

CONSUMER PERCEPTION AND SATISFACTION OF BONELESS MILKFISH IN LAMONGAN BASED ON IPA–CSI APPROACH

Persepsi dan Kepuasan Konsumen terhadap Ikan Bandeng Tanpa Duri di Lamongan
Berdasarkan Pendekatan IPA–CSI

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ABSTRACT

Processed fishery products, such as boneless milkfish, are increasingly in demand among consumers due to their convenience and nutritional value. This study aims to analyze consumer perceptions of boneless milkfish products in Lamongan Regency and to measure the level of customer satisfaction using the Importance–Performance Analysis (IPA) and Customer Satisfaction Index (CSI) methods. The research employed a quantitative approach, utilizing an online questionnaire distributed to 115 respondents who had previously consumed boneless milkfish products. The results of the IPA indicate that attributes such as taste, price, packaging, presentation, stock availability, as well as safety and consumer trust, fall into Quadrant I (high importance–low performance), signifying that these aspects require immediate improvement. Attributes including texture and overall product quality are categorized in Quadrant II (high importance–high performance), indicating that their performance should be maintained. Meanwhile, accessibility and ease of transaction are placed in Quadrant III (low importance–low performance), suggesting lower priority for improvement, whereas product size is categorized in Quadrant IV (low importance–high performance), indicating potential overinvestment. Furthermore, the Customer Satisfaction Index (CSI) value was calculated at 79.76%, demonstrating that consumers are generally satisfied with boneless milkfish products. In conclusion, several key attributes require strategic improvements by business actors in order to enhance overall consumer satisfaction and competitiveness in the market.

Keywords: Boneless milkfish, Consumer perception, CSI, Customer satisfaction, IPA

ABSTRAK

Produk olahan perikanan, seperti bandeng tanpa duri, semakin diminati oleh konsumen karena kemudahan konsumsi dan nilai gizinya. Penelitian ini bertujuan untuk menganalisis persepsi konsumen terhadap produk bandeng tanpa duri di Kabupaten Lamongan serta mengukur tingkat kepuasan pelanggan menggunakan metode Importance–Performance Analysis (IPA) dan Customer Satisfaction Index (CSI). Penelitian ini menggunakan pendekatan kuantitatif

dengan memanfaatkan kuesioner daring yang disebarkan kepada 115 responden yang telah mengonsumsi produk bandeng tanpa duri. Hasil analisis IPA menunjukkan bahwa atribut seperti rasa, harga, kemasan, penyajian, ketersediaan stok, serta keamanan dan kepercayaan konsumen berada pada Kuadran I (tingkat kepentingan tinggi–kinerja rendah), yang berarti atribut-atribut tersebut memerlukan perbaikan segera. Atribut seperti tekstur dan kualitas produk secara keseluruhan berada pada Kuadran II (tingkat kepentingan tinggi–kinerja tinggi), yang menunjukkan bahwa kinerjanya perlu dipertahankan. Sementara itu, aksesibilitas dan kemudahan transaksi berada pada Kuadran III (tingkat kepentingan rendah–kinerja rendah), sehingga menjadi prioritas yang lebih rendah untuk ditingkatkan. Ukuran produk berada pada Kuadran IV (tingkat kepentingan rendah–kinerja tinggi), yang mengindikasikan adanya potensi kelebihan alokasi sumber daya. Selain itu, nilai Customer Satisfaction Index (CSI) sebesar 79,76% menunjukkan bahwa konsumen secara umum merasa puas terhadap produk bandeng tanpa duri. Kesimpulannya, beberapa atribut utama memerlukan perbaikan strategis oleh pelaku usaha guna meningkatkan kepuasan konsumen secara keseluruhan serta daya saing di pasar.

Kata Kunci: Bandeng Tanpa Duri, Persepsi Konsumen, CSI, Kepuasan Konsumen, IPA

INTRODUCTION

East Java possesses substantial and diverse fisheries potential distributed across multiple regencies and municipalities. Supported by relatively strong human resources, the province has emerged as a major contributor to national fisheries production, accounting for approximately 595,799 tons of capture fisheries and 1,284,129 tons of aquaculture output (BPS East Java, 2022). These figures underscore the strategic role of the marine and fisheries sector in contributing to national economic development, while also highlighting its untapped potential for further growth in achieving broader development objectives, including economic expansion and food security.

Within this context, Lamongan Regency represents one of the key fisheries production centers in East Java, with significant contributions from both capture fisheries and aquaculture. Recent statistics indicate that capture fisheries production reached 84,538,062 kg, while aquaculture production amounted to 48,978,069 kg (BPS Lamongan, 2024). Despite this strong performance, milkfish (*Chanos chanos*), one of the region's leading aquaculture commodities, has exhibited a declining production trend over the period 2021–2024. Production decreased from 22,333,484 kg in 2021 to 12,299,339 kg in 2024, reflecting a substantial contraction. This decline is likely influenced by multiple factors, including environmental changes, climatic variability, seed availability, and the prevalence of pests and diseases.

