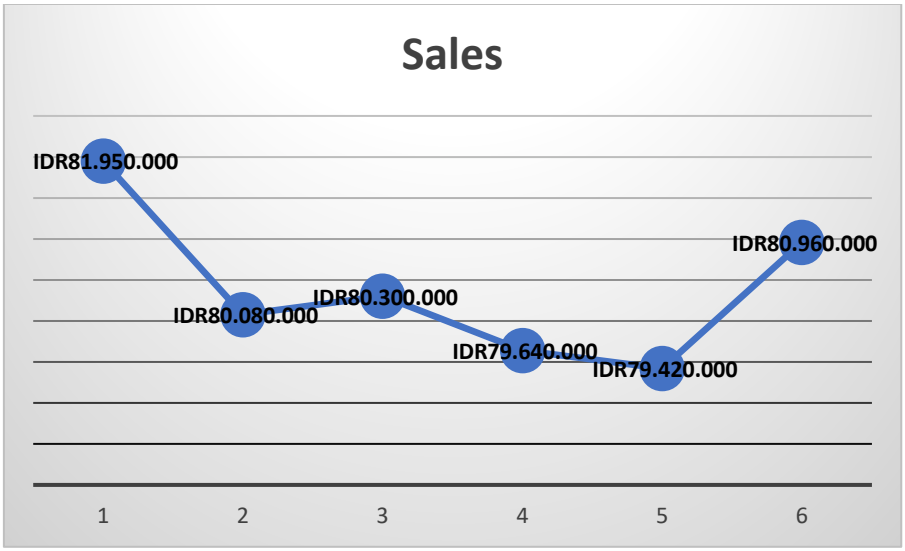

Figure 4. 2 Sales Graph

From table 4.1 and figure 4.1, it can be seen that the number of sales has not decreased compared to November 2021. In addition, during interviews with customers who were in the business area during the observation, there were many complaints from customers about the services and facilities at UKM Sutoyo which caused a decrease in the number of sales at the business.

Table 4. 2 Customer Compaints

No	Date of observation	Customer name	Complaints
1	02-May-22	Mustopo	Uncomfortable transaction location (stink)
2	03-May-22	Nur Khamidah	Some of the eggs received were damaged (broken / rotten)
3	03-May-22	Ilyas	Employees who serve look ignorant of customers
4	04-May-22	Yatno	Employees do not seem to master knowledge about eggs when asked
5	05-May-22	Nur Aini	Egg orders are not recorded
6	05-May-22	Turipah	Egg delivery is not in accordance with the promised time
7	05-May-22	Anton	Difficult to contact to order eggs
8	05-May-22	Yudha	The purchasing office does not provide adequate customer furniture (waiting chairs).
9	05-May-22	Fuad	Employees do not look neat when welcoming customers
10	06-May-22	Sunardi	Employees do not welcome customers who come (greet and ask for needs)
11	06-May-22	Jauhari	There is no parking space for customers so customers are forced to park on the side of the road
12	07-May-22	Yanti	Complaints are not taken seriously and responsively
13	07-May-22	Surya	Frontliner employees are rarely in the office
14	09-May-22	Mahmudin	Office location is difficult to reach using a 4-wheeled vehicle
15	09-May-22	Maryati	Fhere is no toilet for guests in the office

4.3 Questionnaire Preparation

Before compiling the questionnaire, interviews were conducted with employees and business owners about the situation and problems regarding service at Sutoyo SME. Then another interview was conducted with several consumers related to eggs to determine consumer desires and criteria for buying eggs. Then the results will be

applied to the five criteria in the quality dimension and questionnaire. The following table shows the requirements obtained through interviews with several consumers.

Table 4. 3 Customer Criteria of Eggs Purchasing

Criteria
Price
Size
Quantity (in Kilograms)
Cleanliness
No rotten eggs
No broken eggs
Durable eggs
delivery time
purchasing system
employee proficiency
Convenience of transaction place

The questionnaire that will be used in this study is based on the method used, which is the servqual method. In this study, the questionnaire was made into three parts. The first part is an introductory sheet and instructions for filling out. The second part contains questions related to measuring consumer expectations of Sutoyo SMEs, and the third part includes questions to measure the performance that Sutoyo SMEs have given to each consumer.

This questionnaire consists of several questions from 5 service attributes: tangibles, reliability, responsiveness, assurance, and empathy. The questions presented are used to measure the five existing service quality variables. The following are the service attributes contained in the questionnaire.

Table 4. 4 Dimension and Attributes of service quality

Dimensions	NO	Attributes
Tangible	X1	Cleanliness of the business area is always maintained
	X2	has complete cage facilities

Dimensions	NO	Attributes
	X3	have employees who are neatly dressed
	X4	have complete office facilities (waiting room, toilet, prayer room and parking lot)
	X5	Has a catalog or brochure related to the products sold
Reliability	X6	Egg delivery is always on time
	X7	information about prices and ordering is easy to obtain (social media or business number WA)
	X8	Egg prices are in accordance with market prices
	X9	provide services in accordance with the promised time
	X10	Sutoyo has an organized administration
Responsiveness	X11	Always informs about price changes and egg delivery times
	X12	Provide fast service
	X13	Always accompany customers during the transaction process
assurance	X14	Employees behave in a friendly, polite, and responsible manner.
	X15	Provides a guarantee of the safety of eggs for consumption
	X16	Employees master product information (eggs)
	X17	Guarantee egg replacement if there is damage when received
Empathy	X18	Accept any criticism and input from customers
	X19	Have convenient operating hours for the customers (10:00 - 16:00)
	X20	Employees give personal attention to customers who come
	X21	Employees prioritize customer interests
	X22	Employees understand specific customer needs

In filling out the questionnaire, in all aspects of performance and expectations for service attributes, the Likert scale was used with values of 1 to 5. A value of 1 indicates a strongly disagree statement on the given question. A value of 5 is used to express strongly agree on a given question. Based on this, respondents were asked to assess the performance related to the current service quality and also give an expectation assessment related to the services provided by Sutoyo SME. Here's the assessment scale for the questionnaire.

Strongly disagree =1

disagree = 2

Neutral = 3

Agree	= 4
Strongly Agree	= 5

After the questionnaire is created, it will be distributed to the predetermined respondents, namely consumers from the Sutoyo SME. The questionnaire will be distributed through two stages, spreading the pilot of the questionnaire to 10 people to determine whether the questionnaire was well understood by the respondent and also to determine whether the data were valid and reliable. Then a second distribution was made for all the samples that had been determined.

4.4 Number of samples

In this project sampling technique used is a non-probabilistic sampling technique. The population size for this research is the population of the sub-district of bandar with an age range of 15 to 64 years or the productive age population. based on the publication of data from the national statistics agency (BPS) on 2021 the population of the sub-district of bandar in 2020 is 71691 people with 70% in the age range of 15-64 years, giving a population size of 50404 people. thus to determine the sample size can use the Solvin formula as follows

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{39.007}{1 + (39.007 \times 0{,}1^2)}$$

$$n = 99{,}802 \approx 100$$

Based on the above calculations, the sample size for this study was obtained. Thus the number of respondents to calculate the servqual score will be taken from 100 people in Bandar sub-district.

