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**ANALYSIS OF CONSUMER SATISFACTION TOWARD THE QUALITY OF  
MORINGA LEAF NOODLES (MIGREEN) PRODUCT BY PT LIEFDE HERB  
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**Abstract**

This study aimed to analyze consumer satisfaction with the quality of MiGreen Moringa leaf noodles with Chicken Onion flavor produced by PT Liefde Herb Nusantara using Importance Performance Analysis (IPA), Customer Satisfaction Index (CSI), and GAP Analysis. The research was conducted in the Special Region of Yogyakarta from November 2025 to Juni 2026 using a quantitative descriptive approach. Data were collected through questionnaires from 50 respondents selected using accidental sampling. The IPA results showed that no product attributes were located in Quadrant I, indicating that there were no attributes requiring immediate priority improvement among the sampled respondents. However, several attributes were distributed in other quadrants, suggesting that product quality still requires continuous evaluation, particularly in terms of taste, color, and serving practicality. The Customer Satisfaction Index (CSI) value of 79.49% indicated that consumers were generally satisfied with the product. Meanwhile, the GAP Analysis showed a total GAP value of -2.78 and an average GAP value of -0.15, indicating that product performance was slightly below consumer expectations. Although the gap was relatively small and the product was still well accepted, the findings should be interpreted carefully due to the limited sample size and the use of accidental sampling. Therefore, PT Liefde Herb Nusantara is advised to maintain product attributes that already perform well while improving attributes with lower performance to enhance consumer satisfaction and support broader market acceptance.

**Keywords:** Consumer Satisfaction, Product Quality, Moringa Leaf Noodles, IPA, CSI, GAP Analysis



## INTRODUCTION

Food is a basic human need that plays a vital role in various aspects of life, including physiological, psychological, and social aspects. Besides being a source of energy and nutrition, food also shapes people's consumption patterns. Along with these evolving consumption patterns, convenient foods such as instant noodles are gaining popularity as an easy-to-prepare alternative. Instant noodle consumption in the Special Region of Yogyakarta Province has experienced steady and increasing growth, particularly in urban areas, driven by lifestyle changes and the need for convenient foods (Azzahra et al., 2025).

With the increasing public preference for convenient foods, instant noodles have become a popular choice due to their ease of preparation. However, instant noodle consumption is often not accompanied by healthy eating habits. Many people consume instant noodles without additional ingredients such as vegetables. Furthermore, instant noodles generally contain significant amounts of oil and MSG, which, if consumed excessively, can cause various health problems (Madeleine & Oktavia, 2024). This situation has encouraged many manufacturers to develop innovations to create healthier instant noodle variants, either through the use of natural ingredients or by reducing the composition of additives that pose health risks. One innovation currently being developed is the use of moringa leaves as a raw material for healthy instant noodles. Due to the high nutritional and antioxidant content of moringa leaves, they are thought to provide superior health benefits compared to regular instant noodles.

Health benefits alone are not enough to guarantee consumer acceptance of a product. Rosita et al. (2022) explain that product quality is a highly sensitive aspect for both consumers and companies, so any discrepancies in product attributes can impact customer satisfaction levels. Satisfaction arises when a product's performance meets or even exceeds consumer expectations. This view is reinforced by Masnun et al. (2024), who state that product quality has a direct impact on consumer satisfaction. Nabila (2024) similarly stated that product quality is a crucial factor influencing consumer decisions when purchasing instant noodles made from moringa leaves. A product can be considered high-quality if it meets consumer expectations, attracting more buyers and increasing competitiveness in the market.

One instant noodle product marketed using moringa leaf extract is MiGreen, produced by PT Liefde Herb Nusantara. MiGreen is an alternative to instant noodles made with natural ingredients, developed to meet the demand for healthier and more innovative food products. However, increasing public interest



in healthy food products does not necessarily guarantee high acceptance. In practice, MiGreen still faces various challenges, particularly in terms of product quality, where consumer complaints persist regarding the quality of the noodles produced. When assessing the quality of instant noodles, consumers typically consider product attributes such as taste, texture, aroma, color, and packaging. Afia et al. (2022) stated that taste, texture, aroma, and color are factors considered very important by consumers in determining the overall quality of instant noodles. Therefore, in moringa leaf noodle products like MiGreen, these attributes must be consistently maintained. Taste and aroma influence sensory acceptance, texture and firmness of the noodles determine consumption comfort, while color and appearance reflect the quality of the raw materials.



Figure 1

### MiGreen Sales Graph from January to October 2025

Based on the sales graph above, MiGreen sales experienced a significant decline in October 2025. However, this decline should not be interpreted as direct evidence of consumer dissatisfaction, as sales performance may also be influenced by various factors such as marketing activities, market competition, distribution conditions, and purchasing power. Nevertheless, the decline indicates the need for further evaluation of consumer perceptions toward MiGreen, particularly regarding product quality attributes that may influence satisfaction and future purchase intentions. According to Masnun et al. (2024), product quality has a direct relationship with customer satisfaction. The better the quality perceived by consumers, the higher the level of satisfaction that arises, thereby increasing the likelihood of repeat purchases. Therefore, evaluating consumer satisfaction is important to provide a deeper understanding of how consumers assess the quality of MiGreen products and to identify product attributes that require attention and continuous improvement. Regardless of the general sales conditions of MiGreen, internal evaluations show that the Mi Goreng variant has a more stable acceptance than the Ayam Bawang flavored noodle soup variant, which still requires more attention in terms of product



quality. Therefore, this study focused on the Ayam Bawang flavored noodle soup variant to evaluate its attributes and level of consumer satisfaction. By considering these conditions, this research is important to analyze consumer perceptions of MiGreen product quality, measure consumer satisfaction levels, and identify product attributes that may become the focus of future quality development efforts.

## **LITERATURE REVIEW**

### **Moringa**

Moringa (*Moringa oleifera* Lam.) is widely known in Indonesia as both a food ingredient and a traditional medicinal plant. The Indonesian Food and Drug Authority (BPOM) (2016) stated that moringa has high nutritional content, is safe for consumption, and has the potential to be developed as a natural-based functional food ingredient. The leaves are the most commonly utilized part of the plant because they contain protein, vitamins, minerals, and antioxidant compounds that may contribute to health benefits. In addition, moringa leaves can be processed through drying and flouring, making them suitable for incorporation into various food products, including noodles.

