Unlocking Consumer Satisfaction: How Product Quality, Service Quality, and Preferences Drive Hydroponic Lettuce Purchases

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Abstract

This study aims to analyze the model of purchasing decisions and their impact on consumer satisfaction when buying hydroponic lettuce. It specifically investigates how product quality, service quality, consumer preferences, and purchasing decisions directly affect consumer satisfaction. Additionally, it examines the indirect influence of product and service quality on consumer satisfaction through purchasing decisions. Utilizing a quantitative research methodology, data was collected via a structured questionnaire employing a Likert scale to measure respondents' attitudes. The sample consisted of 75 consumers of hydroponic lettuce from Level One MSMEs. The analysis involved various statistical tests, including outer model testing for validity and reliability, goodness-of-fit assessments, and hypothesis testing to explore the relationships among five key variables: purchasing decisions, consumer satisfaction, consumer preferences, service quality, and product quality. Findings indicate that while product quality does not significantly influence purchasing decisions, both service quality and consumer preferences have substantial effects on these decisions, ultimately impacting consumer satisfaction. Moreover, the study highlights the importance of understanding the multifaceted factors influencing consumer decision-making, suggesting that future research should explore a broader range of products and additional variables, such as brand loyalty, to gain deeper insights into consumer behavior.

Keywords : consumer satisfaction, hydroponic lettuce, purchasing decisions, service quality, product quality.

1. Introduction

As an agrarian nation, Indonesia is endowed with vast agricultural resources that present significant opportunities for development, particularly in the horticultural sector (Dutu, 2015; Mariyono, 2019; Mariyono et al., 2020). Among various agricultural commodities, hydroponic vegetables, especially hydroponic lettuce, have emerged as a promising area of growth. The shift towards healthier eating habits among consumers, driven by increased awareness of nutrition and wellness, has propelled the demand for fresh, high-quality produce (Cook, 2001; Galanakis, 2024; Kelly, 2020; Ochel, 2018; Talukdar, 2022). This trend not only enhances the market potential for hydroponic farming but also emphasizes the importance of understanding consumer satisfaction in this rapidly evolving sector.

The global agricultural landscape is witnessing a transformation, with sustainable farming practices gaining traction. Hydroponics, a method of growing plants without soil, is at the forefront of this revolution (Fernadeds, 2019). By utilizing nutrient-rich water solutions, hydroponic systems can significantly enhance crop yields and reduce the need for pesticides, making them an environmentally friendly alternative to traditional farming methods (Roidah, 2014). In Indonesia, where urbanization is on the rise, hydroponics offers a viable solution to meet the increasing demand for fresh vegetables, particularly in densely populated areas. The ability to grow produce

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in controlled environments allows for year-round cultivation, which further addresses the challenges posed by seasonal fluctuations in supply. The significance of consumer preferences in the agricultural market cannot be overstated. As consumers become more discerning about their food choices, factors such as product quality, service quality, and brand reputation play crucial roles in shaping purchasing decisions. Research indicates that consumers are increasingly inclined to select products that not only meet their nutritional needs but also align with their values, including sustainability and ethical sourcing (Kusmaria et al., 2021). Therefore, understanding the determinants of consumer satisfaction in the context of hydroponic lettuce purchases is essential for producers aiming to thrive in a competitive marketplace.

Level One Farm, a leading small and medium-sized enterprise (SME) in Gresik, exemplifies the potential of hydroponic farming in Indonesia. Since its establishment in 2014, Level One Farm has committed itself to providing high-quality hydroponic vegetables while promoting a sustainable lifestyle. The farm's mission to deliver fresh, nutritious, and environmentally friendly produce aligns with the growing consumer demand for healthy food options. By leveraging innovative hydroponic techniques, Level One Farm has positioned itself as a key player in the local agribusiness landscape, offering consumers an alternative that prioritizes quality and sustainability (Sangadji et al., 2024). The relationship between product quality and consumer satisfaction is well-documented in marketing literature. High-quality products not only meet the functional requirements of consumers but also evoke emotional responses that foster loyalty and repeat purchases. In the case of hydroponic lettuce, factors such as freshness, taste, appearance, and nutritional value significantly influence consumer perceptions of quality. As consumers increasingly seek out premium produce, understanding how these attributes affect satisfaction levels becomes vital for producers aiming to maintain a competitive edge.