Milkfish (*Chanos chanos*) is widely recognized as a nutritionally rich commodity with high potential for development as a sustainable food source. However, consumer preferences are often constrained by the presence of numerous fine bones, which reduce convenience and consumption appeal. Consequently, innovation in processed fishery products—particularly boneless milkfish—has emerged as a promising solution to enhance product acceptability. This is consistent with findings by Food Quality Research studies showing that convenience, safety, and perceived quality significantly influence consumer acceptance of seafood products (Verbeke *et al.*, 2005; Olsen, 2003).

In parallel, fish consumption in Lamongan has shown a steady increase, as reflected in the Fish Consumption Rate (AKI), which rose from 56.83 kg/year in 2021 to 65.98 kg/year in 2023 (Diskominfo East Java, 2023). This trend indicates growing awareness of the nutritional benefits of fish consumption. However, despite increasing demand, the adoption of value-added products such as boneless milkfish remains limited. Similar patterns have been observed globally, where consumer trust, product knowledge, and perceived risk significantly influence

seafood consumption behavior (Pieniak et al., 2010; Claret et al., 2014).

Previous studies have extensively examined consumer perception and satisfaction in fisheries and food products using analytical approaches such as Importance–Performance Analysis (IPA) and Customer Satisfaction Index (CSI). For instance, Anam et al., (2023) found that product quality, price, and packaging significantly influence consumer satisfaction in fisheries marketing. Likewise, studies on processed fish products report that satisfaction is driven by taste, convenience, and product reliability. Internationally, IPA was first introduced by Martilla & James, (1977) as a strategic tool to identify priority attributes, while its integration with satisfaction measurement has been widely applied in food and service industries (Deng, 2007). Furthermore, research by Ryu & Han, (2010) demonstrates that product attributes and service quality strongly affect customer satisfaction and behavioral intentions in food consumption contexts.

Despite these contributions, existing studies predominantly focus on general fisheries products, digital marketing, or other processed food commodities. There remains limited research specifically addressing consumer perception and satisfaction toward boneless milkfish products, particularly in Lamongan Regency. This gap is important considering the declining trend in milkfish production and the need to enhance competitiveness through value-added innovation. Previous international studies also emphasize that aligning product attributes with consumer expectations is crucial in sustaining competitiveness in modern food markets (Grunert, 2005).

Therefore, the novelty of this study lies in its specific focus on boneless milkfish as an emerging product innovation, combined with a comprehensive evaluation of both product and service attributes, including price, availability, accessibility, and consumer trust. Additionally, this study contributes empirical insights into consumer acceptance of a relatively underdeveloped product within a key fisheries production region.

Based on these considerations, this study aims to: (1) analyze consumer perceptions of boneless milkfish products in Lamongan Regency, and (2) estimate the level of customer satisfaction using IPA and CSI approaches. The findings are expected to provide strategic recommendations for improving product quality, consumer satisfaction, and competitiveness in the fisheries sector.

RESEARCH METHOD

Data Collection Method

This study was conducted between February and March 2025 in Lamongan Regency. The selection of this study area was based on its significant potential in the fisheries sector, particularly in milkfish production. Furthermore, analyzing consumer perceptions in this region is expected to provide valuable insights into the acceptance of innovative fishery products in local markets. This research employed a quantitative descriptive approach to systematically examine consumer perceptions of boneless milkfish products. Such an approach aims to describe data and phenomena in a structured manner, particularly regarding consumer preferences and the factors influencing their perceptions (Hanggraeni et al., 2021).

The sampling technique applied in this study was accidental sampling, a non-probability sampling method in which respondents are selected based on their availability and willingness to participate, as described by Sugiyono, (2016). In this context, respondents consisted of individuals residing in Lamongan Regency who had purchased boneless milkfish products at least once and were aged over 15 years. This approach was chosen due to its practicality and efficiency in collecting data rapidly, particularly through online platforms such as social media. Although this method does not fully represent the entire population, it allows for the inclusion of diverse perspectives, which can enrich the analysis of consumer perceptions.

The sample size was determined based on the recommendation of Hair et al., (2009) which

suggests that the minimum number of respondents should be five to ten times the number of indicators used in the questionnaire. Given that this study included 23 measurement items, the minimum required sample size was calculated as follows:

$$n = k \times 5$$

where n represents the number of respondents and k denotes the number of questionnaire items. Based on this formula, the minimum sample size was 115 respondents. Accordingly, this study involved 115 respondents, which is considered sufficient to capture general consumer perceptions. However, this number may not fully represent the broader population of Lamongan Regency. Additionally, it should be noted that there is only one fish processing and marketing group (Poklahsar) producing boneless milkfish in the region. Therefore, this study focuses on general consumer perceptions rather than on specific producer groups.

Data were collected through an online questionnaire using the Google Forms platform. This method was selected due to its efficiency in reaching respondents across different areas of Lamongan, particularly in the digital era. The questionnaire consisted of structured statements designed to capture respondents' experiences and perceptions. Each item was measured using a Likert scale ranging from 1 to 5, where 1 indicates "strongly disagree," 2 "disagree," 3 "neutral," 4 "agree," and 5 "strongly agree." The Likert scale is widely used in quantitative research to systematically measure perceptions and satisfaction levels (Joshi et al., 2015).