However, the use of moringa as a functional ingredient should not be evaluated solely based on its nutritional value. In food product development, nutritional improvement does not automatically guarantee consumer acceptance because the incorporation of moringa leaves may alter sensory characteristics such as taste, aroma, color, and texture. These attributes are important determinants of consumer perceptions and satisfaction. Therefore, although moringa provides additional nutritional benefits, the success of moringa-based noodle products depends not only on their health advantages but also on their ability to meet consumer expectations regarding product quality. This highlights the importance of evaluating consumer perceptions and satisfaction to determine whether the nutritional benefits of moringa leaf noodles are accompanied by acceptable sensory characteristics.

### **Moringa Leaf Noodles**

Moringa leaf noodles are functional food products made by combining wheat flour with moringa leaf powder to improve nutritional value. BPOM (2016) emphasized that moringa powder contains nutrients and bioactive compounds that can enhance the nutritional quality of food products. Research by Zula et al. (2021) also confirmed that moringa fortification can increase the nutritional composition of noodles compared with regular noodles. This evidence supports



the use of moringa as a promising ingredient for developing healthier noodle products.

Nevertheless, nutritional improvement may also create product quality challenges. According to Koswara (2009), noodles can be enriched using additional ingredients, while Sutomo (2008) explained that flour, starch, eggs, water, salt, oil, and natural coloring influence noodle texture, elasticity, flavor, and appearance. This means that moringa fortification may improve nutritional value but may also affect sensory quality. For example, the natural green color, distinctive aroma, and possible herbal taste of moringa may be perceived positively by some consumers but less favorably by others. Therefore, moringa leaf noodles should be assessed not only as a healthier alternative but also as a product whose sensory and practical attributes determine consumer satisfaction.

### **Product Quality**

Product quality refers to a product's ability to perform according to consumer needs and expectations. Harjadi and Arraniri (2021) explained that product quality includes aspects such as durability, reliability, precision, and ease of use, while Tjiptono (2015) described product quality through dimensions such as performance, features, reliability, conformity, durability, serviceability, aesthetics, and perceived quality. These dimensions are relevant because consumers usually evaluate a product based on both objective characteristics and subjective perceptions.

In the context of food products, product quality is strongly related to sensory attributes. Taste, texture, aroma, color, and packaging practicality are important indicators because they directly influence the consumer's eating experience. Koswara (2009) and Annisa et al. (2023) emphasized that sensory and practical attributes play a role in shaping consumer perceptions of food quality. Kotler and Armstrong (2017) also stated that product attributes may influence consumer purchasing decisions. These perspectives indicate that product quality is not a single concept but a combination of several attributes evaluated by consumers.

For moringa leaf noodles, the concept of product quality becomes more complex because the product carries both functional and sensory expectations. Consumers may expect the product to be healthier than conventional noodles, but they may still demand acceptable taste, attractive color, pleasant aroma, suitable texture, and practical preparation. Therefore, product quality in this study is examined through several attributes, namely flavor, texture, aroma, color, and practicality of presentation. These attributes are relevant because they represent



the main aspects consumers are likely to evaluate when consuming MiGreen moringa leaf noodles.

### **Customer Satisfaction**

Customer satisfaction is generally formed through the comparison between consumer expectations and actual product performance. Tjiptono (2015) defines customer satisfaction as an emotional response that arises when consumers compare their initial expectations with the performance of a product or service they receive. Satisfaction occurs when product performance meets or exceeds expectations, whereas dissatisfaction occurs when performance is lower than expected.

This explanation is consistent with the Expectation Disconfirmation approach. According to this perspective, consumers do not evaluate a product only based on its physical characteristics, but also based on the gap between what they expected and what they experienced. Positive disconfirmation occurs when product performance exceeds expectations, leading to satisfaction. Negative disconfirmation occurs when product performance fails to meet expectations, leading to dissatisfaction. This theory is relevant to MiGreen because consumers may have specific expectations toward a healthier noodle product, including expectations about taste, texture, aroma, color, and serving practicality.

The relationship between product quality and customer satisfaction is therefore not automatic but evaluative. A product may have high nutritional value, yet consumers may still feel dissatisfied if its sensory attributes do not meet their expectations. Conversely, consumers may accept a functional food product if its quality attributes are perceived as adequate, even if some attributes still require improvement. Thus, customer satisfaction in this study is understood as the result of consumers' evaluation of MiGreen's product quality attributes.

### **Consumer Satisfaction Measurement Tools**

Consumer satisfaction can be measured using several analytical tools. Importance Performance Analysis (IPA) is used to compare the importance level of each attribute with its perceived performance. Dzulfikar et al. (2021) explained that IPA maps product attributes into quadrants that can help determine improvement priorities. The strength of IPA lies in its ability to identify which attributes should be prioritized, maintained, monitored, or managed efficiently. However, IPA should be interpreted carefully because the absence of attributes in Quadrant I does not necessarily mean that the product has no weaknesses. Attributes in Quadrant III or Quadrant IV may still provide important managerial



information, especially when their performance or relevance may change over time.

The Customer Satisfaction Index (CSI) is used to measure the overall level of consumer satisfaction based on predetermined product attributes. Dzulfikar et al. (2021) stated that CSI expresses satisfaction in percentage form according to specific satisfaction criteria. The advantage of CSI is that it provides a clear overall satisfaction score, making it easier to interpret the general level of consumer satisfaction. However, CSI alone does not identify which specific attributes require improvement. Therefore, CSI needs to be complemented by other methods.

GAP Analysis is useful for identifying the difference between consumer expectations and perceived product performance. A negative gap indicates that product performance is below consumer expectations, while a positive gap indicates that performance exceeds expectations. In this study, GAP Analysis complements IPA and CSI by showing whether each attribute has met consumer expectations. The combination of IPA, CSI, and GAP Analysis is therefore appropriate because the three methods provide different but complementary information: IPA identifies attribute priorities, CSI measures overall satisfaction, and GAP Analysis evaluates the direction and size of expectation-performance differences.