4.3 Validity Test

After collecting data through distributing questionnaires, the next stage that will be carried out is testing the validity of the data. This test is carried out to determine whether the questions in the questionnaire are by the concept. In this final project,

SPSS software is used to test the validity of the data obtained, provided that if the value of the r count is greater than the r table, then the attribute is declared valid and vice versa. In the calculation results using SPSS software, the validity of the attribute is usually indicated by the correlation value with an asterisk (*) in the last column. The following are the results of the validity test calculation using SPSS software.

Table 4. 5 Validity test Customer Preception

Question	Correlation	R-Table	Validity
Cleanliness of the business area is always maintained	0,2902	0,1966	VAL
has complete cage facilities	0,3600	0,1966	VAL
have employees who are neatly dressed	0,5734	0,1966	VAL
have complete office facilities (waiting room, toilet, prayer room and parking lot)	0,6181	0,1966	VAL
Has a catalog or brochure related to the products sold	0,7393	0,1966	VAL
Egg delivery is always on time	0,4509	0,1966	VAL
information about prices and ordering is easy to obtain (social media or business number WA)	0,6174	0,1966	VAL
Egg prices are in accordance with market prices	0,5411	0,1966	VAL
provide services in accordance	0,6005	0,1966	VAL

Question	Correlation	R-Table	Validity
with the promised time			
Sutoyo has an organized administration	0,6134	0,1966	VAL
Always informs about price changes and egg delivery times	0,3335	0,1966	VAL
Provide fast service	0,5328	0,1966	VAL
Always accompany customers during the transaction process	0,5926	0,1966	VAL
Employees behave in a friendly, polite, and responsible manner.	0,3498	0,1966	VAL
Provides a guarantee of the safety of eggs for consumption	0,3464	0,1966	VAL
Employees master product information (eggs)	0,4709	0,1966	VAL
Guarantee egg replacement if there is damage when received	0,2730	0,1966	VAL
Accept any criticism and input from customers	0,4593	0,1966	VAL
Have convenient operating hours for the customers (10:00 - 16:00)	0,4845	0,1966	VAL
Employees give personal attention to customers who come	0,5822	0,1966	VAL

Question	Correlation	R-Table	Validity
Employees prioritize customer interests	0,5587	0,1966	VAL
Employees understand specific customer needs	0,6512	0,1966	VAL

Table 4. 6 Validity Test Customer Expectation

Question	Correlation	R-Table	Status
Cleanliness of the business area is always maintained	0,4454	0,1966	VAL
has complete cage facilities	0,7010	0,1966	VAL
have employees who are neatly dressed	0,4043	0,1966	VAL
have complete office facilities (waiting room, toilet, prayer room and parking lot)	0,5666	0,1966	VAL
Has a catalog or brochure related to the products sold	0,4221	0,1966	VAL
Egg delivery is always on time	0,6878	0,1966	VAL
information about prices and ordering is easy to obtain (social media or business number WA)	0,4744	0,1966	VAL
Egg prices are in accordance with market prices	0,6544	0,1966	VAL
provide services in accordance with the promised time	0,5365	0,1966	VAL

Question	Correlation	R-Table	Status
Sutoyo has an organized administration	0,3863	0,1966	VAL
Always informs about price changes and egg delivery times	0,3781	0,1966	VAL
Provide fast service	0,3912	0,1966	VAL
Always accompany customers during the transaction process	0,4706	0,1966	VAL
Employees behave in a friendly, polite, and responsible manner.	0,4471	0,1966	VAL
Provides a guarantee of the safety of eggs for consumption	0,3125	0,1966	VAL
Employees master product information (eggs)	0,4049	0,1966	VAL
Guarantee egg replacement if there is damage when received	0,4938	0,1966	VAL
Accept any criticism and input from customers	0,4904	0,1966	VAL
Have convenient operating hours for the customers (10:00 - 16:00)	0,5058	0,1966	VAL
Employees give personal attention to customers who come	0,4631	0,1966	VAL
Employees prioritize	0,4409	0,1966	VAL

Question	Correlation	R-Table	Status
customer interests			
Employees understand specific customer needs	0,3142	0,1966	VAL

From **Tables 4.3** and **4.4**, it is known that for N or the number of samples in this study is 100, with an error estimate of 5%, the r-table value is 0.19666. Thus all attributes in the customer perception and customer expectation questionnaires can be declared valid, because the overall value exceeds the r-table value.

4.4 Reliability Test

The reliability test will be carried out if the data received has been declared valid. In this study, the reliability test will use the Cronbach alfa method using SPSS software to process the data. The reliability test is carried out to determine whether the measuring instrument in the questionnaire is consistent and can be reused in further research. Quoted from Sekaran (1992), data can be reliable if it is above 0.66 in the poor category, 0.7 is categorized as acceptable, and 0.8 is classified as very good (Purnomo, 2016). The following are the reliability test results using Microsoft excel software for customer satisfaction and expectations.

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	152,3636364	99	1,53902663	6,234478458	3,39605E-64	1,252497213
Columns	1132,783636	21	53,94207792	218,5152071	0	1,560857205
Error	513,2163636	2079	0,246857318			
Total	1798,363636	2199				

CORNBACH		N
ALPHA	0,839601659	100

Figure 4. 3 Reliability test result of customer satisfaction

Figure 4.1 Shows the reliability test results for customer perception/satisfaction. The Cronbach alpha value for customer perception is 0.839 because this value is more than 0,6, so it can be considered that the questionnaire instrument is reliable.

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	150,25955	99	1,5177732	7,0881848	4,36866E-76	1,25249721
Columns	320,14773	21	15,24513	71,196605	2,6636E-226	1,56085721
Error	445,17045	2079	0,2141272			
Total	915,57773	2199				

CORNBACH	N
ALPHA	0,858920157	100

Figure 4. 4 Reliability test result of customer expectation

Figures 4.2 Shows the reliability test results for and expectation. The Cronbach alpha value for customer expectation obtained is 0.833, which also exceeds 0.6, so the questionnaire instrument for customer expectation can be said to be reliable.

4.5 SERVQUAL Analysis

After the data is declared valid and reliable, the next step is to analyze the data obtained, which in this study uses the servqual method. From the data collected, the value of consumer perceptions and expectations will be calculated to obtain a gap for each service attribute. After that, the customer satisfaction index will be calculated to determine customer satisfaction.

4.5.1 Calculation of consumer Expectation Value

To calculate the servqual score, it is necessary to know the mean importance score (MIS) or the average consumer expectations for the company. Therefore, it is required to calculate the value of consumer expectations to determine the MIS by weighting using a Likert scale from the questionnaire results. The following is the weighting of the importance value or customer expected value.

Strongly disagree	=1
disagree	= 2
Neutral	= 3
Agree	= 4
Strongly Agree	= 5

And the formula for calculating the MSI of each service attribute is as follows.

$$MIS = \frac{\sum Yi}{N}$$

Where:

Yi = Expectation value of i Attribute

N = Total Respondents.