In this study, the Likert scale was applied to evaluate consumer perceptions based on two primary dimensions: perceived performance and perceived importance of each attribute. These dimensions were subsequently analyzed to assess consumer satisfaction and identify priority areas for improvement.

Data Analysis

The data analysis in this study was conducted to process the questionnaire responses in order to address the research objectives. The initial stage involved instrument testing, including validity and reliability tests, to ensure that the questionnaire items were appropriate for measuring the variables under investigation. The validity test was performed by examining the correlation between each item score and the total score of the corresponding variable using SPSS Statistics with a significance level of 0.05. The reliability test was conducted to assess the consistency of the measurement instrument using Cronbach's Alpha, where a value of 0.60 or higher indicates acceptable reliability. Following instrument validation, the data were analyzed using the Importance–Performance Analysis (IPA) method to evaluate the level of congruence between product performance and the importance perceived by consumers. Furthermore, the Customer Satisfaction Index (CSI) method was employed to measure the overall level of consumer satisfaction with boneless milkfish products.

Important Performance Analysis (IPA)

Data processing for the Importance–Performance Analysis (IPA) method was carried out using Microsoft Excel and SPSS Statistics. The data were obtained from questionnaires completed by the respondents. The IPA method was used to measure and compare the level of importance and performance of each product attribute.

Table 1. Parameters for Determining Consumer Perceptions of Boneless Milkfish in Lamongan Regency

No.	Parameter
1	The taste of boneless milkfish is delicious.
2	The texture of boneless milkfish is soft and not tough when chewed.
3	The price of boneless milkfish in Lamongan is relatively affordable.
4	Boneless milkfish has good product quality.
5	Boneless milkfish has a sufficiently large size.

No.	Parameter
6	The packaging of boneless milkfish products is attractive and well-designed.
7	The presentation of boneless milkfish is appealing and well-executed.
8	The availability of boneless milkfish in Lamongan is sufficient.
9	Boneless milkfish is easy to find in markets, souvenir shops, or local sellers in Lamongan.
10	It is easy to conduct transactions when purchasing boneless milkfish in Lamongan.
11	Boneless milkfish is considered safe to consume and fosters consumer trust.

Source: Observation Result (2025)

The IPA matrix is needed to describe the level of performance and customer satisfaction. The division of quadrants in the IPA matrix is shown in Figure 1.

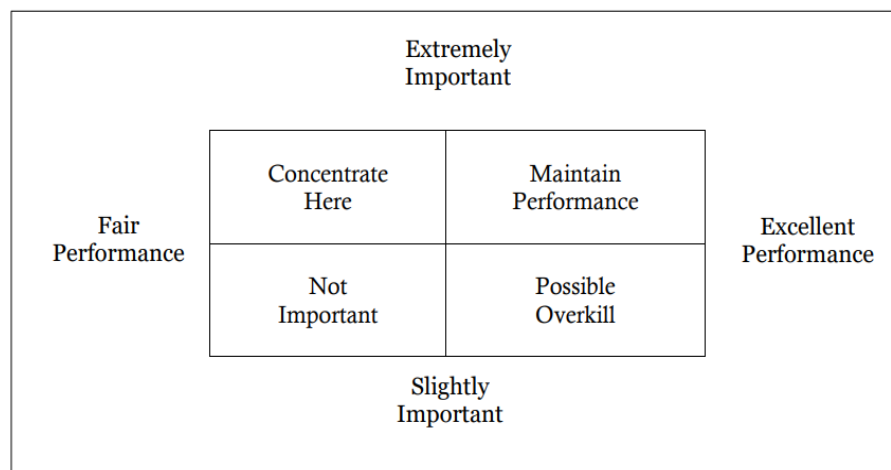


Figure 1. Importance Performance Matrix (Martilla dan James, 1977)

The steps for processing data using the Importance–Performance Analysis (IPA) method are as follows:

1. The average score for each attribute in terms of importance and performance can be calculated as follows:

$$\bar{X} = \frac{\sum X_i}{n}$$

$$\bar{Y} = \frac{\sum Y_i}{n}$$

Where:

$\bar{X}$ = the average performance score for each attribute

$\bar{Y}$ = the average important score for each attribute

$\sum X_i$ = total performance score

$\sum Y_i$ = total important score

n = number of respondents

2. The calculation used to construct the IPA matrix is as follows:

$$\bar{\bar{X}} = \frac{\sum_{i=1}^n \bar{X}}{k}$$

$$\bar{\bar{Y}} = \frac{\sum_{i=1}^n \bar{Y}}{k}$$

Where:

- $\bar{X}$ = the average performance score across all attributes
 $\bar{Y}$ = the average important score across all attributes
 $\bar{X}$ = the average performance score for each attribute
 $\bar{Y}$ = the average important score for each attribute
 n = number of respondents
 k = the number of attributes influencing consumer satisfaction

Customer Satisfaction Index (CSI)

The consumer satisfaction index method aims to measure the level of consumer satisfaction. The formula for calculating the satisfaction index based on Hill and Alexander (2006), as follow:

1. Calculate the average level of importance and performance of each consumer.

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

$$MSS = \frac{\sum_{i=1}^n X_i}{n}$$

Where:

- MIS = Mean Importance Score;
 MSS = Mean Satisfaction Score;
 n = Number of consumers;
 Y_i = Importance Value of attribute i ; and
 X_i = Performance Value of attribute i

2. Calculate Weight Factor (WF)

$$WIFI = \frac{MIS_i}{\sum_{i=1}^p MIS_i} \times 100\%$$

Where:

- p = number of importance attributes;
 i = attributes i ;
 MIS_i = average score of importance attributes i ;

3. Calculate Weight Score (WS)

$$WS_i = WIFI \times MSS_i$$

Where:

- i = attributes i ;
 WF = Weighting Factor;
 MSS = average score of performance attributes i

4. Calculate Customers Satisfactions Index

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

Where:

- p = importance attributes i ;
 WS = Weight Score; and
 HS = Height Score or minimum scale (5)

Furthermore, a scale range is made to explain the value of the consumer satisfaction index based on the Simamora, (2002) scale range equation.

$$RS = \frac{m - n}{b}$$

Where:

- RS = Scale Range;
 m = highest score;

n = lowest score;

b = number of categories (in this study uses maximal scale 5)

The highest satisfaction if the consumer satisfaction index reaches 100%, so the scale range can be calculated as follows:

$$RS = \frac{100\% - 0\%}{5} = 20\%$$

Next, the index values and criteria for the consumer satisfaction index are made as shown in Table 2.

Table 2. Interpretation of consumer satisfaction index numbers

Index Value	Satisfaction Index Criteria
80% < Satisfaction Index < 100%	Very Satisfied
60% < Satisfaction Index < 80%	Satisfied
40% < Satisfaction Index < 60%	Quite Satisfied
20% < Satisfaction Index < 40%	Less Satisfied
0% < Satisfaction Index < 20%	Unsatisfied

Source: Martilla & James, (1977)

RESULT

Consumer Characteristics

Consumer characteristics are distinguished by age, education, occupation, monthly income, and gender (Table 3). These characteristics can influence the behavior of the purchasing process. Therefore, it is expected to be a source of information for the purpose of evaluating and preparing marketing strategies for fishery business using digital marketing.

Table 3. Consumer characteristics

Age Group (Year)	Frequency	Education	Frequency
15-25	24	Elementary School	0
26-35	41	Junior High School	4
36-45	36	Senior High School	53
46-55	15	Diploma	9
Total	115	Bachelor	48
		Postgraduate	1
		Total	115
Type of Works	Frequency	Income per month (Rp)	Frequency
Students	16	<500.000	11
Civil Servant	13	500.000 – 1.000.000	11
Private Sector Employee	44	1.000.000 – 2.000.000	21
Entrepreneur	28	2.000.000 – 3.000.000	40
Housewife	12	>3.000.000	32
Farmer	2	Total	115
Total	115		
Gender			
Male	59		
Female	56		
Total	115		

Source: Analysis Result (2025)

Table 3 indicates that the respondents are predominantly individuals of productive age with a relatively balanced gender composition, suggesting that the study captures perspectives

from active consumers in the market. Overall, the sample is characterized by a moderate level of education, with most respondents having at least a senior high school or higher education background, which implies a sufficient level of awareness in evaluating product attributes. In terms of occupation and income, the respondents largely represent middle-income earners with diverse professional backgrounds, particularly from the private sector and entrepreneurial activities. This profile reflects a consumer group that is economically active and potentially responsive to product innovation, indicating that the findings of this study are relevant for understanding market acceptance and consumer behavior toward boneless milkfish products in Lamongan Regency. These findings are consistent with recent studies showing that socio-economic characteristics such as income, occupation, and perceived value significantly influence consumer satisfaction, as they shape expectations and evaluation standards of products and services (Konuk, 2019). Furthermore, empirical evidence also confirms that perceived fairness and service-related factors often interpreted differently across consumer segments have a significant impact on customer satisfaction and loyalty, highlighting the moderating role of consumer characteristics in shaping satisfaction outcomes (Cárdenas-Muga et al., 2025)

Validity and Reliability Test

Each questionnaire item representing the studied attributes was subjected to a validity test to ensure that the instrument accurately measured the intended constructs. The validity test was conducted using the Pearson Product Moment correlation between each item score and the total score (item-total correlation) (Hair et al., 2009). The test was performed on 115 respondents who were consumers of boneless milkfish products in Lamongan Regency. Based on this sample size, the critical *r*-table values at a significance level of 5% and 1% were 0.183 and 0.239, respectively. An item was considered valid if the calculated correlation coefficient ($r_{hitung} \geq r_{tabel}$) was greater than or equal to the *r*-table value (Ghozali, 2018). The results indicated that all questionnaire items, both in the importance and performance dimensions, had correlation values exceeding the *r*-table threshold. Therefore, all items were deemed valid and suitable for further analysis.

In addition to validity testing, a reliability test was conducted to evaluate the consistency of the research instrument in producing stable results when applied repeatedly. Reliability in this study was assessed using the Cronbach's Alpha coefficient, where a value of 0.60 or higher indicates acceptable reliability (Ghozali, 2018). The results showed that all dimensions, both importance and performance, obtained Cronbach's Alpha values greater than 0.60. Thus, the questionnaire used in this study can be considered reliable and appropriate as a research instrument.