Based on the literature, previous studies have shown that moringa leaf noodles have potential as healthier food products because of their nutritional value. However, previous discussions have focused more on product development and nutritional improvement than on consumer satisfaction with product quality attributes. This creates a research gap because the market success of functional food products depends not only on nutritional benefits but also on consumer evaluation of sensory and practical attributes. Therefore, this study analyzes consumer satisfaction with MiGreen moringa leaf noodles by examining product quality attributes through IPA, CSI, and GAP Analysis.

## **RESEARCH METHOD**

This study was conducted in the Special Region of Yogyakarta from November 2025 to Juni 2026 to analyze consumer satisfaction with MiGreen moringa leaf noodles produced by PT Liefde Herb Nusantara. A quantitative descriptive method with a survey approach was employed because the study aimed to describe consumer evaluations of product quality attributes based on measurable perception scores.



The research location was selected purposively because Yogyakarta is one of the main marketing areas for MiGreen products. Data were collected through questionnaires and documentation. The questionnaire was used to obtain consumer assessments of product quality attributes, while documentation was used to support the description of the product and company context.

Respondents were selected using accidental sampling, a non-probability sampling technique in which respondents were chosen based on their availability and willingness to participate. This technique was used because the study focused on consumers who had direct experience with noodle products and were accessible during the data collection period. The respondent criteria included: being at least 17 years old, having consumed noodles previously, liking noodle products, and being willing to participate in the study. A total of 50 respondents were involved, following the rule-of-thumb approach suggested by Ranatunga et al. (2020).

Although accidental sampling is practical for exploratory consumer satisfaction research, this method has limitations in terms of representativeness. Since not all MiGreen consumers in Yogyakarta had an equal chance of being selected, the sample may not fully represent the broader population of MiGreen consumers. Therefore, the findings of this study should be interpreted as an indication of consumer satisfaction among the sampled respondents rather than as a general conclusion for all MiGreen consumers in Yogyakarta or other markets.

The questionnaire used a five-point Likert scale to measure consumer perceptions of product quality attributes, including flavor, texture, aroma, color, and practicality of presentation. Data analysis included validity testing using the Pearson Product Moment correlation and reliability testing using Cronbach's Alpha coefficient (Sugiyono, 2013). After the instrument was declared valid and reliable, the data were analyzed using Importance Performance Analysis (IPA), Customer Satisfaction Index (CSI), and GAP Analysis. IPA was used to identify the position of each product attribute based on importance and performance levels, CSI was used to measure the overall level of consumer satisfaction, and GAP Analysis was used to examine the difference between consumer expectations and perceived product performance.



## RESULTS AND DISCUSSION

### Company Overview



**Figure 1**

#### **Company Logo of PT Liefde Herb Nusantara**

PT Liefde Herb Nusantara is a company engaged in the processing of functional foods and herbal beverages, focusing on providing products based on natural ingredients with health benefits. In running its business, PT Liefde Herb Nusantara has a vision to provide a distinctive experience to consumers through healthy, high-quality products and impressive service. Its mission is to provide herbal products that are practical, highly nutritious, and easy to consume at any time, while also raising public awareness of the importance of consuming healthy, naturally based foods.

#### **Product Profile**

One of PT Liefde Herb Nusantara's flagship products is moringa leaf noodles, branded "MiGreen." This functional food innovation utilizes moringa leaves as the main ingredient, known for their high nutritional content and health benefits. It is available in two flavors: moringa leaf noodles with chicken and onion soup and fried noodles.

MiGreen was developed as a healthy noodle alternative that not only prioritizes taste but also provides added value in the form of nutritional content that is beneficial for the body. This product is made using quality raw materials, such as high-protein flour combined with selected moringa leaves. This product is produced with strict attention to quality and food safety aspects and has P-IRT and Halal certification. The following are images of MiGreen product variants Chicken Onion soup and fried variants:



**Figure 2**

#### **MiGreen Onion Chicken Variant and Fried Variant**



## RESULTS AND DISCUSSION

### Validity Test

Validity testing was conducted to determine the instrument's accuracy in measuring the research variables. An item in all questions is declared valid if the R-calculated correlation coefficient value is greater than the R-table value (Sugiyono, 2013). In this study, the number of respondents was 30 people (N = 30) with a significance level of 5% ( $\alpha = 0.05$ ), resulting in an R-table value of 0.361. The results of the questionnaire validity test for the variables studied are presented in the following table:

**Table 1**  
**Validity Test**

Dimensions	Code	Importance			Performance		
		R-Count	R-Table	Decision	R-Count	R-Table	Decision
Flavor	R1	0.594	0.361	Valid	0.788	0.361	Valid
	R2	0.632	0.361	Valid	0.569	0.361	Valid
	R3	0.818	0.361	Valid	0.792	0.361	Valid
	R4	0.872	0.361	Valid	0.760	0.361	Valid
Texture	T1	0.438	0.361	Valid	0.517	0.361	Valid
	T2	0.755	0.361	Valid	0.878	0.361	Valid
	T3	0.767	0.361	Valid	0.810	0.361	Valid
	T4	0.784	0.361	Valid	0.757	0.361	Valid
Aroma	A1	0.840	0.361	Valid	0.787	0.361	Valid
	A2	0.794	0.361	Valid	0.797	0.361	Valid
	A3	0.801	0.361	Valid	0.661	0.361	Valid
Color	W1	0.662	0.361	Valid	0.877	0.361	Valid
	W2	0.701	0.361	Valid	0.874	0.361	Valid
	W3	0.723	0.361	Valid	0.829	0.361	Valid
	W4	0.767	0.361	Valid	0.697	0.361	Valid
Practicality of Presentation	K1	0.781	0.361	Valid	0.898	0.361	Valid
	K2	0.818	0.361	Valid	0.822	0.361	Valid
	K3	0.674	0.361	Valid	0.516	0.361	Valid
	K4	0.920	0.361	Valid	0.786	0.361	Valid

Source: Processed Data, 2026

Based on Table 1, all question items for both importance and performance variables had calculated R-values greater than the R-table value of 0.361. The calculated R-values for the importance variable ranged from 0.438 to 0.920, while



those for the performance variable ranged from 0.516 to 0.898. These results indicate that all questionnaire items were valid and could be used to collect data on consumer evaluations of MiGreen product quality attributes.