Using the formula above, the consumer expectation and MIS values of each service attribute are shown in the table below.

Table 4. 7 Mean Importance Score Calculation (Customer Expectation)

Attributes	Variable	$\sum Yi$	MIS
Cleanliness of the business area is always maintained	X1	494	4,94
has complete cage facilities	X2	492	4,92
have employees who are neatly dressed	X3	321	3,21
have complete office facilities (waiting room, toilet, prayer room and parking lot)	X4	440	4,4
Has a catalog or brochure related to the products sold	X5	417	4,17
Egg delivery is always on time	X6	488	4,88
information about prices and ordering is easy to obtain (social media or business number WA)	X7	450	4,5
Egg prices are in accordance with market prices	X8	452	4,52
provide services in accordance with the promised time	X9	464	4,64
Sutoyo has an organized administration	X10	436	4,36
Always informs about price changes and egg delivery times	X11	464	4,64
Provide fast service	X12	440	4,4
Always accompany customers during the transaction process	X13	433	4,33
Employees behave in a friendly, polite, and responsible manner.	X14	486	4,86
Provides a guarantee of the safety of eggs for consumption	X15	481	4,81
Employees master product information (eggs)	X16	449	4,49
Guarantee egg replacement if there is damage when received	X17	485	4,85
Accept any criticism and input from customers	X18	437	4,37
Have convenient operating hours for the customers (10:00 - 16:00)	X19	439	4,39
Employees give personal attention to customers who come	X20	424	4,24

Attributes	Variable	$\sum Yi$	MIS
Employees prioritize customer interests	X21	447	4,47
Employees understand specific customer needs	X22	388	3,88

4.5.2 Calculation of Customer satisfaction Score

Similar to the value of consumer expectations, the value of consumer perception or satisfaction is one of the elements for calculating the servqual score. This section will calculate the Mean satisfaction Score (MSS). All questionnaire results in the customer satisfaction survey will be weighted with the following Likert scale:

Strongly disagree =1

disagree = 2

Neutral = 3

Agree = 4

Strongly Agree = 5

The data will be calculated as the MSS value with the following formula.

$$MSS = \frac{\sum Xi}{N}$$

Where:

Xi= Satisfaction value of i Attribute

N = Total Respondents.

By using the formula above, the MSS value is obtained. The following MSS calculation results are shown in the table.

Table 4. 8 Calculation of Mean Satisfaction Score (Customer Satisfaction Value)

Atributes	Variable	$\sum Xi$	MSS
Cleanliness of the business area is always maintained	X1	405	4,029
has complete cage facilities	X2	365	3,600
have employees who are neatly dressed	X3	115	1,143
have complete office facilities (waiting room, toilet, prayer room and parking lot)	X4	300	3,000

Atributes	Variable	$\sum Xi$	MSS
Has a catalog or brochure related to the products sold	X5	325	3,229
Egg delivery is always on time	X6	312	3,086
information about prices and ordering is easy to obtain (social media or business number WA)	X7	412	4,086
Egg prices are in accordance with market prices	X8	409	4,057
provide services in accordance with the promised time	X9	372	3,686
Sutoyo has an organized administration	X10	409	4,086
Always informs about price changes and egg delivery times	X11	400	3,971
Provide fast service	X12	417	4,171
Always accompany customers during the transaction process	X13	430	4,286
Employees behave in a friendly, polite, and responsible manner.	X14	468	4,686
Provides a guarantee of the safety of eggs for consumption	X15	384	3,829
Employees master product information (eggs)	X16	324	3,257
Guarantee egg replacement if there is damage when received	X17	443	4,400
Accept any criticism and input from customers	X18	393	3,886
Have convenient operating hours for the customers (10:00 - 16:00)	X19	412	4,086
Employees give personal attention to customers who come	X20	419	4,171
Employees prioritize customer interests	X21	434	4,314
Employees understand specific customer needs	X22	352	3,514

4.5.3 Calculation of Servqual Score

n the servqual method, calculations will be made for the gap between the expected value of consumers and the value of consumer satisfaction related to the performance and service that has been provided. From this servqual calculation, it will be obtained which attributes will be prioritized. Attributes with the most significant gap will be prioritized for improvement by businesses. To calculate the servqual score, the following formula will be used.

$$Servqual\ score = MSS - MIS$$

Where

MSS = Mean Satisfaction score

MIS = Mean Importance Score

By using the servqual formula, the gap for each attribute will be obtained, and the gap value will determine the priority value of each attribute. The following are the results of the Servqual score calculation, which is processed using Microsoft excel.

Table 4. 9 Servqual Score Calculation

Attribute		MSS	MIS	GAP
Cleanliness of the business area is always maintained	X1	4,029	4,94	-0,911
has complete cage facilities	X2	3,600	4,92	-1,320
have employees who are neatly dressed	X3	1,143	3,21	-2,067
have complete office facilities (waiting room, toilet, prayer room and parking lot)	X4	3,000	4,4	-1,400
Has a catalog or brochure related to the products sold	X5	3,229	4,17	-0,941
Egg delivery is always on time	X6	3,086	4,88	-1,794
information about prices and ordering is easy to obtain (social media or business number WA)	X7	4,086	4,5	-0,414
Egg prices are in accordance with market prices	X8	4,057	4,52	-0,463
provide services in accordance with the promised time	X9	3,686	4,64	-0,954
Sutoyo has an organized administration	X10	4,086	4,36	-0,274
Always informs about price changes and egg delivery times	X11	3,971	4,64	-0,669
Provide fast service	X12	4,171	4,4	-0,229
Always accompany customers during the transaction process	X13	4,286	4,33	-0,044
Employees behave in a friendly, polite, and responsible manner.	X14	4,686	4,86	-0,174
Provides a guarantee of the safety of eggs for consumption	X15	3,829	4,81	-0,981

Attribute		MSS	MIS	GAP
Employees master product information (eggs)	X16	3,257	4,49	-1,233
Guarantee egg replacement if there is damage when received	X17	4,400	4,85	-0,450
Accept any criticism and input from customers	X18	3,886	4,37	-0,484
Have convenient operating hours for the customers (10:00 - 16:00)	X19	4,086	4,39	-0,304
Employees give personal attention to customers who come	X20	4,171	4,24	-0,069
Employees prioritize customer interests	X21	4,314	4,47	-0,156
Employees understand specific customer needs	X22	3,514	3,88	-0,366

Based on **Table 4.7**, it can be seen the gap for each attribute. From the value of the gap in each service attribute, it will be sorted which attribute has the largest gap. Five attributes with the highest gap value will be prioritized for improvement. The following attributes are prioritized for improvement in Sutoyo SME.

Table 4. 10 prioritized Attributes

Attributes		Servqual Score	Priority
X3	Have employees who are neatly dressed	-2,07	1
X6	Egg delivery is always on time	-1,79	2
X4	have complete office facilities (waiting room, toilet, prayer room and parking lot)	-1,40	3
X2	has complete cage facilities	-1,32	4
X16	Employees master product information (eggs)	-1,23	5

At this stage of the servqual score calculation, in addition to calculating each service attribute, the servqual score for the five service quality dimensions is also calculated. The following are the results of the calculation of the servqual score for the service dimension.

