

Customer Satisfaction Index (CSI) to quality product of Maiwa breeding centre in Makassar city

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This study aims to analyze the impact of the Customer Satisfaction Index (CSI) on product quality at Maiwa Breeding Centre (MBC). Data was collected from 118 respondents in Makassar City. The research found that product quality aspects such as attractive appearance, specifications, and product longevity are considered excessive by consumers. This suggests that companies should focus on improving these aspects and reviewing excessive ones to increase customer satisfaction and loyalty. The findings can guide MBC in setting higher product quality standards, promoting new innovations, and building strategic partnerships. High customer satisfaction can increase competitiveness and foster brand loyalty, leading to increased demand for high-quality livestock products. This, in turn, encourages manufacturers to innovate and improve their products, ultimately fostering a sustainable livestock industry. Further research is needed to identify additional factors influencing customer satisfaction and the quality of livestock products, as well as to enhance consumer knowledge about selecting quality products.

Keywords: Product quality, consumer satisfaction, Maiwa breeding centre, CSI, excessive, suggest, aspects, specification.

INTRODUCTION

Product quality is one thing to measure the level of consumer satisfaction (Diputra and Yasa, 2021; Komari, 2023; Lone and Bhat, 2023; Nurfauzi *et al.*, 2023). MBC always strives to maintain the quality of its products. A good product is reflected if the taste does not change, the product texture is stable, the shape and packaging are attractive and have high protein. The added value of this product is because it already has a halal certificate, the product does not use preservatives, the product does not use flavoring (MSG) (Asnawi *et al.*, 2023). Some of these things will cause consumers to be satisfied when making a purchase. The types of products offered are varied, giving consumers the opportunity to choose the type of meatball they like (Utami *et al.*, 2020). The meatball product is one of the new innovations by MBC. This was done to meet the need for animal protein, namely meatballs, in the city of Makassar by initiating the slogan (Safe, Healthy, Whole, and Halal). Meatballs are produced from beef from fattening owned by MBC and its partners. Meatballs are produced using modern meatball production machines. The meatball formulation is the result of innovation

by lecturers at the Faculty of Animal Husbandry, Hasanuddin University with a meat composition of 75% (for prime) and 50% (for soca). Hybrid meatballs are meatballs mixed with beef and chicken. Sixone 77 meatballs are produced using Good Manufacturing Practices (GMP) principles and have been certified halal from LP POM MUI Number 06010011240218 and BPOM.

MBC's innovative beef meatballs are made with selected fresh meat, without MSG and without preservatives. However, this product had difficulty penetrating the market. The unstable number of meatball sales can be seen based on sales data in 2022 as follows: In January, the number of sales was 113 pieces of meatballs; in February, 76 pieces; in March, 195 pieces; in April, 200 pieces; in May, 83 pieces; in June, 158 pieces; in July, 3 pieces; in August, 86 pieces; in September, 101 pieces; in October, 475 pieces; in November, 28 pieces; and in December, 243 pieces.

The instability in the number of meatball sales at MBC gives an indication that there are consumers who are dissatisfied and are switching their purchases to other meatball products. The level of consumer satisfaction with a product can be analyzed based on five aspects (Hasibuan *et al.*, 2023; Lone



and Bhat, 2023; Tjiptono and Anastasia, 2022; Widagdo *et al.*, 2022) namely Expectations (expectations) are defined as consumers setting expectations regarding what they will get from the product. Performance is during consumption activities, consumers feel the actual benefits and performance of the product from the point of view of the consumer's interests. Comparison is a post-consumption activity, where consumers compare expectations both before making a purchase and perceptions of actual performance. Confirmation or disconfirmation is a confirmation of expectations, whether the consumer's expectations during pre-purchase and perceptions at the time of purchase are the same or not. Discrepancy, namely negative disconfirmation, ensures that if the feeling of dissatisfaction is greater than actual performance is below the level of expectations. The study investigates the relationship between customer satisfaction index and product quality at Maiwa Breeding Centre in Makassar City, revealing a significant positive correlation.