Important Performance Analysis (IPA)

The use of the Importance–Performance Analysis (IPA) method aims to identify the attributes that influence consumers in purchasing boneless milkfish products. This method integrates the level of importance and performance of each attribute as perceived and evaluated by consumers.

Table 4. The average score of Important and Performance

No.	Attribute	Performance Average	Important Average
1	Taste	3,83	4,30
2	Texture	4,04	4,14
3	Price	4,22	4,10
4	Quality Level	3,93	4,31
5	Size	4,12	3,91

No.	Attribute	Performance Average	Important Average
6	Packaging	4,02	4,13
7	Presentation	4,02	4,08
8	Stock availability	3,96	4,06
9	Accessibility	4,03	3,46
10	Ease of transaction	3,89	3,77
11	Safety and trust	3,83	4,06
Total		43,88	44,31
Average		3,99	4,03

Source: Processed Data (2025)

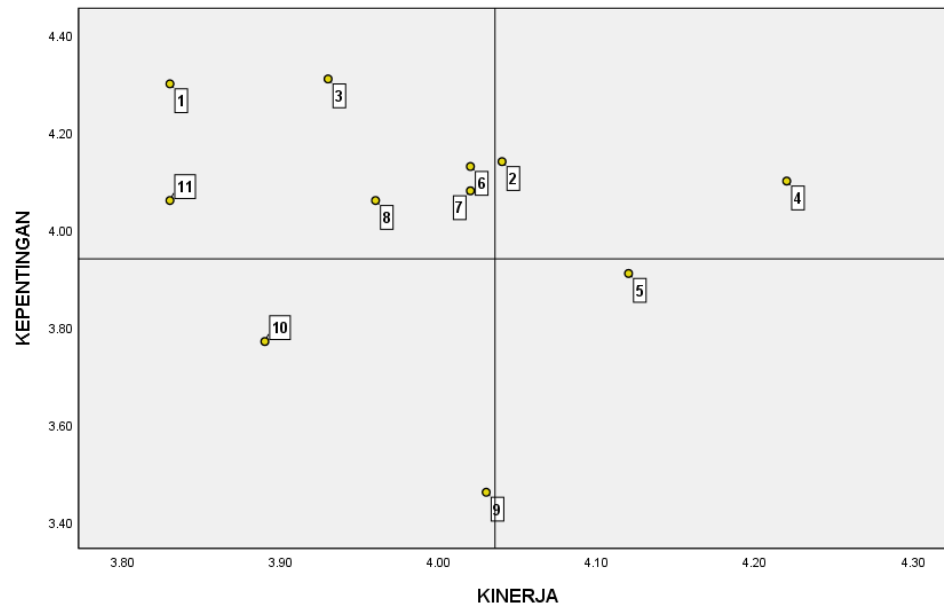


Figure 2. IPA Matrix of Consumer Perceptions toward Boneless Milkfish Products

Table 4 shows that, overall, the average importance score (4.03) is slightly higher than the average performance score (3.99), indicating that the performance of boneless milkfish products has not fully met consumer expectations. Several attributes such as taste (3.83 vs 4.30), quality level (3.93 vs 4.31), packaging (4.02 vs 4.13), stock availability (3.96 vs 4.06), and safety and trust (3.83 vs 4.06) exhibit noticeable gaps where importance exceeds performance, suggesting these attributes require improvement and should become priority areas for producers. On the other hand, attributes like price (4.22 vs 4.10) and size (4.12 vs 3.91) show higher performance than importance, indicating that these aspects are already well-managed and even exceed consumer expectations. Meanwhile, attributes such as texture, presentation, accessibility, and ease of transaction demonstrate relatively balanced scores, reflecting satisfactory performance in meeting consumer needs. Overall, the table implies that while consumers are generally satisfied, there are still several critical attributes particularly those related to product quality, taste, and trust that need to be enhanced to better align with consumer expectations.

Customer Satisfaction Index

Table 5. Customer Satisfaction Index Result

No.	Attribute	MSS	MIS	WF	WS
1	Taste	3,83	4,30	9,69	37,17

No.	Attribute	MSS	MIS	WF	WS
2	Texture	4,04	4,14	9,34	37,77
3	Price	4,22	4,10	9,24	38,98
4	Quality Level	3,93	4,31	9,73	38,26
5	Size	4,12	3,91	8,83	36,40
6	Packaging	4,02	4,13	9,32	37,45
7	Presentation	4,02	4,08	9,20	36,97
8	Stock availability	3,96	4,06	9,16	36,26
9	Accessibility	4,03	3,46	7,81	31,44
10	Ease of transaction	3,89	3,77	8,50	33,03
11	Safety and trust	3,83	4,06	9,16	35,06
Total		43,88	44,31		
				WT	398,78
				CSI	79,76%

Source: Processed Data (2025)

The Customer Satisfaction Index (CSI) was calculated based on responses from 115 respondents to assess consumer perceptions of boneless milkfish products. The CSI value was obtained by dividing the total weighted score by the maximum scale value used in the measurement, and then multiplying the result by 100. Based on the calculation results presented in Table 5, the CSI value was 79.76%, which falls within the range of 60–80%, indicating that consumers are generally satisfied with boneless milkfish products.