Table 4. 11 Dimension Servqual Score

Dimension	MSS	MIS	Servqual Score
Tangible	3,000	4,328	-1,328
Reiability	3,800	4,580	-0,780
Responsiveness	4,143	4,457	-0,314
Assurance	4,043	4,753	-0,710
Empathy	3,994	4,270	-0,276

Table 4.9 shows the results of servqual calculations for service quality dimensions. From this table, it can be seen that the gap for each dimension, the tangibles dimension has the highest gap with a value of (-1.33), and the Empathy dimension is the dimension with the lowest gap, which is (-0.28). To see more clearly the gap in each attribute and dimension, the data is presented in the form of a diagram below.

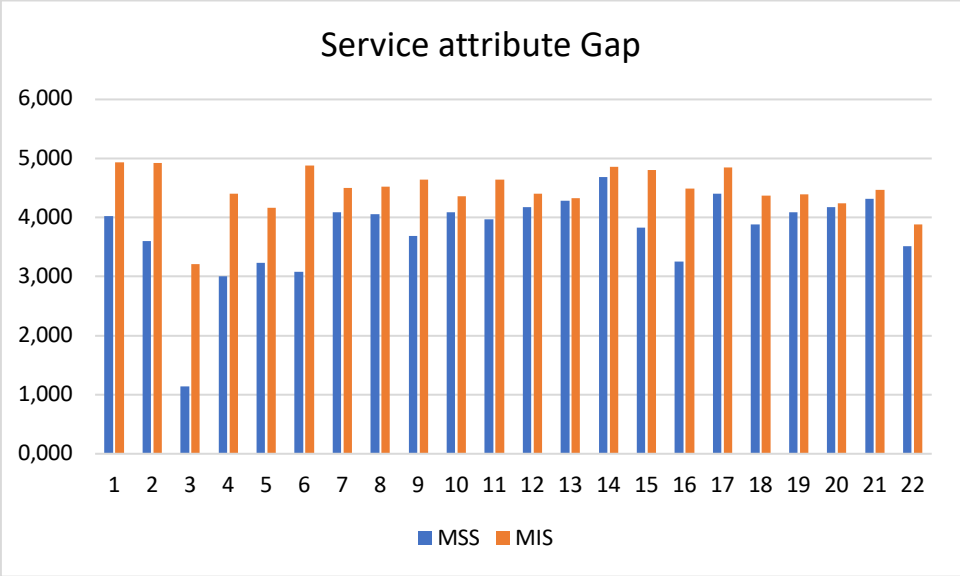

Figure 4. 5 Service Attribute Gap

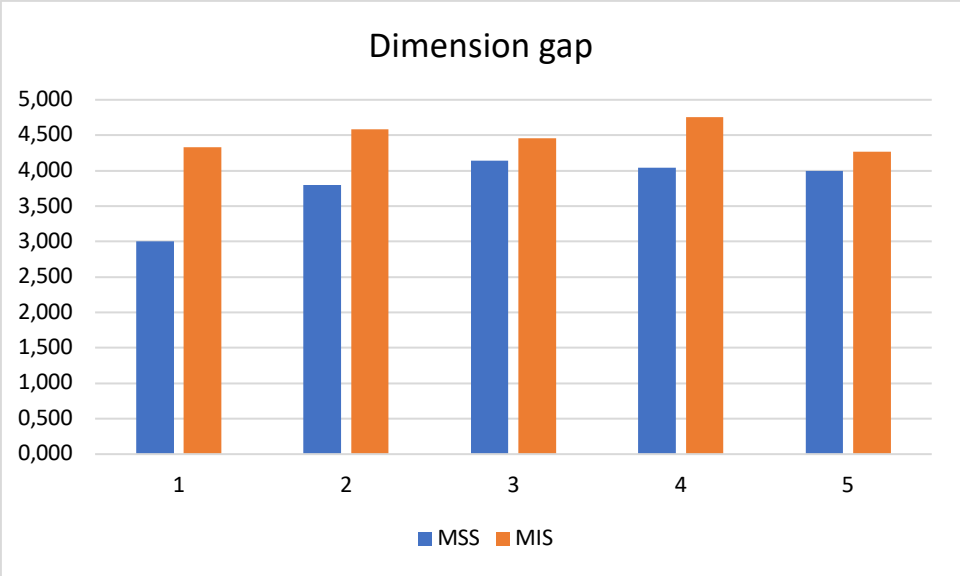

Figure 4. 6 Quality Service Dimension Gap

CS4.5.4 CSI

After calculating the gap using the servqual score and getting attribute prioritization, measuring the percentage of customer satisfaction is necessary. For that, the value of the customer satisfaction index is needed. In the previous calculation, the MIS and MSS values were obtained. In this section, the Weight Factor (WF) value for each attribute will be calculated. To calculate it, the formula below is used

$$WF = \frac{MISi}{\sum MIS} \times 100$$

Where

i= the i item of the attribute

then to calculate WSi, the following formula is used

$$WSi = WFi \times MSSi$$

In the last stage, the CSP value is sought using the following formula

$$CSI = \frac{\sum WSi}{k} \times 100\%$$

Where

k = Number of scale parameter

The percentage assessment of customer satisfaction is determined through the customer satisfaction index indicator. The criteria are shown in the table below.

Table 4. 12 Customer satisfaction index

No	Index value	Category
1	81%-100%	Very Satisfied
2	66%-80,99%	Satisfied
3	51%-65,99%	Quite Satisfied
4	35%-50.99%	Slightly Satisfied
5	0%-34.99%	Not Satisfied

Source: (Buditjahjanto, 2020)

The calculation of the CSI score, including the WF score and WS score, will be shown in the following table.

Table 4. 13 CSI Calculation

Attribut		MIS Score	MSS Score	GAP	WF Score	WS Score
Cleanliness of the business area is always maintained	X1	4,029	4,03	-0,86	5,19	20,93
has complete cage facilities	X2	3,600	3,63	-1,23	5,16	18,71
have employees who are neatly dressed	X3	1,143	1,14	-1,68	3,00	3,42
have complete office facilities (waiting room, toilet, prayer room and parking lot)	X4	3,000	3,00	-1,14	4,40	13,19
Has a catalog or brochure related to the products sold	X5	3,229	3,23	-0,58	4,04	13,04
Egg delivery is always on time	X6	3,086	3,11	-1,67	5,08	15,82
information about prices and ordering is easy to obtain (social media or business number WA)	X7	4,086	4,11	-0,17	4,55	18,72
Egg prices are in accordance with market prices	X8	4,057	4,09	-0,15	4,49	18,36