MATERIALS AND METHODS

Population and sample techniques: According to (Etikan *et al.*, 2016; Iseh and Bassey, 2024; Oribhabor and Anyanwu, 2020; Sugiyono, 2018), a population is a generalized region encompassing things or persons with specific features and attributes identified by researchers for study, from which conclusions are subsequently derived. The population in this study comprises all MBC consumers in Makassar City. The researcher uses Cohran's Formula literacy formula to determine the sample size for the study, as the population is large and unknown. (Suharsimi, 2013):

Data Continues

$$N = \frac{t^2 \times s^2}{d^2}$$

Where, N = sample size; t = t value based on a specific alpha (1.96) for a standard error of 5%; s = standard deviation of the population (1.167); d = margin of error (0.03);

The calculation results:

$$\begin{aligned} N &= \frac{t^2 \times s^2}{d^2} \\ &= \frac{1.96^2 \times 1.167^2}{0.044} \\ &= \frac{7 \times 0.03^2}{0.044} \\ &= \frac{3.841 \times 1.361}{0.044} \\ &= 118 \end{aligned}$$

A minimum of 118 samples will be used through Cluster Random Sampling, which divides the population into four clusters based on showrooms and agents, selected randomly and selected based on predetermined criteria. Random selection is a crucial technique in quantitative research, reducing selection bias and ensuring representative samples. This method reduces bias and allows for more generalizable results. Random selection techniques are considered more

credible, objective, and scientific, making them useful for further research. Therefore, random selection is a vital tool in quantitative research.

Importance Performance Analysis Method (IPA): Analysis of the Level of Importance and Performance/Consumer Satisfaction is also known as Importance Performance Analysis (IPA). According to Rangkuti (2006) A method for evaluating a product or service's performance and degree of importance is called importance performance analysis, or IPA. This analysis is utilized to address issues with farmers' and breeders' performance levels in relation to the services provided by currently operating institutions. The degree of importance is determined using a 5-point Likert scale: very important (5), important (4), quite important (3), less important (2), and not important (1). Performance levels are also measured using the Likert scale: very good (5), good (4), quite good (3), poor (2), and not good (1).

The stages in the Importance Performance Analysis method follow the suggestions proposed by (Fatoni *et al.*, 2020; Haumetan and Nababan, 2022; Mohebifar *et al.*, 2016; Supranto, 2011). First, calculate the average performance (Xi) and interest (Yi) of all farmers/breeders. The average performance and interests of all respondents are calculated using the following formula:

Finding the average assessment of each attribute's performance and importance:

$$Xi = \frac{\sum_{i=1}^k Xi}{n} \leftrightarrow Yi = \frac{\sum_{i=1}^k Yi}{n}$$

Xi = average weight of level when assessing an attribute's performance I

Yi = average weight of level assessing an attribute's importance I

n = number of respondents

The second step is to compute the Level of Conformity (TKi) between the performance level and the expectations or importance. TKi was determined by applying the subsequent formula:

$$TKi = \frac{Yi}{Xi} \times 100\%$$

where Xi is the attribute i performance score and Yi is the attribute i importance score.

Third, figuring out the overall attribute's average performance and importance level:

$$Xi = \frac{\sum_{i=1}^k Xi}{K} \leftrightarrow Yi = \frac{\sum_{i=1}^k Yi}{K}$$

Xi = average attribute performance score

Yi = average attribute importance score

K = several factors that may influence the respondents' level of satisfaction

After the weight of the performance and importance as well as mean score of performance and importance were obtained, then they were plotted into Cartesian diagram as in Fig. 1.



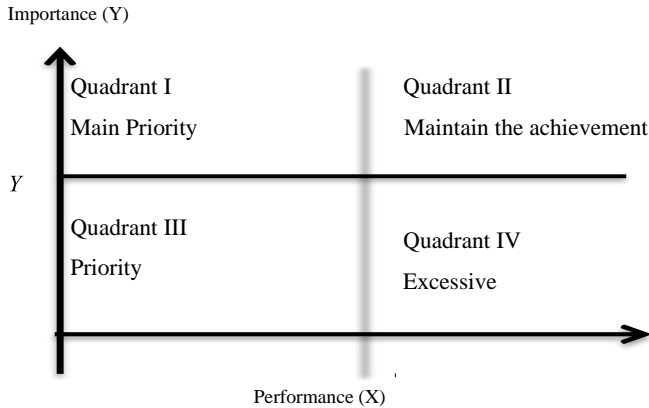


Figure 1. Cartesian diagram (Nasution, 2010) and (Lin and Zheng, 2019).