However, the findings also suggest that approximately 20.24% of the evaluated attributes have not fully met consumer expectations. This indicates that there is still room for improvement in product performance. Therefore, further optimization efforts are necessary, particularly by improving the key attributes identified through the Importance–Performance Analysis (IPA), in order to enhance overall consumer satisfaction in the future.

DISCUSSION

Important Performance Analysis (IPA)

Each quadrant in the IPA matrix represents a distinct condition reflecting consumer perception of product attributes. This mapping is based on the levels of importance and performance, aiming to assist business actors in identifying strategic priorities for improving products or services within a relatively short timeframe. The classification of attributes into four quadrants provides clear guidance for decision-making, whether for improvement or for maintaining quality in accordance with consumer expectations (Martilla & James, 1977). The interpretation of each quadrant is presented as follows:

1. Quadrant I (Main Priority – Attributes 1, 3, 6, 7, 8, and 11)

Attributes in this quadrant are considered highly important by consumers but exhibit performance levels that fall short of expectations. Total of six attributes are included in this quadrant, namely taste, price, packaging, presentation, stock availability, and safety and trust. Previous research by Utami et al., (2023) indicates that consumer satisfaction levels for attributes such as price, quality, and service range between 65–70%, suggesting that there is still considerable room for improvement in these aspects. Therefore, producers should implement continuous improvement strategies to enhance the performance of these critical attributes. Business actors in the fish processing industry, particularly those producing boneless milkfish, need to prioritize these attributes in order to increase consumer satisfaction and strengthen customer loyalty.

2. Quadrant II (Maintain Performance – Attributes 2 and 4)

Texture and product quality of boneless milkfish are classified in this quadrant, as they exhibit

high importance and satisfactory performance from the consumers' perspective. This indicates that these attributes are considered critical and have successfully delivered a satisfying experience to consumers. Attributes within this quadrant should be consistently maintained, as they represent the core strengths of the product in the eyes of consumers. Mihafu et al., (2020) stated that texture and quality are significant parameters in evaluating the performance of food products. Maintaining these advantages is an essential strategic effort for producers to sustain consumer satisfaction and loyalty toward boneless milkfish products. Therefore, business actors need to ensure the stability of performance in these aspects to keep them at an optimal level. The superiority of texture and quality also serves as a key indicator in shaping the overall perception of product quality.

3. Quadrant III (Low Priority – Attributes 9 and 10)

Accessibility and ease of transaction are categorized in this quadrant, indicating that these attributes are perceived as relatively less important by consumers and exhibit comparatively lower performance. Although they are not considered primary determinants of consumer preference, these attributes still play a role in enhancing overall purchasing convenience. Therefore, improvements in these aspects remain relevant, as consumers are more likely to engage in repeat purchases when their expectations are met, ultimately leading to satisfaction. Good accessibility enables consumers to obtain the product more easily, while a smooth and convenient transaction process can encourage repeat buying behavior for boneless milkfish products and contribute to increased purchase intention. Previous studies have shown that ease of access and transaction processes are significantly associated with repurchase decisions, even though they are not the main drivers of initial consumer preference (Sembiring & Setyani, 2024).

4. Quadrant IV (Possible Overkill – Attribute 5)

This quadrant contains only one attribute, namely product size, which indicates that although its performance is relatively satisfactory, its level of importance is considered low by consumers. According to the IPA framework, business actors do not need to allocate excessive resources to further improve this attribute, as its contribution to overall consumer satisfaction is relatively limited (Martilla & James, 1977).

The mapping of attributes into the IPA matrix serves as an essential basis for formulating marketing strategies and product development. It enables the identification of attributes that require improvement as well as those that should be maintained. As the variety of product alternatives increases, consumer sensitivity in evaluating whether their needs are met also becomes higher. This condition ultimately leads to greater consumer satisfaction, as consumers have more flexibility in choosing products that best match their preferences and expectations (Kotler & Keller, 2009).

Customer Satisfaction Index (CSI)

Attributes with the lowest weighted scores (WS), such as accessibility and ease of transaction, require particular attention and should be prioritized for improvement in order to meet consumer expectations. The relatively low performance of accessibility can be attributed to the limited distribution of boneless milkfish products, which are not yet widely available across traditional markets and local retail outlets in Lamongan Regency. As a result, a significant portion of consumers has limited access to the product. This condition highlights the importance of strengthening distribution networks and improving purchasing convenience as strategic efforts to significantly enhance consumer satisfaction. These findings are consistent with previous studies employing the Customer Satisfaction Index (CSI) method in food product evaluation. For instance, Anam et al., (2023) reported a CSI value of 62.4% in the context of digital marketing of fisheries products, where shipping cost was identified as a low-performing

attribute. Similarly, their study on milkfish-based processed products (otak-otak bandeng) revealed a CSI value of 68.5%, indicating a “satisfied” category but still requiring improvement in several attributes. Other studies have reported higher CSI values, such as Fauzi et al., (2023) with 82.45% (“very satisfied”), Setiawan et al., (2022) with 75.19%, and Ramadhan et al., (2023) with 79.51%, all categorized as “satisfied.” Therefore, the CSI value of 79.76% for boneless milkfish products in Lamongan shows a similar trend, although improvements are still needed, particularly in accessibility and transaction convenience.