Service quality also plays a critical role in consumer satisfaction (Hasan & Sangadji, 2024; Purboyo et al., 2021; Sari et al., 2021; Silitonga et al., 2020; Syahrir, 2023). In the context of hydroponic lettuce, service quality encompasses various dimensions, including the responsiveness of the seller, the availability of information, and the overall shopping experience. A positive service encounter can enhance consumer perceptions of product quality and lead to increased satisfaction. For Level One Farm, providing exceptional customer service is integral to its business strategy. By focusing on building strong relationships with customers and ensuring a seamless purchasing process, the farm aims to enhance consumer loyalty and advocacy. Moreover, consumer preferences are shaped by a myriad of factors, including cultural influences, lifestyle choices, and individual tastes. Understanding these preferences is essential for businesses seeking to tailor their offerings to meet the needs of their target market. For instance, health-conscious consumers may prioritize the nutritional benefits of hydroponic lettuce, while others may be drawn to its environmentally friendly production methods. By identifying and addressing the diverse preferences of consumers, producers can enhance their marketing strategies and improve overall satisfaction.

The rising sales of hydroponic lettuce in Indonesia underscore the relevance of this research. As consumer interest in this product continues to grow, it becomes imperative to explore the underlying factors driving purchasing decisions. The increasing availability of hydroponic produce in markets reflects a shift in consumer behavior, highlighting the need for comprehensive research into the relationship between product quality, service quality, and consumer preferences. Such insights can guide agribusinesses in developing effective marketing strategies and improving customer engagement.

2. Method

This study employs a quantitative research method utilizing a questionnaire as the research instrument, designed in the form of a Likert scale. This scale serves as an assessment tool to measure respondents' attitudes, opinions, and perceptions towards the research subject (Rahmandika, 2023; Supriatin et al., 2022). Respondents evaluate items using a scale from 1 to 5, where a score of 1 indicates strong disagreement ("Strongly Disagree") and a score of 5 indicates strong agreement ("Strongly Agree").

Table 1. Likert Scale Scoring Determination

No	Category	Description	Score
1.	SA	Strongly Agree	5
2.	A	Agree	4
3.	N	Neutral	3
4.	D	Disagree	2
5.	SD	Strongly Disagree	1

This research utilizes two data sources: secondary data and primary data. Primary data will be collected through interviews with respondents, providing access to valuable qualitative information about the company's relationship with customers, challenges faced, and the company's long-term vision regarding this product. Additionally, primary data will be gathered through a questionnaire distributed to potential consumers of hydroponic lettuce. This questionnaire will be carefully designed to collect detailed information about consumer preferences, purchasing behavior, price preferences, and product attributes deemed important in the purchasing decision.

The population is defined by Sugiyono (2017) as a generic area consisting of items or individuals selected due to specific characteristics by the researcher to obtain conclusions or findings from the study. In this case, the population consists of consumers of hydroponic lettuce at the Level One MSME (Micro, Small, and Medium Enterprises).

A sample is a subset of the population that represents it. In the context of Partial Least Squares Path Modeling, Solimun (2002) defines a sample as follows:

1. For maximum likelihood estimation, a sample size between 100 and 200 is recommended, with a minimum sample size of around 50.
2. The recommended sample size should be 5-10 times the number of parameters in the research model.
3. The recommended sample size should be equivalent to 5-10 times the total number of indicators across all latent variables in the study.

In this research, there are 15 indicators reflecting the observed variables. Based on the calculations in point three, the minimum recommended sample size is 5 times the number of indicators, which equates to 75 samples. Therefore, this study will involve 75 consumers of hydroponic lettuce at Level One MSME as respondents.

Given that this research employs a quantitative method to describe its findings as explanatory research, its primary objective is to explain the location, nature, and relationships among the studied variables. The main goal is to test hypotheses to understand causal correlations between variables. This research examines the relationships among five major variables: purchase decisions (Z), consumer satisfaction (Y), consumer preferences (X3), service quality (X2), and product quality (X1).

To conduct a comprehensive analysis, the study involves several tests. First, the outer model testing is performed to provide validity and reliability indicators for the variables used in the study. This evaluation ensures the accuracy and reliability of the measurement tools, confirming that the

constructs measured are both valid and dependable. Subsequently, the goodness of fit of the model is assessed, which includes measuring R-square, Q-square, SRMR (Standardized Root Mean Square Residual), and PLS Predict. These steps are designed to evaluate the extent to which the model can adequately explain and predict the variability in the data.