Quadrant I (Main priority): This quadrant consists of areas where the performance is low and the importance aspect is high, disappointing the customers. The manager of the Maiwa Breeding Centre has to prioritize improving the performance of the factors contained in this quadrant.

Quadrant II (Maintain the achievement): This quadrant displays the features that the manager of Maiwa Breeding Centre has put into place and that customers find highly significant. Aspects that are included in this quadrant must be maintained and must be managed properly.

Quadrant III (Priority): There are characteristics in this quadrant that are not very important or effective. Customers view the elements in this quadrant as less significant, and their execution is viewed as inadequate. However, the manager of Maiwa Breeding Centre still needs to be vigilant, observe and control every aspect of this quadrant, because the level of consumer interest can change as demand increases.

Quadrant IV (Excessive): This quadrant displays characteristics that Maiwa Breeding Centre’s manager believes are less significant to customers has implemented them well, so they are considered excessive.

CSI (Customer Satisfaction Index) analysis method: Based on specific parameters, the Customer Satisfaction Index technique calculates the degree of satisfaction among customers or members. This depends on the information needs that companies want to get from consumers (Massnick, 1996). The measured attributes can be different for each industry, even for each company.

According to (Aritonang, 2005) The Customer Satisfaction Index (CSI) is calculated in four steps, which are:

1. Calculating the Mean Importance Score (MIS). This rating is derived from each member's average performance and importance level:

$$MIS = \frac{\sum_{i=1}^n Y_i}{n}$$

Where: n = respondent

Y_i = The attribute's importance score i

X_i = The attribute's Performance score i

2. The percentage of each attribute's MIS score toward the overall MIS of all attributes is used to create weight factors, or WFs.

$$WF = \frac{MIS}{\sum_{i=1}^p MIS} \times 100\%$$

Where: p = 20 aspects of group ability

I = Attributes of group ability aspect of i

3. The Weight Factor (WF) and the Mean Satisfaction Score (MSS) are multiplied to create the Weight Score (WS)

$$WS_i = WF_i \times MSS_i$$

Where: i = Attribute of group ability aspect of i

4. Calculating the Index of Customer Satisfaction

$$CSI = \frac{\sum_{i=1}^p WS_i}{5} \times 100\%$$

A scale from zero to one is typically employed to measure consumer satisfaction when interpreting the index. According to Table 1 description.

Table 1. Criteria for the consumer satisfaction index.

Index Score	Consumer Satisfaction Index Criteria
0.80 – 1.00	Very satisfied
0.60 – 0.79	Satisfied
0.40 – 0.59	Quite satisfied
0.20 – 0.39	Less satisfied
0.00 – 0.19	Not satisfied

Source: (Chandra and Novia, 2019)

RESULTS

Product Quality Importance Performance Analysis (IPA):

The average value of the level of importance and performance for Maiwa Breeding Centre product quality is 94.48 which can be seen in Table 2.

Based on Table 2, The mean score for the importance level is 4.04, while the mean score for the performance level is 4.12. The Cartesian Importance Performance Analysis (IPA) diagram will be centered on these two values, representing the Y and X axes, respectively, representing the importance and performance levels. Figure 2 displays the Cartesian Importance Performance Analysis (IPA) diagram.

1. Quadrant I is Main Priority

According to the computation findings, even though a feature is deemed vital by customers, its performance is nonetheless subpar, as shown by quadrant I in the Cartesian diagram. Although the attributes in quadrant I are highly significant, their performance is still modest. In quadrant I, the characteristics are:

- The product texture is right according to consumer tastes
- Young nutritional value labels and information are read and understood
- In accordance with product size/volume specifications



Table 2. Results of calculating the average level of importance and performance for Maiwa breeding Centre product quality.