From a broader perspective, improving accessibility and transaction processes is closely associated with enhancing perceived service quality and customer experience. Recent studies emphasize that distribution efficiency, ease of access, and transaction simplicity significantly influence customer satisfaction and repurchase intention, particularly in food and retail sectors (Konuk, 2019; Rita et al., 2019). When consumers perceive that a product is easily accessible and transactions are seamless, their perceived value increases, which in turn strengthens satisfaction and loyalty. Moreover, digitalization and omnichannel distribution strategies have been shown to improve accessibility and convenience, thereby enhancing overall customer experience in modern markets (Verhoef et al., 2021).

Overall, the Customer Satisfaction Index serves as a crucial indicator reflecting the effectiveness of marketing strategies and product quality. The CSI value approaching 80% in this study indicates relatively strong performance; however, to achieve an optimal satisfaction level (closer to 100%), continuous improvement efforts are required, particularly by addressing priority attributes identified through the IPA matrix. In this context, CSI not only functions as an evaluative tool but also as a strategic guideline for decision-making and business improvement. Strengthening key attributes such as accessibility and transaction ease, while maintaining high-performing attributes, will enable businesses to enhance competitiveness and sustain long-term customer satisfaction.

CONSLUSION

Importance Performance Analysis (IPA) reveals several key attributes categorized in Quadrant I (main priority), namely taste, price, packaging, presentation, stock availability, as well as safety and trust, which are considered highly important by consumers but have not yet achieved performance levels that meet their expectations, thus requiring immediate attention and improvement from business actors. Meanwhile, attributes such as texture and overall product quality fall into Quadrant II (maintain performance), indicating that they are both important and well-performing, and therefore should be consistently maintained to sustain consumer satisfaction. On the other hand, accessibility and ease of transaction are classified in Quadrant III (low priority), suggesting that although these attributes are less important and currently underperforming, gradual improvements are still necessary to enhance consumer convenience and long-term loyalty. The product size attribute, which is positioned in Quadrant IV (possible overkill), indicates that its performance exceeds its perceived importance, and therefore does not require additional resource allocation. Furthermore, the Customer Satisfaction Index (CSI) value of 79.76% indicates that consumers are generally satisfied with boneless milkfish products; however, approximately 20.24% of the attributes have not fully met consumer expectations, highlighting the need for continuous improvement. Accordingly, business actors are strongly encouraged to prioritize improvements in critical attributes, maintain high-performing aspects, and gradually enhance supporting factors such as accessibility and transaction convenience to strengthen competitiveness and consumer loyalty. In addition, future research is recommended to incorporate a broader range of variables and attributes that may influence consumer satisfaction and purchasing decisions, in order to provide more comprehensive insights and better reflect the evolving needs and preferences of consumers.