Finally, the importance of the relationships among the variables under investigation is examined through hypothesis testing. This testing aims to determine whether the statistical results provide sufficient support to accept or reject the research hypotheses. Thus, hypothesis testing aids the researcher in drawing conclusions about the relationships among the studied variables. The combination of all these tests is expected to provide a deeper understanding of the interrelationships among variables and the model's fit with the existing empirical data, reinforcing the validity and reliability of the research findings.

3. Result and Discussion

3.1 Characteristics of Hydroponic Lettuce Consumers

To deepen the analysis of the consumer characteristics of hydroponic lettuce at the MSME Level One Farm, and to explore the relationship between product quality, service quality, and consumer preferences with purchasing decisions and customer satisfaction, this study examines how these factors impact purchasing preferences. The characteristics include demographic factors such as gender, age, education, occupation, and income, which play an integral role in consumer dynamics. This aims to provide a more comprehensive understanding of the factors influencing customer satisfaction and purchasing decisions, particularly in relation to hydroponic lettuce produced by MSME Level One Farm.

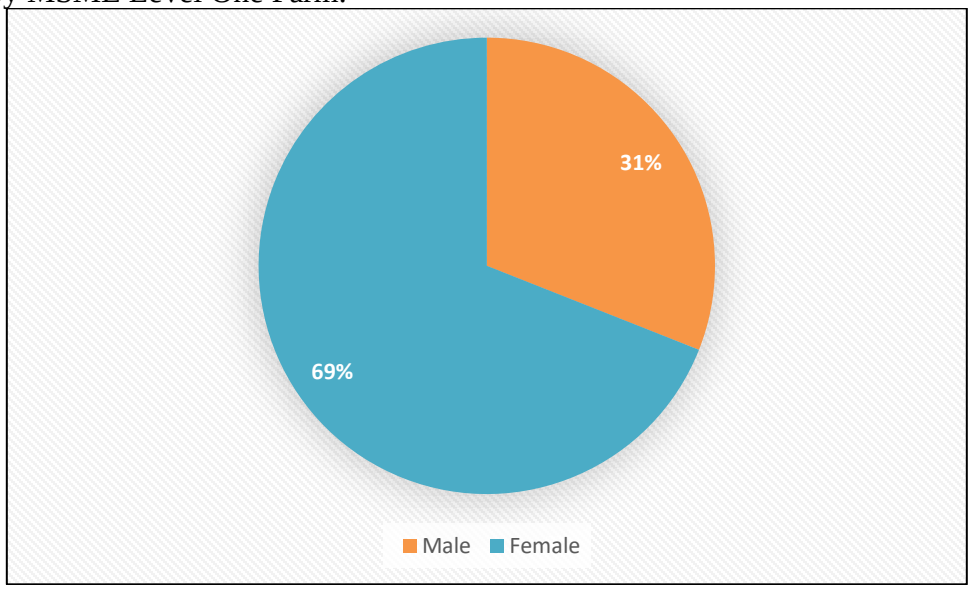

Figure 1. Diagram of Hydroponic Lettuce Consumers by Gender

As seen in the diagram above, the research findings on the gender of hydroponic lettuce consumers at MSME Level One Farm involved 75 respondents, consisting of 52 females and 23 males. The proportion of respondents indicates a dominance of female consumers at 69%, while male consumers account for 31%. Another interesting finding is that, although fewer in number, male consumers tend to use hydroponic lettuce more frequently for business purposes, whereas female consumers primarily use it for personal consumption.