Attribut		MIS Score	MSS Score	GAP	WF Score	WS Score
provide services in accordance with the promised time	X9	3,686	3,71	-0,68	4,66	17,32
Sutoyo has an organized administration	X10	4,086	4,09	-0,02	4,36	17,81
Always informs about price changes and egg delivery times	X11	3,971	3,94	-0,59	4,82	18,99
Provide fast service	X12	4,171	4,20	0,02	4,44	18,63
Always accompany customers during the transaction process	X13	4,286	4,29	0,20	4,34	18,61
Employees behave in a friendly, polite, and responsible manner.	X14	4,686	4,69	-0,08	5,06	23,72
Provides a guarantee of the safety of eggs for consumption	X15	3,829	3,83	-0,87	4,99	19,09
Employees master product information (eggs)	X16	3,257	3,23	-1,16	4,66	15,06
Guarantee egg replacement if there is damage when received	X17	4,400	4,40	-0,44	5,14	22,60
Accept any criticism and input from customers	X18	3,886	3,91	-0,32	4,49	17,59
Have convenient operating hours for the customers (10:00 - 16:00)	X19	4,086	4,14	-0,13	4,53	18,77
Employees give personal attention to customers who come	X20	4,171	4,17	0,19	4,23	17,63
Employees prioritize customer interests	X21	4,314	4,34	0,04	4,57	19,84
Employees understand specific customer needs	X22	3,514	3,49	-0,10	3,81	13,28
Total		**98,27**			**100,00**	**379,22**
Customer satisfaction index (%)						**75,84**

Table 4.11 shows the value of the MIS score, MSS score, gap, WF Score & WS Score for each service attribute. From these calculations, the CSI value is also obtained at 75.84%. Based on the criteria from **table 4.10**, Sutoyo SME is satisfied. However, there is a quite high gap in some attributes, such as attributes X3, X6, X4, X2, and X16. Thus, improvements and improvisations are needed to reduce the gap in that attribute. Discussion of technical responses and proposed solutions will be discussed in the Quality function deployment section.

4.6 Quality Function Deployment

In the previous stage, the data were processed using the servqual analysis method to measure the level of service quality that Sutoyo SME has provided. Through this stage obtained, service attributes are prioritized. The next stage is to determine the response that needs to be done, for that approach with the Quality Function Deployment (QFD) method is made to improve and develop existing services.

The QFD preparation process is carried out using the House of Quality (HoQ). HoQ is composed of 2 main parts, namely the consumer table containing consumer desires and the second table is technical table which is a response to the consumer table. To develop HoQ, here are the steps that need to be followed:

1. Determine the Consumer Information Matrix
2. Preparation of Planning Matrix
3. Determining the Technical Response
4. Determining the Correlation Matrix
5. Determine the Relationship Matrix
6. Determine Technical Priorities
7. HoQ Analysis

4.6.1 Consumer Information Matrix

The consumer information matrix stage or usually called the voice of the customer is the initial stage in preparing QFD, which will then be used in making the House of Quality (HoQ). In the HoQ Matrix, consumer information is located in the horizontal table. In this case, the determination of consumer desires is reflected in the service attributes that have been formulated in the previous questionnaire and the servqual method. In the information matrix, the attribute that will be used is the priority attribute with the highest gap value and other attributes that have a satisfaction value below 4. The satisfaction value below 4 is an attribute with a "sufficient" category but has not achieved customer satisfaction so that improvements need to be made. The following information matrix is taken from service attributes that have not met customer satisfaction .

Table 4. 14 Information Matrix

ATTRIBUT		MSS	MIS
has complete cage facilities	X2	3,600	4,92
have employees who are neatly dressed	X3	1,143	3,21
have complete office facilities (waiting room, toilet, prayer room and parking lot)	X4	3,000	4,4
Has a catalog or brochure related to the products sold	X5	3,229	4,17
Egg delivery is always on time	X6	3,086	4,88
provide services in accordance with the promised time	X9	3,686	4,64
always informs about price changes and egg delivery times	X11	3,971	4,64
Provides a guarantee of the safety of eggs for consumption	X15	3,829	4,81
Employees master product information (eggs)	X16	3,257	4,49
Accept any criticism and input from customers	X18	3,886	4,37
Employees understand specific customer needs	X22	3,514	3,88

4.6.2 Planning Matrix

After determining the voice of the customer, which in this study is a service attribute, the next is the preparation of a planning matrix which is the core stage in making HoQ. This section consists of 6 stages: importance to customers, Customer

satisfaction performance, goal, Improvement ratio, sales point, and determination of row weight & Normalized row weight.

1. Importance to customers (ITC)

   Importance to the customer is the part that shows how important an attribute is from the customer's perspective. In this case, the importance of customer value is the average value of the importance attribute or MIS, the value of importance to customers can be seen in table 4.6

2. Customers Satisfaction Performance (CSP)

   Customer satisfaction performance is a part that shows the performance assessment provided by a business entity, in this case, by Sutoyo SME customers. CSP is the average value of satisfaction attributes which is the same as the MSS value, so the CSP value can be seen in table 4.7

3. Goal

   The goal is the target value of satisfaction that the company wants to achieve to improve existing services. Because the satisfaction performance assessment uses a Likert scale of 1 to 5, the determination of the target or goal is 1 to 5 according to the satisfaction value. This goal value is determined entirely by management, considering the importance value that has been collected and considering whether these obstacles can be overcome. The goal value for service attributes can be shown in the following table.

Table 4. 15 Attributes Goal Value

ATTRIBUT			**GOAL**
TANGIBLE	has complete cage facilities	X2	5
	have employees who are neatly dressed	X3	3
	have complete office facilities (waiting room, toilet, prayer room and parking lot)	X4	5
	Has a catalog or brochure related to the products sold	X5	4
RELIABLE	Egg delivery is always on time	X6	5
	provide services in accordance with the promised time	X9	4

ATTRIBUT			GOAL
RESPONSIVENESS	always informs about price changes and egg delivery times	X11	5
ASSURANCE	Provides a guarantee of the safety of eggs for consumption	X15	5
	Employees master product information (eggs)	X16	5
EMPHATY	Accept any criticism and input from customers	X18	4
	Employees understand specific customer needs	X22	4

4. Improvement Ratio (IR)

The improvement ratio is a value calculation that shows how much effort needs to be made to improve attributes and achieve the goal value. The improvement ratio value is obtained by comparing the goal value with the value of customer satisfaction. The following formula is used in calculating the improvement ratio

$$IR = \frac{Goal}{CSP(MSS)}$$

The results of the calculation of the improvement ratio for each service attribute are shown in the table below.

Table 4. 16 Improvement ratio score

ATTRIBUT			IR
TANGIBLE	has complete cage facilities	X2	0,72
	have employees who are neatly dressed	X3	0,38095238
	have complete office facilities (waiting room, toilet, prayer room and parking lot)	X4	0,6
	Has a catalog or brochure related to the products sold	X5	0,80714286
RELIABLE	Egg delivery is always on time	X6	0,61714286
	provide services in accordance with the promised time	X9	0,92142857
RESPONSIVENESS	always informs about price changes and egg delivery times	X11	0,79428571
ASSURANCE	Provides a guarantee of the safety of eggs for consumption	X15	0,76571429
	Employees master product information (eggs)	X16	0,65142857

ATTRIBUT			IR
EMPHATY	Accept any criticism and input from customers	X18	0,97142857
	Employees understand specific customer needs	X22	0,87857143

5. Sales Point

Sales point is a value that shows the influence of each improved service attribute on increasing sales. This value is based on the ITC value by considering management opinion. A sales point assessment with a value of 1 indicates no effect on sales, a value of 1.2 indicates a moderate effect on sales, and a value of 1.5 indicates a substantial effect on sales. The sales point values are shown in the table below.