Product Quality Characteristics	\bar{x}	\bar{y}	TKi
1 The taste of the product is in accordance with consumer tastes	4,23	4,08	96,45
2 The product's taste consistency is stable	4,02	4,01	99,75
3 The product texture is right according to consumer tastes	4,08	4,09	100,25
4 Product displays that attract consumer attention	4,21	4,00	95,01
5 The shape of the product attracts consumers' attention	4,14	4,12	99,52
6 Attractive packaging	4,16	4,07	97,84
7 Young nutritional value labels and information are read and understood	3,96	4,04	102,02
8 In accordance with product size/volume specifications	4,00	4,11	102,75
9 In accordance with product quality specifications	4,21	3,91	92,87
10 The product lasts a long time according to the expiration date	4,17	3,94	94,48
11 The product lasts a long time at room temperature	4,19	4,07	97,14
Average	4,12	4,04	98,01

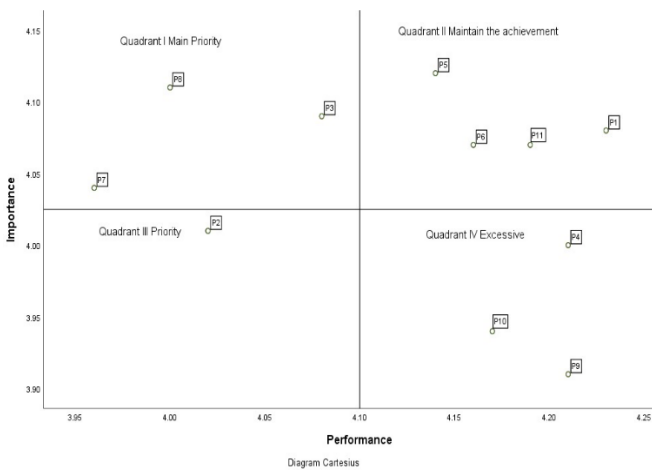


Figure 2. Cartesian diagram of product quality.

2. Quadrant II is Maintain the Achievement

The characteristics of product quality are described in quadrant II as characteristics that customers value highly and that MBC has successfully implemented in line with their expectations. Performance in this attribute must be maintained by MBC because this attribute is the company's strength in maintaining consumer confidence in the quality of its products. The characteristics found in quadrant II are:

- The taste of the product is in accordance with consumer tastes
- The shape of the product attracts consumers' attention
- Attractive packaging
- The product lasts a long time at room temperature

3. Quadrant III is Priority

Product quality is characterized by the criteria in quadrant III as being less significant, while actual performance is still low.

Table 3. Customer satisfaction index calculation.

No.	Product Quality Characteristics	Mean Importance Score (MIS)	Weight Factors (WF)	Mean Satisfaction Score (MSS)	Weight Score (WS)
1	The taste of the product is in accordance with consumer tastes	4,08	9,19	4,12	0,38
2	The product's taste consistency is stable	4,01	9,03	4,14	0,37
3	The product texture is right according to consumer tastes	4,09	9,21	4,15	0,38
4	Product displays that attract consumer attention	4,00	9,01	3,98	0,36
5	The shape of the product attracts consumers' attention	4,12	9,28	4,10	0,38
6	Attractive packaging	4,04	9,10	4,18	0,38
7	Young nutritional value labels and information are read and understood	4,04	9,10	4,34	0,39
8	In accordance with product size/volume specifications	4,11	9,25	4,10	0,38
9	In accordance with product quality specifications	3,91	8,80	4,37	0,38
10	The product lasts a long time according to the expiration date	3,94	8,87	4,31	0,38
11	The product lasts a long time at room temperature	4,07	9,16	3,98	0,36
Total		44,41	100,0	45,77	4,16
Average		4,04	9,1	4,16	0,38
CSI					0,83



Stable product taste uniformity and taste stability are the characteristics in quadrant III.

4. Quadrant IV is Excessive

Quadrant IV traits characterize characteristics from the ability aspect as having a low importance but a high performance. The characteristics that make up quadrant IV include:

- a. Product displays that attract consumer attention
- b. In accordance with product quality specifications
- c. The product lasts a long time according to the expiration date

Product quality customer satisfaction index (CSI): The IPA study reveals the CSI results, which indicate that around 83% of consumers are satisfied. As a measure of satisfaction, this value is maximum so the Maiwa Breeding Centre must maintain its performance and improve its performance. The characteristics in quadrant I, where their performance is subpar and has to be further enhanced, are those that need to be prioritized in order to increase their performance. In the meanwhile, quadrant II's attributes must continue to perform well in order for the development of the area to hopefully raise the CSI rating.