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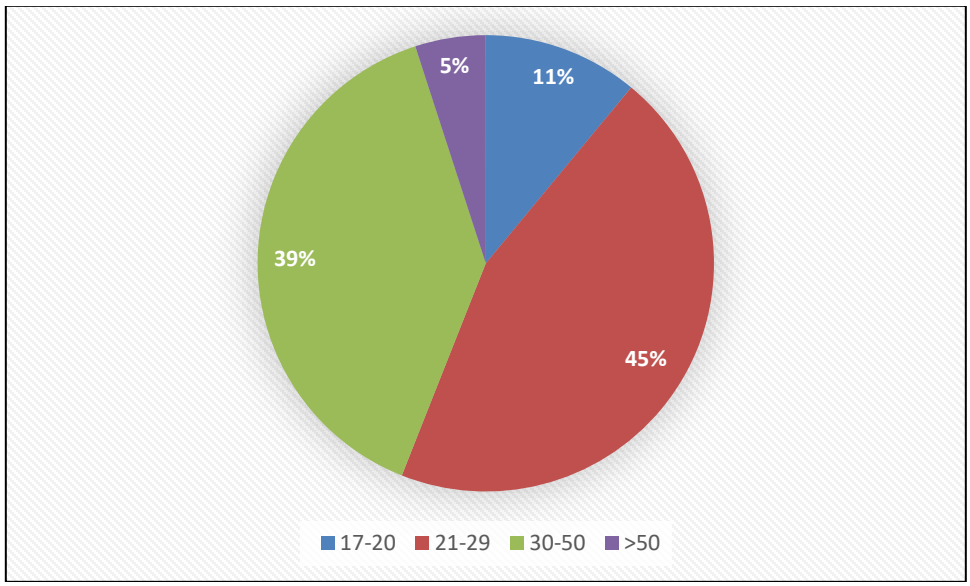

Figure 2. Diagram of Hydroponic Lettuce Consumers by Age

Based on the age diagram above, which reflects the age preferences of baby romaine lettuce consumers at PT Kebunsayur Surabaya, data were collected from 75 respondents with varied age distributions. The results show the following breakdown: 8 respondents (11%) were aged 17-20, 34 respondents (45%) were aged 21-29, 29 respondents (39%) were aged 30-50, and 4 respondents (5%) were over 50 years old. This analysis explores the purchasing preferences and tendencies of baby romaine lettuce based on these age groups, providing deeper insights into consumer dynamics across different age ranges.

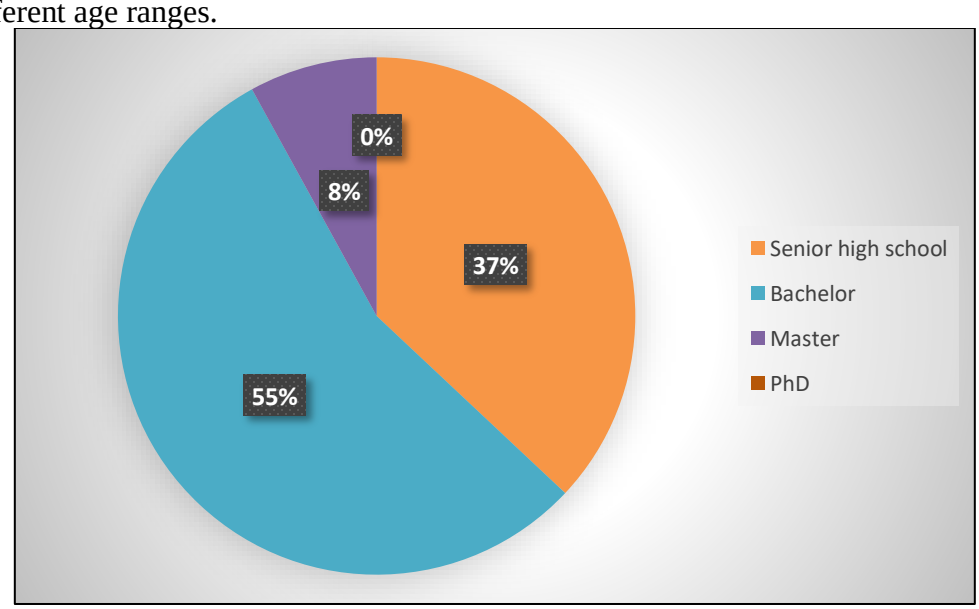

Figure 3. Diagram of Hydroponic Lettuce Consumers by Education Level

From the diagram above, which presents data on the education levels of 75 respondents, collected regarding consumer preferences for hydroponic lettuce at MSME Level One Farm, the results show a fascinating distribution. The majority, 41 respondents or 55%, hold a Bachelor's degree (S1), while 28 respondents (37%) are high school graduates, and 6 respondents (8%) hold a Master's degree (S2). The predominance of Bachelor's degree holders, accounting for 55%,

indicates a strong representation from university-educated consumers. This data will be further analyzed to understand how education levels influence consumer perceptions, preferences, and purchasing patterns.