Table 4. 17 Sales Point

ATTRIBUT			Sales point
TANGIBLE	has complete cage facilities	X2	1,5
	have employees who are neatly dressed	X3	1,2
	have complete office facilities (waiting room, toilet, prayer room and parking lot)	X4	1,5
	Has a catalog or brochure related to the products sold	X5	1,2
RELIABLE	Egg delivery is always on time	X6	1,5
	provide services in accordance with the promised time	X9	1,5
RESPONSIVENESS	always informs about price changes and egg delivery times	X11	1,2
ASSURANCE	Provides a guarantee of the safety of eggs for consumption	X15	1,5
	Employees master product information (eggs)	X16	1,5
EMPHATY	Accept any criticism and input from customers	X18	1,5
	Employees understand specific customer needs	X22	1,5

6. Row Weight (RW) and Normalized Row weight (NWR)

The RW value shows how important the attribute is for improvement, while the NWR value shows how important the RW value is compared to the total

NRW value. The RW and NRW values are used as consideration for improvement along with the servqual value. The RW and NRW values are used as consideration for prioritization because the RW and NRW assessments have calculated sales points, IR, and goals where management takes part in deciding, and the servqual score is also taken into consideration as the opinion of the customer. Calculating RW and NRW can be obtained through the following formula.

$$Row\ Weight = ITC \times Sales\ Point \times IR$$

$$Normaized\ Row\ Weight = \frac{Row\ Weight}{\sum Row\ Weight}$$

Using the formula above , the row weight and normalized row weight values are shown in the table below.

Table 4. 18 Row weight & Normalized Row Weight score

ATTRIBUT			RW	NRW
TANGIBLE	has complete cage facilities	X2	4,25088	0,09894473
	have employees who are neatly dressed	X3	1,22285714	0,02846358
	have complete office facilities (waiting room, toilet, prayer room and parking lot)	X4	3,168	0,0737393
	Has a catalog or brochure related to the products sold	X5	4,03894286	0,09401162
RELIABLE	Egg delivery is always on time	X6	3,61398857	0,08412026
	provide services in accordance with the promised time	X9	5,13051429	0,11941936
RESPONSIVENESS	always informs about price changes and egg delivery times	X11	4,42258286	0,10294134
ASSURANCE	Provides a guarantee of the safety of eggs for consumption	X15	4,41970286	0,1028743
	Employees master product information (eggs)	X16	3,50989714	0,0816974

ATTRIBUT			RW	NRW
EMPHATY	Accept any criticism and input from customers	X18	5,094171 43	0,118573 43
	Employees understand specific customer needs	X22	4,090628 57	0,095214 67

4.6.3 Technical Responses

After preparing the planning matrix, the next step that needs to be performed is the preparation of the technical response matrix. The technical response serves as an answer to the voice of the customer in the form of non-technical translated into technical treatment. This is done to develop and improve existing services. The technical response in the HoQ table is located in the vertical section.

In developing technical responses, discussions were held with business owners to determine the steps taken as a response to existing service attributes. From the results of the Analysis through the servqual results and at the planning matrix stage and the discussion, three main points of response were obtained, which consisted of several technical responses.

Based on the analysis and discussion carried out, the technical responses to improve current service quality are obtained as follows.

1. Facility Addition
    - Adding cage facilities. The addition of cage facilities needed at this time is the addition of egg checking equipment so that all eggs harvested are safe for consumption, then fans need to be added to facilitate air circulation and maintain optimal temperatures so that chickens are in good condition to lay eggs.
    - Addition of supporting facilities in the commercial area. Currently the commercial area does not have many facilities, it is necessary to procure furniture such as customer waiting chairs and tables. In addition, toilet facilities and parking areas for visitors need to be built.

2. Improved employee skills and proficiency and work standards.
    - Employee training on clothing attributes. It is necessary to conduct training, especially for employees who are in the frontliner regarding the ethics of dressing so that it is pleasing to the eye. In addition, all employees should wear clothing attributes such as aprons, boots and masks when in the cage area.
    - Employee training on administration. This training is needed so that employees can record various transactions neatly so that the company's performance can be analyzed. In addition, this training is intended so that employees are able to use simple software such as Microsoft words and excel to organize delivery schedules so that there are no delays.
    - Employee training on layer farming. This training is conducted to ensure that employees are well-informed about the products they sell. In addition, this training is carried out in order to increase the knowledge and abilities of employees about chicken care, so that the eggs produced are good and safe for consumption.

3. Information system
    - Adding business numbers and creating social media. Creating a business number is used to facilitate placing orders by customers, while social media can be used as a promotional medium that can contain price updates, product promos and others.
    - Addition of a criticism and suggestion column. By providing this column, consumer desires can be identified so that decisions can be made to fulfill customer desires so that the level of loyalty increase.

Table 4. 19 Technical Responses

Attributes		Technical Responses
X2	has complete cage facilities	addition of UV lighting facilities as an irradiation tool to maintain egg quality
		Addition of blower fans to maintain air circulation
X3	have employees who are neatly dressed	provide training to employees on neat dress standards for frontliners
X4	have complete office facilities	addition of toilet facilities and parking areas for visitors
		addition of supporting facilities (waiting chairs and tables)
X5	Has a catalog or brochure related to the products sold	adding a special business number for transactions and creating social media to notify price updates and promos
X6	Egg delivery is always on time	conduct employee training on administration to organize delivery schedules
X9	provide services in accordance with the promised time	conduct employee training on administration to organize delivery schedules
X11	always informs about price changes and egg delivery times	adding a special business number for transactions and creating social media to notify price updates and promos
X15	Provides a guarantee of the safety of eggs for consumption	addition of UV lighting facilities as an irradiation tool to maintain egg quality
		Adding a blower fan to maintain air circulation
		providing employee training on layer farming so that eggs are safe for consumption
X16	Employees master product information (eggs)	provide employee training on layer farming so that eggs are safe for consumption
X18	Accept any criticism and input from customers	adding suggestion and critic box facilities both through the office and electronic media
		adding a special business number for transactions and creating social media to notify price updates and promos
X22	Employees understand specific customer needs	adding suggestion and critic box facilities both through the office and electronic media

4.6.4 Correlation Matrix

At this stage is determining the relationship between one technical response and other technical responses. This matrix shows whether one technical response has a positive, negative, or no relationship at all. The House of the quality correlation matrix is at the top, with filling symbols for each correlation. Symbol correlation can be seen in the table below.