REFERENCES

- Anam, M. K., Muntalim, M., & Mas'ud, F. (2023). Consumer Perception on Digital Marketing of Fisheries Product in Lamongan, East Java, Indonesia. *Jurnal Analisis Bisnis Ekonomi*, 21(1), 1-18.
- Anam, M. K., Muntalim, M., & Wulandari, S. (2023). Analisis Persepsi Konsumen dalam Pembelian Produk Otak-Otak Bandeng di Kabupaten Lamongan: Pendekatan IPA dan CSI. *Jurnal Dinamika Sosial Ekonomi*, 24(2), 154-167.
- Badan Pusat Statistik. (2022). *Produksi dan Nilai Produksi Perikanan Tangkap dan Budidaya Menurut Kabupaten/Kota dan Komoditas Utama di Provinsi Jawa Timur*. Badan Pusat Statistik. Provinsi Jawa Timur.
- Badan Pusat Statistik. (2024). *Kabupaten Lamongan Dalam Angka 2024*. Badan Pusat Statistik. Lamongan.
- Cárdenas-Muga, J., Rodríguez-Zurita, D., Barcia, K. F., & Abad-Moran, J. (2025). The Role of Service Quality and Price Fairness in Explaining Customer Satisfaction and Loyalty in A Shrimp Industry B2B Relationship. *The TQM Journal*, 4(1), 9-12.
- Claret, A., Guerrero, L., Ginés, R., Grau, A., Hernández, M. D., Aguirre, E., ... & Rodríguez-Rodríguez, C. (2014). Consumer Beliefs Regarding Farmed Versus Wild Fish. *Appetite*, 79, 25-31.
- Deng, W. (2007). Using A Revised Importance–Performance Analysis Approach: The Case of Taiwanese Hot Springs Tourism. *Tourism management*, 28(5), 1274-1284.
- Dinas Komunikasi dan Informatika. (2023). *Di Tahun 2023, Angka Konsumsi Ikan di Lamongan Meningkat*. Dinas Komunikasi dan Informatika. Provinsi Jawa Timur.
- Fauzi, R. Y., Bukhari, A., & Pancawati, J. (2023). Persepsi Konsumen dan Siklus Hidup Pangan Lokal Gipang Singkong (Studi Kasus Gipang Singkong Ika-Ke, Kota Cilegon) Consumer Perceptions and Product Life Cycle of Gipang Singkong Cake (Case Study of Gipang Singkong Ika-Ke, Cilegon City). *Jurnal Ilmu Pertanian Tirtayasa*, 5(1), 347.
- Ghozali, I. (2018). *Aplikasi Analisis Multivariete dengan Program IBM SPSS 23*.
- Grunert, K. G. (2005). Food Quality and Safety: Consumer Perception and Demand. *European Review of Agricultural Economics*, 32(3), 369-391.
- Hair, J. F., Black W. C., Babin, J., & Anderson R, E. (2009). *Analisis Data Multivariat Edisi Ke-7*. Upper Saddle River, NJ: Prentice Hall, 3, 256-291.
- Hanggraeni, S. D., Budiraharjo, K., & Santoso, S. I. (2021). Analisis Faktor–Faktor yang Mempengaruhi Loyalitas Konsumen Teh Cap Bandulan di Kabupaten Pekalongan. *Mediagro*, 17(2), 161-171.
- Hill, N., & Jim, A. (2006). *Customer Satisfaction and Loyalty Measurement*. Great Britain: TJ International LTD, Padstow, Cornwall
- Joshi, A., Kale, S., Chandel, S., & Pal, D. (2015). Likert Scale: Explored and Explained. *British Journal of Applied Science & Technology*, 7(4), 396-403.
- Konuk, F. A. (2019). The Influence of Perceived Food Quality, Price Fairness, Perceived Value and Satisfaction on Customers' Revisit and Word-of-Mouth Intentions Towards Organic Food Restaurants. *Journal of Retailing and Consumer Services*, 50, 103-110.
- Kotler, P. dan Keller K.L. (2012). *Marketing Management (14th ed.)*. Prentice-Hall, New Jersey. Pearson, London
- Martilla, J. A., & James, J. C. (1977). Importance-Performance Analysis. *Journal of Marketing*, 41(1), 77-79.
- Mihafu, F. D., Issa, J. Y., & Kamiyango, M. W. (2020). Implication of Sensory Evaluation and Quality Assessment in Food Product Development: A Review. *Current Research in Nutrition and Food Science Journal*, 8(3), 690–702.
- Olsen, S. O. (2003). Understanding The Relationship Between Age and Seafood Consumption:

- The Mediating Role of Attitude, Health Involvement and Convenience. *Food quality and Preference*, 14(3), 199-209.
- Pieniak, Z., Verbeke, W., & Scholderer, J. (2010). Health-Related Beliefs and Consumer Knowledge As Determinants of Fish Consumption. *Journal of Human Nutrition and Dietetics*, 23(5), 480-488.
- Ramadhan, B. A. Z., Daryanti, D., Safitri, N., Khasanah, U. N., Eviyani, M. R., & Ratnawati, A. (2023). Analisis Tingkat Kepuasan Konsumen Terhadap Kualitas Produk dan Kualitas Pelayanan di Mie Gacoan Kartasura. *Academica: Journal of Multidisciplinary Studies*, 7(2), 299-316.
- Rita, P., Oliveira, T., & Farisa, A. (2019). The Impact of E-Service Quality and Customer Satisfaction on Customer Behavior in Online Shopping. *Heliyon*, 5(10), 15-20.
- Ryu, K., & Han, H. (2010). Influence of The Quality of Food, Service, and Physical Environment on Customer Satisfaction and Behavioral Intention in Quick-Casual Restaurants: Moderating Role of Perceived Price. *Journal of Hospitality & Tourism Research*, 34(3), 310-329.
- Sembiring, T. P. B., & Setyani, AY (2024). Analisis Pengaruh Kemudahan Transaksi dan Kepercayaan Konsumen Terhadap Penggunaan Kembali E-Commerce Tik Tok Shop. *Jurnal Pendidikan Indonesia*, 5(10), 971-987.
- Setiawan, A. D., Yamani, A. Z., & Winati, F. D. (2022). Pengukuran Kepuasan Konsumen Menggunakan Customer Satisfaction Index (CSI) dan Importance Performance Analysis (IPA) (Studi Kasus UMKM Ahul Saleh). *Jurnal Teknologi dan Manajemen Industri Terapan*, 1(4), 286-295.
- Simamora, B. (2002). *Panduan Riset Perilaku Konsumen*. Gramedia Pustaka Utama.
- Sugiyono. (2016). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Alfabeta. Bandung.
- Utami, A. U., Chastelyna, A. J., & Setyawan, B., (2023). Tingkat Kepuasan Konsumen terhadap Olahan Hasil Perikanan Festival Bazar Fakultas Pertanian Universitas PGRI Banyuwangi. *Jurnal Lemuru*, 5(1), 131-136.
- Verbeke, W. (2005). Consumer Acceptance of Functional Foods: Socio-Demographic, Cognitive and Attitudinal Determinants. *Food Quality and Preference*, 16(1), 45-57.
- Verhoef, P. C., Kannan, P. K., & Inman, J. J. (2015). From Multi-Channel Retailing to Omni-Channel Retailing: Introduction to The Special Issue on Multi-Channel Retailing. *Journal of Retailing*, 91(2), 174-181.