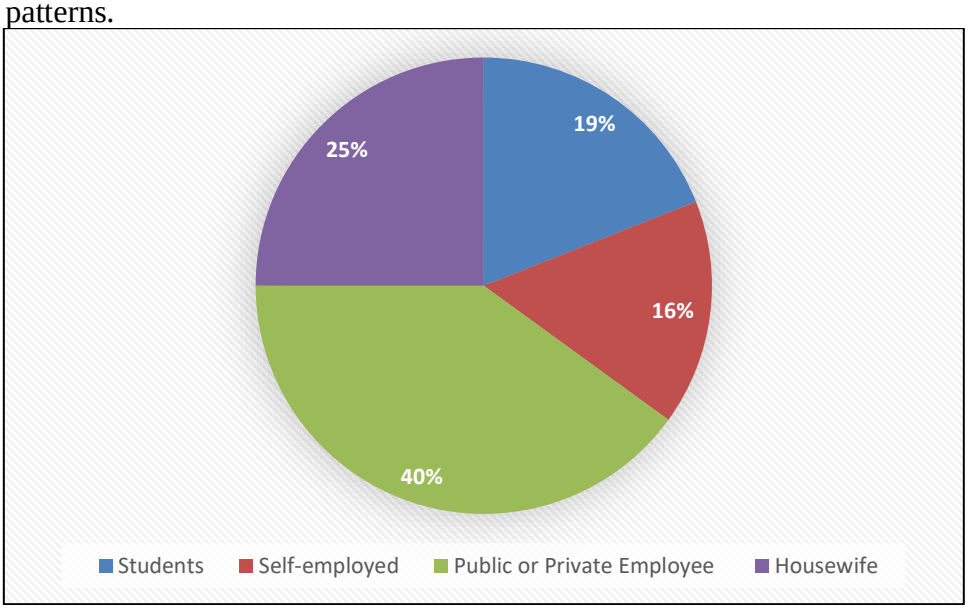

Figure 4. Diagram of Hydroponic Lettuce Consumers by Occupation

Among the 75 respondents involved in the study of hydroponic lettuce consumer preferences at MSME Level One Farm, a variety of occupational backgrounds were observed, which influenced their preferences. Fourteen respondents (19%) were students, while 30 respondents (40%) were government or private sector employees, highlighting a significant contribution from the formal workforce. Additionally, 12 respondents (16%) were entrepreneurs, reflecting strong interest from the business community in this product. Furthermore, 19 respondents (25%) were housewives, indicating a preference among this group for hydroponic lettuce. These findings provide a broad view of consumer interests and preferences, shaped by their occupational backgrounds.

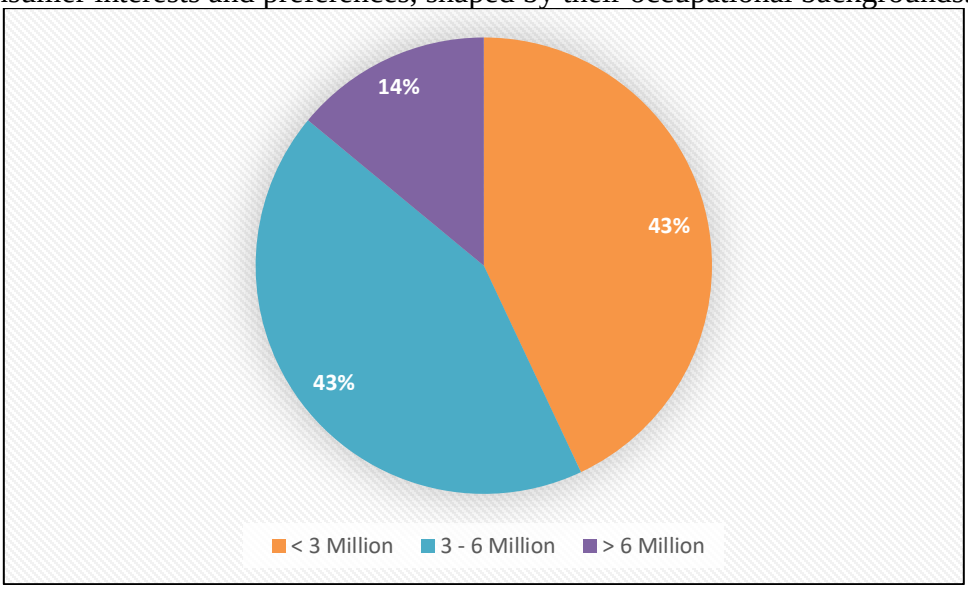

Figure 5. Diagram of Hydroponic Lettuce Consumers by Income

In this study, which examines consumer preferences for hydroponic lettuce at MSME Level One Farm, data were collected from 75 respondents, revealing significant variations in income levels. The analysis shows that 43% of respondents (32 people) have an income of less than 3 million rupiah, another 43% (32 people) fall within the income range of 3-6 million rupiah, and 14% (11 people) earn more than 6 million rupiah. This analysis indicates that the majority of respondents fall within the lower to middle-income bracket, earning less than 6 million rupiah, while respondents with higher incomes are fewer in number in this study.