The validity results also show that the selected indicators were relevant to the evaluation of moringa leaf noodles. Attributes such as flavor, texture, aroma, color, and practicality are appropriate because they represent the main aspects consumers typically consider when assessing noodle products. However, validity in this context only shows that the instrument items were statistically acceptable; it does not prove that the sample fully represents all MiGreen consumers. Therefore, the interpretation of subsequent findings should still consider the sampling limitations of this study.

**Reliability Test**

This reliability test is conducted to determine the level of consistency of the research instrument in measuring the variables studied by examining the results of the Cronbach's Alpha value in SPSS. If the resulting Cronbach's Alpha value is > 0.60, the variable is considered reliable. The following are the results of the reliability test for variables X (performance) and Y (importance):

**Table 2**  
**Reliability Test**

<b>Indicator</b>	<b>Cronbach's Alpha</b>	<b>Total Instruments</b>	<b>Decision</b>
Performance (X)	0.853	19	<b>Reliable</b>
Importance (Y)	0.852	19	<b>Reliable</b>

Source: Processed Data 2026

Based on Table 2, the performance variable obtained a Cronbach's Alpha value of 0.853, while the importance variable obtained a Cronbach's Alpha value of 0.852. Both values were higher than 0.60, indicating that the questionnaire had good internal consistency. This means that the instrument was reliable for measuring consumer perceptions of the importance and performance of MiGreen product quality attributes.

Nevertheless, reliability only indicates consistency among the questionnaire items. It does not eliminate the possibility of respondent bias, especially because the sample was dominated by young student consumers. Therefore, while the instrument was statistically reliable, the interpretation of consumer satisfaction should be limited to the characteristics of the respondents involved in this study.

**Respondent Characteristics**



The respondents in this study consisted of 50 people residing in Yogyakarta City who had consumed MiGreen Moringa Leaf Noodles with Chicken Onion Soup flavor. Based on gender, most respondents were female, totaling 34 people or 68%, while male respondents totaled 16 people or 32%. This composition suggests that female consumers were more represented in this study. Pangestika et al. (2025) stated that women tend to be more active in selecting and evaluating food products related to health and lifestyle. However, this finding should be interpreted carefully because the higher proportion of female respondents may also be influenced by the accidental sampling technique used in the study.

In terms of age, the respondents were dominated by the 20–29 age group, totaling 36 people or 72%. Respondents aged 17–19 years accounted for 26%, while respondents over 40 years old accounted for only 2%. Most respondents were unmarried, totaling 49 people or 98%. In terms of education, most respondents had a high school or vocational high school background, totaling 44 people or 88%. Based on occupation, students dominated the sample with 45 respondents or 90%. In addition, 40 respondents or 80% had monthly incomes below IDR 1,500,000.

This demographic profile indicates that the findings mainly reflect the perceptions of young, unmarried, student consumers with relatively low income levels. This group may evaluate MiGreen differently from older consumers, working consumers, households, or consumers with higher purchasing power. Young student consumers may be more open to innovative and healthy food products, but they may also be more price-sensitive and more accustomed to conventional instant noodles in terms of taste, color, and cooking practicality. Therefore, the results of this study should not be generalized to all MiGreen consumers in Yogyakarta. Instead, the findings are more accurately interpreted as an overview of consumer satisfaction among the sampled respondents, particularly young student consumers.

### **Data analysis**

#### **IPA Analysis Method (Importance Performance Analysis)**

The average score of the performance and importance levels is used to determine the location of the attributes in each quadrant. While the total average of the average performance and the average level of importance is used to determine the location of the midpoint of the X and Y axes. The results of the IPA analysis obtained the average score and the average performance and importance as follows:

**Table 3.**

**Average Score of Performance and Importance Levels**

<b>Code</b>	<b>Attribute</b>	<b>Average Performance</b>	<b>Average Importance</b>
<b>Flavor</b>			
R1	The taste of Moringa leaf noodles (MiGreen) is delicious when consumed	3.90	4.08
R2	The taste of Moringa leaf noodles (MiGreen) is not bitter	4.22	4.10
R3	The taste of Moringa leaf noodles (MiGreen) suits my taste	3.60	3.92
R4	The taste of Moringa leaf noodles (MiGreen) is according to my expectations	3.80	4.06
<b>Texture</b>			
T1	The texture of the Moringa leaf noodles (MiGreen) feels chewy	4.12	4.22
T2	The texture of the Moringa leaf noodles (MiGreen) does not break easily when cooked.	3.84	4.06
T3	The texture of the Moringa leaf noodles (MiGreen) is not soft when consumed	4.12	4.06
T4	The texture of Moringa leaf noodles (MiGreen) is comfortable when chewed	4.20	4.44
<b>Aroma</b>			
A1	The aroma of Moringa leaf noodles (MiGreen) is not pleasant	4.12	4.22
A2	The aroma of Moringa leaf noodles (MiGreen) feels natural	3.98	4.00
A3	The aroma of Moringa leaf noodles (MiGreen) is not disturbing when consumed.	4.18	4.30
<b>Color</b>			



Code	Attribute	Average Performance	Average Importance
W1	The color of the Moringa leaf noodles (Mi Green) looks attractive	3.58	3.84
W2	The color of the Moringa leaf noodles (Mi Green) looks natural	4.08	4.24
W3	The color of the Moringa leaf noodles (Mi Green) matches the Moringa leaf ingredients.	3.76	3.94
W4	The color of the Moringa leaf noodles increases my interest in consuming them.	3.68	3.88
<b>Practicality of Presentation</b>			
K1	Moringa leaf noodles (MiGreen) are ready to be served	4.00	4.32
K2	The cooking time for moringa leaf noodles is relatively short.	3.78	4.02
K3	Serving instructions on the packaging are easy to understand.	4.28	4.30
K4	Practical noodle serving for daily consumption	4.10	4.12
Average		3.96	4.11

Source: Processed Data 2026

The midpoints of the X and Y axes were then obtained with average performance and importance levels of 3.96 and 4.11, respectively. The location of each attribute was then obtained based on the average performance (X) and average importance (Y). The following is the location of the Moringa leaf noodle (MiGreen) attributes presented in each quadrant as follows:

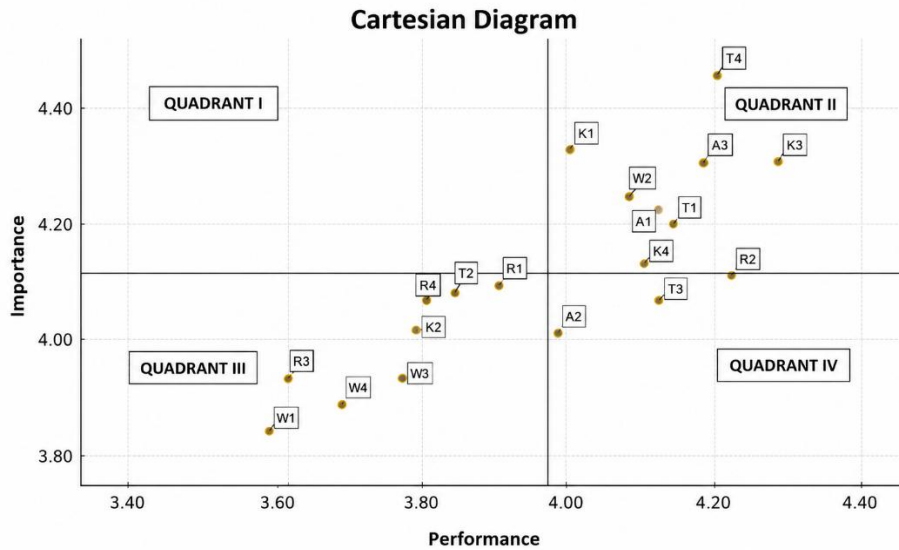
**Figure 3****Cartesian Diagram of Moringa Leaf Noodle (MiGreen) Attributes**

Image: Researcher, 2026

Information:

R (Taste), T (Texture), A (Aroma), W (Color), K (Practicality of Serving)

Based on Figure 3. the location of each attribute in the Cartesian diagram, the following explanation of the attributes of Moringa leaf noodles (MiGreen) is obtained:

**1) Quadrant I (Top Priority)**

Quadrant I describes attributes considered important but still have a low level of performance and therefore require immediate priority improvement. According to Setiawan et al. (2022), attributes in quadrant I indicate a gap between the level of importance and the level of product performance perceived by consumers. Based on the results of the Importance Performance Analysis (IPA), no attributes fell into quadrant I. This indicates that the attributes considered important by consumers already have a sufficient level of performance to meet consumer expectations. Therefore, there are no attributes that are a top priority for immediate improvement. This situation may also be influenced by the characteristics of the respondents in this study, the majority of whom were students aged 20-29. This group of respondents tends to be more open to innovative food products and has a fairly good tolerance for several product attributes, such as serving time and the characteristics of Moringa leaf noodles. Furthermore, respondents focused more on the product's consumption experience, such as taste, aroma, texture, and ease of preparation, which were



generally considered to perform well. The absence of attributes in quadrant I indicates that the Moringa Leaf Noodles (MiGreen) with Onion Chicken Soup variant has generally delivered performance that meets consumer needs. However, the company still needs to maintain product quality and conduct regular evaluations to maintain consumer satisfaction and to continuously improve product quality to meet future consumer needs.

## 2) Quadrant II (Maintain Performance)

Quadrant II describes attributes with equally high levels of importance and performance, thus meeting consumer expectations. According to Wisudawati et al. (2023), attributes in quadrant II indicate that their quality and performance need to be maintained because they have successfully met consumer expectations. Attributes in this quadrant indicate that consumers consider these attributes important and that the product's performance has been able to satisfy them. Therefore, attributes in quadrant II need to maintain their quality and performance to maintain consumer satisfaction. The attributes included in quadrant II are T1 (the texture of the moringa leaf noodles feels chewy), T4 (the texture of the moringa leaf noodles is comfortable to chew), A1 (the aroma of the moringa leaf noodles is not unpleasant), A3 (the aroma of the moringa leaf noodles is not disturbing when consumed), W2 (the color of the moringa leaf noodles looks natural), K1 (the moringa leaf noodles are easy to prepare), K3 (the serving instructions on the packaging are easy to understand), and K4 (the noodles are practical for everyday consumption). The texture attribute, which feels chewy and comfortable when chewed, indicates that consumers feel the quality of the noodle texture meets the expected characteristics of the noodles. Furthermore, the aroma attribute, which is not unpleasant and does not disturb when consumed, indicates that the use of moringa leaves in the product is still well-accepted by consumers without producing an undesirable aroma. Regarding the color attribute, consumers considered the color of the moringa leaf noodles to be natural, thus giving the impression that the product uses natural ingredients from moringa leaves. Meanwhile, the practicality of serving attributes, such as ease of preparation, easy-to-understand serving instructions, and practicality for everyday consumption, indicate that the product has This meets the needs of the majority of respondents, who are predominantly students. This group of respondents tends to prefer food products that are practical, easy to prepare, and suitable for daily activities. Based on these results, it can be seen that the attributes in Quadrant II have been able to meet consumer importance and expectations.



Therefore, companies need to maintain product quality in these attributes to maintain consumer satisfaction and increase consumer loyalty.

### 3) Quadrant III (Low Priority)

Quadrant III describes attributes that have a low level of importance and performance according to consumers. Attributes in quadrant III represent attributes with a relatively low level of importance and performance and are therefore not yet a top priority for improvement. However, these attributes are still considered because consumer needs and preferences can change over time (Wisudawati et al., 2023). Attributes included in quadrant III are R1 (the taste of the moringa leaf noodles is delicious when consumed), R3 (the taste of the moringa leaf noodles meets consumer tastes), R4 (the taste of the moringa leaf noodles meets consumer expectations), T2 (the texture of the moringa leaf noodles does not break easily when cooked), W1 (the color of the moringa leaf noodles is attractive), W3 (the color of the moringa leaf noodles matches the moringa leaf ingredients), W4 (the color of the moringa leaf noodles increases consumer interest), and K2 (the cooking time for the moringa leaf noodles is relatively short). Regarding taste, consumers considered the taste of the moringa leaf noodles (MiGreen) to be quite good, but this attribute was not a primary concern compared to other attributes such as texture, aroma, and practicality of serving. This may be influenced by the characteristics of the respondents, who are mostly students and university students who tend to be more open to innovative food products. Consequently, the distinctive taste of moringa leaves is still well-received by consumers. Regarding attribute T2, namely the texture of moringa leaf noodles that doesn't break easily during cooking, consumers considered this attribute to be less of a priority compared to other attributes. Although some consumers still found noodles that broke during cooking, this did not significantly impact overall consumer satisfaction. This indicates that consumers are still accepting the texture of moringa leaf noodles (MiGreen) as long as the product remains comfortable to consume and has good taste, aroma, and practicality. Furthermore, color attributes, such as the noodles' attractive appearance, matching the moringa leaf ingredient, and increasing consumption interest, also fall into quadrant III. This indicates that product color is not a primary factor influencing consumer decisions to consume moringa leaf noodles (MiGreen). Consumers tend to focus more on the direct consumption experience than the product's visual appearance. Meanwhile, the relatively short noodle cooking time (K2) also falls into quadrant III. This indicates that consumers do not consider cooking time to be a very important attribute compared to other attributes. Although the cooking time for Moringa leaf noodles (MiGreen) is