Table 4. 20 Correlation symbol

Correlations	
Positive	+
Negative	−
No Correlation	

By using the symbols in the table above, the correlation matrix for each technical response is obtained as shown in the figure below

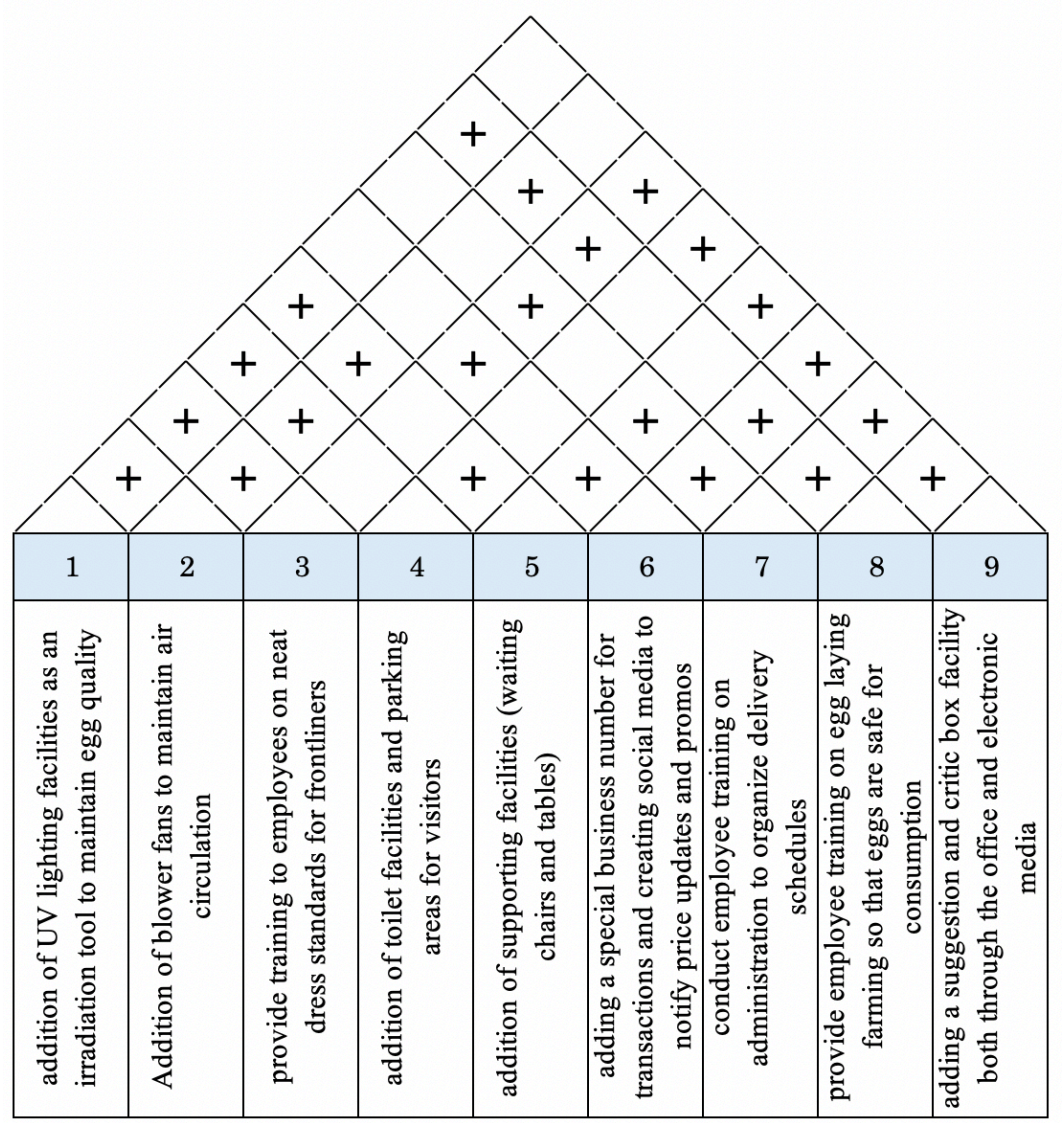

Figure 4. 7 Correlation Matrix

4.6.5 Relationship

This section contains the relationship between service attributes and technical responses, called the relationship matrix. Then the impact value for each relationship will be calculated.

1. Relationship Matrix

In this section, the relationship between the voice of the customer and the technical response that has been decided is determined. At this stage, determining the relationship is done together with management through brainstorming and

discussion. Filling in the relationship matrix will use some of the following symbols.

Table 4. 21 Relationship matrix symbol

Relationships		Impact Value
Strong	●	9
Moderate	○	3
Weak	▽	1

After filling in using the symbol above, a relationship matrix is obtained between service attributes and technical responses. The relationship matrix is shown in the following figure.

Technical Responses / Customer Requirements	addition of UV lighting facilities as an irradiation tool to maintain egg quality	Addition of blower fans to maintain air circulation	provide training to employees on neat dress standards for frontliners	addition of toilet facilities and parking areas for visitors	addition of supporting facilities (waiting chairs and tables)	adding a special business number for transactions and creating social media to notify price updates and promos	conduct employee training on administration to organize delivery schedules	provide employee training on egg laying farming so that eggs are safe for consumption	adding a suggestion and critic box facility both through the office and electronic media	Importance
has complete cage facilities	●	●		○	○				▽	4,92
have employees who are neatly dressed			●							3,21
have complete office facilities (waiting room, toilet, prayer room and parking lot)				●	●					4,4
Has a catalog or brochure related to the products sold						●			○	4,17
Egg delivery is always on time						○	●			4,88
provide services in accordance with the promised time						○	●			4,64
always informs about price changes and egg delivery times						●	○			4,64
Provides a guarantee of the safety of eggs for consumption	●	●						●		4,81
Employees master product information (eggs)								●		4,49
Accept any criticism and input from customers						○			●	4,37
Employees understand specific customer needs						○			●	3,88

Figure 4. 8 Relationship Matrix

2. Impact Score

   After determining the relationship between each service attribute with the technical response, then calculate the impact value for each relationship. The impact value is an indicator of the strength of the relationship between

technical responses and service attributes. Calculating the impact score can be done using the following formula.

$$Impact\ Score = ITC \times Impact\ Value$$

By using the formula above, the impact score for each relationship is obtained. The calculation results are shown in the following table.

Table 4. 22 Impact Score of Technical Response

Importance	Technical response								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
4,94	44,46	44,46	0	14,82	14,82	0	0	0	4,94
4,92	0	0	44,28	0	0	0	0	0	0
3,21	0	0	0	28,89	28,89	0	0	0	0
4,4	0	0	0	0	0	39,6	0	0	13,2
4,17	0	0	0	0	0	12,51	37,53	0	0
4,88	0	0	0	0	0	14,64	43,92	0	0
4,5	0	0	0	0	0	40,5	13,5	0	0
4,52	40,68	40,68	0	0	0	0	0	40,68	0
4,64	0	0	0	0	0	0	0	41,76	0
4,36	0	0	0	0	0	13,08	0	0	39,24
4,64	0	0	0	0	0	13,92	0	0	41,76

4.6.6 Technical Priorities

In this section, it will be calculated which technical responses will be prioritized for improvement. To determine it, it is necessary to determine the direction of improvement for each technical response. Furthermore, the weight of each technical response will be calculated to determine the priority of the technical response.