3.2 **Variable Description**

The independent and dependent variables in this study are: Product Quality (X1), Service Quality (X2), Consumer Preferences (X3), Purchase Decision (Z), and Consumer Satisfaction (Y). The responses to the questionnaire items related to these variables are summarized in the following table.

Table 2. Variable Description

Score	X1	X2	X3	Z	Y
1	0	0	0	0,3	0
2	0,9	1,3	2,7	2,4	0,2
3	6,7	12	4	8	7,6
4	52,4	52,7	44,9	52,3	61,1
5	40	34	48,4	37	31,1
Mean of Indicators	4,31	4,19	4,39	4,23	4,23
Mean of Variables	4,27				

Based on the table, which reflects respondents' perceptions of the variables, the average score of 4.27 is close to 5 (strongly agree). The indicator with the highest perception score is consumer preferences (X3), with a score of 4.39. Most respondents agree with this indicator, with 44.9% agreeing and 48.4% strongly agreeing. In contrast, service quality (X2) has the lowest score of 4.19, with a majority of respondents agreeing (52.7%) and 34% strongly agreeing. Following consumer preferences (X3), the highest-scoring indicators are product quality (X1), purchase decision (Z), and consumer satisfaction (Y).

3.3 **Convergent Validity**

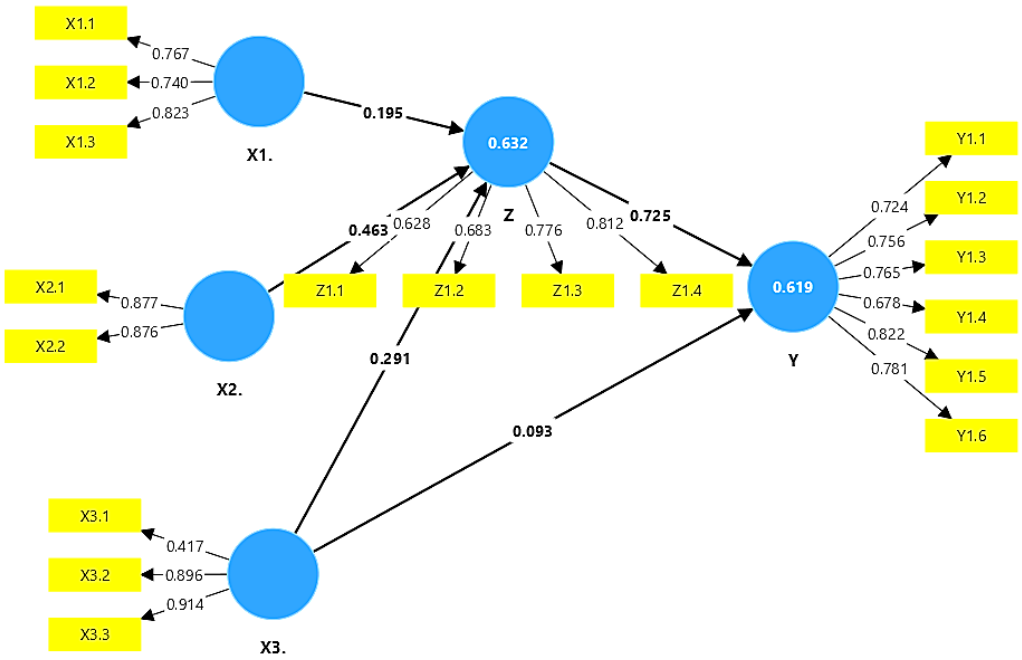

Figure 6. Convergent Validity Test Results

The analysis of convergent validity indicates that, in general, the indicators in the test achieved acceptable validity (> 0.7). This demonstrates a positive and significant relationship in measuring the same construct. However, it should be noted that indicators X3.1, Y1.4, Z1.1, and Z1.2 stand out as exceptions with factor loadings below the set threshold of 0.7. Therefore, these indicators must be removed in subsequent stages, as they cannot be used as measurement parameters for Purchase Decision (Z).