relatively longer, at around 10 minutes, the majority of respondents were still able to accept this serving time. They tended to understand that Moringa leaf noodles (MiGreen) are a healthy noodle product made from natural ingredients and do not use many additives like commercial instant noodles. Therefore, consumers were able to accept the relatively longer cooking time, considering it commensurate with the quality and benefits of the product. Based on these results, it can be seen that attributes in quadrant III are not yet a top priority for improvement. However, the company still needs to evaluate and monitor these attributes to adapt to changing consumer needs and preferences in the future.

#### 4) Quadrant IV (Excessive)

Quadrant IV indicates low importance and excessive performance. According to Adilah et al. (2023), attributes in quadrant IV represent attributes with relatively low importance but high performance, so the company does not need to make excessive improvements to these attributes. Therefore, quadrant IV is not a top priority for improvement because consumers already perceive these attributes as adequate. The attributes included in quadrant IV are R2 (the taste of moringa leaf noodles is not bitter), T3 (the texture of moringa leaf noodles is not mushy when consumed), and A2 (the aroma of moringa leaf noodles is natural). For attribute R2, consumers rated the taste of moringa leaf noodles (MiGreen) as not bitter and as having performed well. This indicates that the use of moringa leaves in the product is acceptable to consumers without causing excessive bitterness. However, this attribute was considered less important by consumers compared to other attributes such as texture comfort and a mild aroma. Furthermore, attribute A2, which indicated the aroma of moringa leaf noodles is natural, indicates that consumers are accepting the natural aroma of moringa leaves in the noodle product. This natural aroma suggests that the product uses natural ingredients and possesses the distinctive characteristics of moringa leaves.

Based on these results, it can be seen that the attributes in quadrant IV have performed well and are acceptable to consumers. Therefore, the company can maintain the quality of these attributes without needing to make excessive improvements, so that the company can focus more resources on other attributes that are more needed by consumers.

#### **Customer Satisfaction Index (CSI)**

The Customer Satisfaction Index (CSI) analysis yields the average importance score (MIS) and the average performance/satisfaction score (MSS) for each product attribute. The MIS indicates the importance of the attribute



according to consumers, while the MSS indicates the performance or satisfaction level of consumers with the product attribute.

The MIS and MSS values are then used to calculate the Customer Satisfaction Index (CSI) through several steps, namely the Weighting Factor (WF), Weighting Score (WS), and Total Weight (WT). These calculations are conducted to determine the overall level of consumer satisfaction with the Moringa Leaf Noodles (MiGreen) with Onion Chicken Soup variant. The results of the Customer Satisfaction Index (CSI) calculation are presented in the following table:

Table 4

Results of the Customer Satisfaction Index (CSI) Method Analysis

Code	Attribute	$\Sigma X$	$\Sigma Y$	MI	MSS	WF	WS
<b>Flavor</b>							
R1	The taste of Moringa leaf noodles (MiGreen) is delicious when consumed	195	204	4.08	3.90	25.24	98.46
R2	The taste of Moringa leaf noodles (MiGreen) is not bitter	211	205	4.10	4.22	25.37	107.06
R3	The taste of Moringa leaf noodles (MiGreen) suits my taste	180	196	3.92	3.60	24.25	87.32
R4	The taste of Moringa leaf noodles (MiGreen) is according to my expectations	190	203	4.06	3.80	25.12	95.47
						<b>WT</b>	<b>388.32</b>
						<b>CSI (%)</b>	<b>77.66 Satisfied</b>
<b>Texture</b>							
T1	The texture of the Moringa leaf noodles (MiGreen) feels chewy	206	211	4.22	4.12	25.14	103.61
T2	The texture of the Moringa leaf noodles (MiGreen) does not break easily when cooked.	192	203	4.06	3.84	24.19	92.91
T3	The texture of the Moringa leaf noodles (MiGreen) is not soft when consumed	206	203	4.06	4.12	24.19	99.68



Code	Attribute	$\Sigma X$	$\Sigma Y$	MI	MSS	WF	WS
T4	The texture of Moringa leaf noodles (MiGreen) is comfortable when chewed	210	222	4.44	4.20	26.46	<b>111.13</b>
		<b>WT</b>				<b>407.34</b>	
		<b>CSI (%)</b>				<b>81.46 (Very satisfied)</b>	
<b>Aroma</b>							
A1	The aroma of Moringa leaf noodles (MiGreen) is not unpleasant	206	211	4.22	4.12	33.70	<b>138.86</b>
A2	The aroma of Moringa leaf noodles (MiGreen) feels natural	199	200	4.00	3.98	31.94	<b>127.15</b>
A3	The aroma of Moringa leaf noodles (MiGreen) is not disturbing when consumed.	209	215	4.30	4.18	34.34	<b>143.56</b>
		<b>WT</b>				<b>409.58</b>	
		<b>CSI (%)</b>				<b>81.91 (Very satisfied)</b>	
<b>Color</b>							
W1	The color of the Moringa leaf noodles (MiGreen) looks attractive	179	192	3.84	3.58	24.15	<b>86.46</b>
W2	The color of the Moringa leaf noodles (MiGreen) looks natural	204	212	4.24	4.08	26.66	<b>108.80</b>
W3	The color of the Moringa leaf noodles (MiGreen) matches the Moringa leaf ingredients.	188	197	3.94	3.76	24.77	<b>93.17</b>
W4	The color of the Moringa leaf noodles increases my interest in consuming them.	184	194	3.88	3.68	24.40	<b>89.80</b>
		<b>WT</b>				<b>378.23</b>	
		<b>CSI (%)</b>				<b>75.64 Satisfied</b>	
<b>Practicality of Presentation</b>							