1. Direction of Improvement

   This section is the determination of the direction of improvement for each technical response. This is a decision to determine the direction of improvement made with SME management through discussion to improve the quality of existing services. In HoQ, the direction of improvement will be filled by the following symbol.

Table 4. 23 Direction of Improvement Symbol

Direction of Improvement	
Maximize	▲
Target	◇
Minimize	▼

Table 4. 24 Direction of improvement

No	Technical Response	Direction of Improvement
1	addition of UV lighting facilities as an irradiation tool to maintain egg quality	◇
2	Addition of blower fans to maintain air circulation	◇
3	provide training to employees on neat dress standards for frontliners	▲
4	addition of toilet facilities and parking areas for visitors	◇
5	addition of supporting facilities (waiting chairs and tables)	◇
6	adding a special business number for transactions and creating social media to notify price updates and promos	▲
7	conduct employee training on administration to organize delivery schedules	▲
8	provide employee training on egg laying farming so that eggs are safe for consumption	▲
9	adding a suggestion and critic box facility both through the office and electronic media	▲

2. Absolute Importance & Relative Importance

   After previously calculating the impact value and direction of improvement, in this section, the calculation of absolute Importance and relative Importance will be carried out to determine which technical responses are prioritized to be done first to improve the quality of service that exists in the current Sutoyo SME. Absolute importance calculation is done to determine the priority order by looking at the relationship between service attributes with technical responses that have been determined and also with the ITC value. In contrast, Relative Importance is done to express the value of

absolute importance in the form of a cumulative percent. Calculating both values can be obtained through the following formula.

$$Absolute\ Importance\ (AI) = \sum Impact\ Score\ i$$

$$Relative\ Importance = \frac{AI\ i}{\sum AI}$$

Where

i = i Technical Responses.

The values for absolute Importance and relative Importance can be obtained using the two formulas above, shown in the table below.

Table 4. 25 Absolute importance score and Relative importance score

No	Technical Responses	Absolute Importance	Relative importance
1	addition of UV lighting facilities as an irradiation tool to maintain egg quality	85,14	0,119
2	Addition of blower fans to maintain air circulation	85,14	0,119
3	provide training to employees on neat dress standards for frontliners	44,28	0,062
4	addition of toilet facilities and parking areas for visitors	43,71	0,061
5	addition of supporting facilities (waiting chairs and tables)	43,71	0,061
6	adding a special business number for transactions and creating social media to notify price updates and promos	134,25	0,188
7	conduct employee training on administration to organize delivery schedules	94,95	0,133
8	provide employee training on egg laying farming so that eggs are safe for consumption	82,44	0,116
9	adding a suggestion and critic box facility both through the office and electronic media	99,14	0,139

Based on the table above, the value of absolute Importance and relative Importance can be determined so that the technical response priorities that will be taken can also be determined. In this study, discussions were held with the owner, and it was decided that at least the five highest priorities

would be implemented first to improve the current service quality. The technical responses are sort in priority order as follow:

Table 4. 26 priority technical priorities

Technical Responses	Priority
adding a special business number for transactions and creating social media to notify price updates and promos	1
adding a suggestion and critic box facility both through the office and electronic media	2
conduct employee training on administration to organize delivery schedules	3
addition of UV lighting facilities as an irradiation tool to maintain egg quality	4
Addition of blower fans to maintain air circulation	4
provide employee training on egg laying farming so that eggs are safe for consumption	6
provide training to employees on neat dress standards for frontliners	7
addition of toilet facilities and parking areas for visitors	8
addition of supporting facilities (waiting chairs and tables)	8

4.6.7 HoQ Analysis.

After doing the whole process of making the House of quality, starting from the planning matrix to technical priorities, information on what service attributes are prioritized for improvement is obtained through the following House of quality service attributes that deserve to be prioritized for improvement:

1. Have employees who are neatly dressed
2. Egg delivery is always on time Egg delivery is always on time It has complete cage facilities
3. have complete office facilities (waiting room, toilet, prayer room and parking lot)
4. has complete cage facilities
5. Employees master product information (eggs).

The attribute priorities selected through the House of quality will be considered together with the priorities that have been obtained through the previous servqual

method. Furthermore, the technical response priorities that need to be taken through the House of Quality are also known. Technical response priorities are located at the bottom of the House of quality in the technical priorities section. The following are the priorities for technical responses that will be carried out to improve the current situation.

1. adding a special business number for transactions and creating social media to notify price updates and promos
2. adding a suggestion and critic box facility both through the office and electronic media
3. conduct employee training on administration to organize delivery schedules
4. addition of UV lighting facilities as an irradiation tool to maintain egg quality
5. Addition of blower fans to maintain air circulation

For a complete view, it can be seen in the House of quality in the appendix.

CHAPTER V

CONCLUSION & RECOMMENDATION

5.1 Conclusion

Based on the analysis carried out in this study, it can be concluded that.

1. Based on interviews with several customers, the criteria for buying obtained are price, size, quantity, the durability of eggs sold, cleanliness of cages and offices, delivery time, purchasing system, convenience of transaction places, and employee service. From criteria of the above, the service attributes are obtained in 5 dimensions. They are
    - Tangible includes completeness of tools, a complete office, complete cage facilities, neatly dressed (in uniform) employees, and a sales catalog.
    - Reliability includes delivery of eggs according to the agreed time, helping customers who have problems, having reasonable egg prices, having an organized administration, and providing services by the promised time.
    - Assurance includes Having employees who are honest, polite, and have sufficient knowledge related to eggs so that they can answer consumer questions and provide guarantees associated with eggs.
    - Empathy includes Employees who Pay attention to all consumers having a relaxing service time and employees who pay attention, prioritize consumer needs and understand consumer needs.
    - Responsiveness includes Informing changes in delivery schedules and egg prices and always providing a responsive response to consumers.

2. Through servqual calculations, Sutoyo SME has fulfilled customer satisfaction by 75.84%. However, there are still many negative gaps in the current service attributes compared to the expectations expected by consumers. Therefore, improvements need to be made. Through the Servqual methods with QFD, the priority attributes that need to be improved are obtained, including as follows.
    - Have employees who are neatly dressed
    - Egg delivery is always on time Egg delivery is always on time It has complete cage facilities
    - have complete office facilities (waiting room, toilet, prayer room and parking lot)
    - has complete cage facilities
    - Employees master product information (eggs).
3. Based on the calculation value of absolute importance and relative importance. The technical response with the highest value is the priority response that needs to be done. The following technical response priorities have been determined.
    - adding a special business number for transactions and creating social media to notify price updates and promos
    - adding a suggestion and critic box facility both through the office and electronic media
    - conduct employee training on administration to organize delivery schedules
    - addition of UV lighting facilities as an irradiation tool to maintain egg quality
    - Addition of blower fans to maintain air circulation

5.2 Recommendation

Based on the analysis, the following suggestions need to be implemented by Sutoyo SME.

1. Sutoyo SME must be able to commit to providing the best products and services to consumers.
2. Sutoyo SME is expected to implement the SOP for customer service immediately.
3. Sutoyo SMEs are expected to conduct regular customer satisfaction surveys.