DISCUSSION

This was conveyed by [Khoirurrohman et al. \(2015\)](#); [Yansah et al. \(2001\)](#) that product suitability has a strong impact on how satisfied customers are. Other research [Erlinda et al. \(2022\)](#); [Mahsyar and Surapati \(2020\)](#) suggests because consumer loyalty is significantly impacted by customer satisfaction, which in turn is positively and significantly impacted by product quality and ([Uslu, 2020](#); [Yusuf et al., 2019](#)) The primary factor influencing consumer satisfaction and loyalty is product quality.

This demonstrates that the primary factor influencing consumer happiness and loyalty is product quality. The necessity and performance of product quality not being carried out correctly might lead to a decline in client loyalty. The ([Kristiawan et al., 2021](#); [Sambo et al., 2022](#); [Suwangsih, 2021](#)) study also makes the point that differences in the caliber of the company's offerings and the degree of client pleasure are connected to caliber of product. Since product quality is one of the primary factors influencing customer satisfaction and loyalty, it is advised that the management of the company set up interactive metrics to monitor the degree of their product quality based on customer perceptions. This is because changes in product quality can have an impact on customer satisfaction levels, which can then have an impact on customer loyalty. It is also ([Kristiawan et al., 2021](#); [Restiana, 2021](#); [Suchánek et al., 2017](#)) said that the strong correlation between consumers' perceptions of the quality of the products and the extent to which their requests are met accounts for most of the elements influencing customer satisfaction.

The last discussion aims to provide specifics on the implications of each result, especially on how MBC can utilize these findings. Product texture, a physical sensation consumers experience when consuming a product, is a main priority in determining consumer satisfaction, as it aligns with consumer expectations and preferences. MBC needs to conduct in-depth research to understand consumer texture preferences, set strict production standards, strengthen quality control, innovate with a wider variety of textures, promote products by emphasizing texture advantages, and provide adequate personnel training to understand the importance of product texture. This will help maintain consistency in texture across time and meet diverse consumer needs.

Nutritional information on product packaging, including calories, protein, fat, carbohydrates, vitamins, and minerals, is crucial for young consumers to read and understand, making it a top priority in purchasing decisions. In accordance with product size/volume specifications. To ensure consumer trust and reputation, MBC products should provide accurate nutritional information, use simple language, attractive label design, and include additional information like raw material origin and health benefits. Consumer education on nutrition labels and healthy product choices can be provided through social media and websites. Market segmentation can help understand consumer preferences and develop healthier products with high protein, low fat, or vitamin and mineral content.

Consumer satisfaction is significantly influenced by the product's size and volume, as these factors are crucial in determining the product's intended use. This emphasizes the importance of product size and volume accuracy, standardization, clear packaging, and flexibility in meeting consumer needs. It is recommended to offer a variety of size and volume options, use flexible packaging, and conduct regular inspections to ensure product conformity. If nonconformities are found, corrective action is taken immediately.

The aspects whose performance must be maintained by MBC because they are a priority are, 1) Taste is crucial for customer satisfaction, especially in food products. MBC can increase loyalty and repeat purchases by conducting market research, developing new flavours, setting consistent taste standards, and being open to consumer feedback. 2) MBC should hire skilled designers to create unique, attractive product shapes, align packaging with the shape, and offer a variety of shapes to cater to different consumer preferences. 3) Attractive packaging enhances product protection, communication, and marketing, improving consumer perception of product quality. MBC actions include packaging design, selecting safe, eco-friendly materials, and providing clear product information. 4) MBC can enhance product shelf life by developing a long-lasting formula, optimizing the production process, and using vacuum packaging or other preservation



technologies to ensure product quality and convenience for consumers.

Conclusion: Maiwa Breeding Centre (MBC) must prioritize and improve its performance in quadrant I and quadrant II to increase satisfaction and loyalty. This can be achieved by offering quality products, meeting consumer expectations, and strengthening its market position. MBC can optimize its strategy by conducting market research, collaborating with nutritionists, focusing on product design, raising consumer awareness, and implementing a strict quality control system.

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SDGs addressed: Responsible Consumption and Production, Industry, Innovation, and Infrastructure, Decent Work and Economic Growth.

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