Code	Attribute	$\Sigma X$	$\Sigma Y$	MI	MSS	WF	WS
K1	Moringa leaf noodles (MiGreen) are easy to serve	200	216	4.32	4.00	25.77	103.10
K2	The cooking time for moringa leaf noodles is relatively short.	189	201	4.02	3.78	23.98	90.66
K3	Serving instructions on the packaging are easy to understand.	214	215	4.30	4.28	25.65	109.80
K4	Practical noodle serving for daily consumption	205	206	4.12	4.10	24.58	107.78
<b>WT</b>						<b>404.36</b>	
<b>CSI (%)</b>						<b>80.87 Satisfied</b>	
<b>Total</b>						<b>79.49 Satisfied</b>	
<b>CSI (%)</b>						<b>d</b>	

Source: Processed Data, 2026

Based on the Customer Satisfaction Index (CSI) results presented in Table 4, all evaluated attributes were categorized as satisfied to very satisfied, indicating that MiGreen Moringa Leaf Noodles were generally well accepted by consumers. Aroma obtained the highest CSI value (81.91%), followed by texture (81.46%), both of which were classified as very satisfied. These findings suggest that consumers highly appreciated the sensory characteristics of the product. Specifically, the high satisfaction with aroma indicates that consumers perceived the aroma of MiGreen as acceptable and comfortable during consumption, despite the distinctive characteristics commonly associated with moringa-based products. Similarly, the high texture score reflects consumers' positive perception of the product's chewiness and eating comfort, which contributed to a more enjoyable consumption experience. These findings support the view of Afia et al. (2022), who reported that sensory attributes play an important role in shaping consumer perceptions and acceptance of noodle products.

Furthermore, the practicality of serving achieved a CSI value of 80.87%, indicating that consumers were satisfied with the convenience of preparing and consuming the product. This finding may be attributed to the clarity of the serving instructions provided on the packaging and the ease of product preparation perceived by consumers. The results are consistent with Annisa et al. (2023), who explained that product attributes can influence consumer evaluations



and contribute to the formation of consumer satisfaction. Therefore, the high level of satisfaction with serving practicality indicates that consumers perceived MiGreen as a convenient product for daily consumption, which positively contributed to their overall satisfaction.

Meanwhile, the taste attribute obtained a CSI value of 77.66%, which was categorized as satisfied. Consumers particularly appreciated that the product did not produce a bitter taste, as reflected by the highest weighting score within the taste dimension. This finding is important because bitterness is often considered one of the challenges in consumer acceptance of products containing moringa leaves. However, the relatively lower score for taste suitability suggests that individual taste preferences varied among respondents. Since taste is a subjective sensory attribute, differences in personal preferences and previous consumption experiences may influence consumer evaluations of product flavor.

In addition, the color attribute recorded the lowest CSI value (75.64%), although it remained within the satisfied category. Consumers generally accepted the natural green color of the product because it reflected the use of moringa leaves as the main ingredient. However, the lower score compared with other attributes suggests that the visual appearance of the product may not have been as attractive as consumers expected. This condition may be influenced by consumers' familiarity with conventional noodle products, causing the natural green color of moringa noodles to be perceived as less appealing by some respondents. This finding is in line with Annisa et al. (2023), who stated that consumer perceptions of product attributes contribute to the overall evaluation of product quality and satisfaction.

Overall, the average CSI value was 79.49%, indicating that consumers were generally satisfied with MiGreen Moringa Leaf Noodles. This result demonstrates that the product has been able to meet consumer expectations regarding taste, texture, aroma, color, and serving practicality. According to Melida and Pramestari (2023), a CSI value within the satisfied category indicates that product performance has generally met consumer expectations. Nevertheless, because the overall CSI value has not yet reached the very satisfied category, continuous product evaluation and improvement remain necessary, particularly for taste and color attributes, in order to further enhance consumer satisfaction and strengthen the competitiveness of MiGreen in the functional food market.

#### **Gap Analysis (GAP) between Performance Level and Consumer Interest Level**

The GAP Analysis was conducted to identify the discrepancy between product performance and consumer expectations. A negative GAP value



indicates that the perceived performance of an attribute is lower than consumer expectations, while a positive GAP value indicates that product performance exceeds expectations.

The taste dimension recorded a total GAP value of -0.64, indicating that the taste performance of MiGreen Moringa Leaf Noodles was slightly below consumer expectations. This finding suggests that the flavor characteristics of MiGreen have not fully aligned with consumer preferences. According to Nabila (2024), taste is one of the main attributes influencing consumer acceptance of moringa-based noodle products. Among the taste attributes, the largest negative GAP was found in the attribute “the taste of MiGreen suits consumer preferences” (R3) with a value of -0.32, indicating that the product flavor was not equally preferred by all consumers. This condition is understandable because taste is a subjective attribute that is strongly influenced by individual preferences. In contrast, the attribute “MiGreen is not bitter” (R2) recorded a positive GAP value of 0.12, indicating that product performance exceeded consumer expectations regarding bitterness. This finding suggests that consumers generally accepted the product because the bitterness commonly associated with moringa-based products was not strongly perceived. Overall, although the taste dimension recorded a negative GAP value, the relatively small discrepancy indicates that product performance remained close to consumer expectations.

The texture dimension recorded a total GAP value of -0.50, indicating that the texture of MiGreen was generally perceived slightly below consumer expectations. Nevertheless, the relatively small GAP value suggests that the texture attributes were generally acceptable to consumers. The attribute “MiGreen is not soft when consumed” (T3) recorded a positive GAP value of 0.06, indicating that the product performed better than consumer expectations regarding firmness. Meanwhile, the largest negative GAP within this dimension was observed in the attribute “comfortable when chewed” (T4), with a value of -0.24. This finding suggests that some consumers expected a more ideal texture during consumption. However, because the discrepancy remained relatively small, the texture of MiGreen can still be considered close to consumer expectations.

The aroma dimension recorded the smallest total GAP value among all dimensions (-0.24). This finding indicates that the aroma characteristics of MiGreen were the closest to consumer expectations. The attribute “the aroma feels natural” (A2) recorded the smallest discrepancy (-0.02), suggesting that consumers generally accepted the natural aroma associated with moringa leaves. Although the attribute “the aroma is not disturbing when consumed” (A3)



recorded the largest negative GAP within this dimension (-0.12), the discrepancy remained relatively small. Therefore, the overall aroma performance of MiGreen can be considered satisfactory and consistent with consumer expectations.

The color dimension recorded the largest negative GAP value (-0.80), indicating that color was the dimension with the greatest discrepancy between perceived performance and consumer expectations. The largest negative GAP was observed in the attribute “the color looks attractive” (W1) with a value of -0.26, suggesting that the visual appearance of MiGreen was not fully aligned with consumer expectations. Although consumers generally accepted the natural green color of the product, the results indicate that visual appeal remains the aspect with the greatest opportunity for improvement. According to Annisa et al. (2023), consumer perceptions of product attributes contribute to the overall evaluation of product quality and satisfaction. Therefore, although the natural color of MiGreen reflects its moringa leaf ingredients, visual appearance still plays an important role in shaping consumer evaluations.

The practicality dimension recorded a total GAP value of -0.60, indicating that the practicality of serving MiGreen was slightly below consumer expectations. The largest negative GAP was found in the attribute “MiGreen is easy to prepare” (K1) with a value of -0.32, suggesting that consumers expected greater convenience during preparation. Meanwhile, the attributes “serving instructions are easy to understand” (K3) and “practical for daily consumption” (K4) both recorded very small GAP values (-0.02), indicating that these attributes were already close to consumer expectations. Overall, the findings suggest that consumers generally perceived MiGreen as a practical product, although there is still room for improvement in preparation convenience.

Based on the recapitulation of GAP Analysis results, the total performance score was 75.34, while the total importance score was 78.12, resulting in a total GAP value of -2.78, a GAP percentage of -3.69%, and an average GAP value of -0.15. The negative GAP value indicates that the overall performance of MiGreen was slightly below consumer expectations. However, the relatively small average GAP value suggests that the discrepancy between performance and expectations was not substantial. According to Tjiptono (2015), consumer satisfaction is influenced by the extent to which product performance matches consumer expectations. Therefore, the small negative GAP identified in this study indicates that there is still room for improvement, although the product performance generally remains close to consumer expectations.



The GAP findings should also be interpreted together with the Customer Satisfaction Index (CSI) results. Although all dimensions recorded negative GAP values, the CSI analysis showed that all evaluated attributes were categorized as satisfied or very satisfied. This indicates that consumers generally accepted the performance of MiGreen despite the existence of small discrepancies between perceived performance and expectations. For example, the aroma dimension recorded the smallest GAP value (-0.24) and the highest CSI value (81.91%), indicating that this attribute most closely matched consumer expectations. In contrast, the color dimension recorded the largest negative GAP value (-0.80) and the lowest CSI value (75.64%), suggesting that visual appearance remains the attribute with the greatest opportunity for improvement. Nevertheless, the CSI value for color remained within the satisfied category, indicating that consumers still evaluated this attribute positively.

Furthermore, the GAP results are consistent with the Importance Performance Analysis (IPA) findings. Although several dimensions showed negative GAP values, no attributes were located in Quadrant I of the IPA matrix, which represents attributes requiring immediate attention and improvement. This finding suggests that the discrepancies between consumer expectations and perceived performance were relatively small and did not indicate critical weaknesses in product performance. Therefore, the negative GAP values identified in this study should be interpreted as opportunities for gradual improvement rather than urgent corrective actions. In other words, GAP Analysis reveals the differences between consumer expectations and perceived performance, whereas IPA identifies improvement priorities based on the relative importance and performance of each attribute. Thus, the two methods complement each other in providing a more comprehensive evaluation of consumer satisfaction.

Overall, the integration of GAP Analysis, CSI, and IPA indicates that MiGreen Moringa Leaf Noodles were generally accepted by consumers. Aroma and texture can be maintained as product strengths because they achieved high satisfaction levels and relatively small GAP values. Meanwhile, color, taste, and serving practicality may continue to be monitored and gradually evaluated to ensure that product performance remains aligned with consumer expectations. Since no attributes were classified as priority attributes in Quadrant I, the findings do not indicate the need for immediate corrective actions but rather support continuous quality improvement and product development efforts.



## CONCLUSION

Based on the results of the data analysis that has been carried out at PT Liefde Herb Nusantara, the Company Overview and Product Profile can be concluded as follows:

1. Based on the results of this study, it can be concluded that the quality attributes of MiGreen Moringa Leaf Noodles produced by PT Liefde Herb Nusantara were generally well accepted by consumers. The Importance Performance Analysis (IPA) showed that no product quality attributes were located in Quadrant I, indicating that none of the evaluated attributes required immediate improvement and that the performance of important attributes was generally able to meet consumer expectations.
2. The Customer Satisfaction Index (CSI) analysis produced a value of 79.49%, which falls within the satisfied category. This result indicates that consumers were generally satisfied with the quality of MiGreen Moringa Leaf Noodles, particularly in terms of aroma and texture, which achieved the highest satisfaction levels. Meanwhile, the GAP Analysis generated an average GAP value of -0.15, indicating that product performance was slightly below consumer expectations. However, the relatively small GAP value suggests that the discrepancy between consumer expectations and perceived performance was not substantial.
3. The integration of IPA, CSI, and GAP Analysis indicates that MiGreen has achieved a satisfactory level of consumer acceptance. Although several attributes, particularly color, taste, and serving practicality, recorded relatively larger negative GAP values than other attributes, they were not identified as priority attributes in the IPA analysis and remained within the satisfied category in the CSI analysis. Therefore, no product quality attributes were identified as requiring immediate corrective action. Instead, PT Liefde Herb Nusantara should maintain the strengths of the product, particularly aroma and texture, while continuously monitoring and gradually evaluating attributes with negative GAP values to ensure that product performance remains aligned with consumer expectations and consumer satisfaction can be sustained.

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