3.4 **Discriminant Validity**

Discriminant evaluation is performed at the indicator or measurement item level. An item is considered acceptable if it exhibits a stronger correlation with the variable it is intended to measure, and a weaker correlation with other variables. Some variables that do not meet the criteria or fall below the threshold of 0.7 are highlighted in red and will be removed in the next stage.

Table 3. Cross Loading Test Results

	X1.	X2.	X3	Y	Z
X1.1	0.767				
X1.2	0.740				
X1.3	0.823				
X2.1		0.877			
X2.2		0.876			
X3.1			0.417		
X3.2			0.896		
X3.3			0.914		
Y1.1				0.724	
Y1.2				0.756	
Y1.3				0.765	
Y1.4				0.678	

	X1.	X2.	X3	Y	Z
Y1.5				0.822	
Y1.6				0.781	
Z1.1					0.628
Z1.2					0.683
Z1.3					0.776
Z1.4					0.812

The discriminant validity analysis for variables X1 and X2 shows that the factor loadings of each indicator for these constructs are higher than those for other blocks, demonstrating sufficient discriminant validity. However, the analysis for variables X3, Y, and Z reveals that the loadings of indicators X3.1, Y1.4, Z1.1, and Z1.2 on their respective constructs are below the 0.7 threshold, indicating a lack of discriminant validity. These indicators do not outperform others within their blocks, and as a result, X3.1, Y1.4, Z1.1, and Z1.2 are excluded from the model based on the cross-loading test.

The AVE and Fornell-Larcker Criterion values suggest that the latent variables predict their indicators more accurately than other factors, with AVE values greater than 0.5 and Fornell-Larcker values for each variable higher than for others, indicating valid discriminant validity (Pratama, 2018).

Table 4. AVE Values

Variabel	AVE
X1.	0.604
X2.	0.769
X3.	0.840
Y	0.607
Z	0.531

The results indicate that the AVE value for X1 (Product Quality) is 0.604, meaning that 60.4% of the variance in X1 is explained by its indicators, thus meeting the criterion for good convergent validity, as the value exceeds 0.50. For X2 (Service Quality), the AVE value is 0.769, indicating that 76.9% of the variance in X2 is explained by its indicators, confirming good convergent validity as it surpasses 0.50. Similarly, X3 (Consumer Preferences) has an AVE value of 0.840, meaning 84% of the variance in X3 is explained by its indicators, satisfying the requirement for good convergent validity. The AVE value for Z (Purchase Decision) is 0.531, indicating that 53.1% of the variance in Z is explained by its indicators, which also meets the standard for good convergent validity. Lastly, the AVE value for Y (Consumer Satisfaction) is 0.607, meaning 60.7% of the variance in Y is explained by its indicators, demonstrating good convergent validity since it exceeds 0.50.

Table 5. Fornell-Larcker Criterion Test Results

	X1.	X2.	X3.	Y	Z
X1.	**0.777**				
X2.	0.542	**0.877**			
X3.	0.477	0.509	**0.917**		
Y	0.778	0.652	0.581	**0.779**	
Z	0.591	0.720	0.629	0.783	**0.729**

The bolded values in the table represent the Fornell-Larcker Criterion for each construct. Compared to other latent variables, each construct shows the highest value for its criterion, demonstrating that each latent variable correctly predicts its respective indicators. Non-bolded values represent correlations between constructs.

3.5 Reliability Test

In the evaluation of the outer model, construct or latent variable reliability can be assessed in addition to convergent and discriminant validity. This is done by evaluating the Cronbach's Alpha values of the measurement indicator blocks for each construct. If the Cronbach's Alpha value of a construct is above 0.60, it is considered reliable.

Table 6. Cronbach's Alpha Test Results

Variabel	Cronbach's alpha
X1.	0.679
X2.	0.699
X3.	0.810
Y	0.838
Z	0.704

Based on the classification criteria for Cronbach's Alpha provided by Dahlan et al. (2014), the reliability of each variable in this study can be interpreted as follows: X1 (Product Quality) has a Cronbach's Alpha value of 0.679, which falls within the 0.61 to 0.80 range, indicating that the scale is reliable. Similarly, X2 (Service Quality) has a value of 0.699, also falling within this range, confirming its reliability. X3 (Consumer Preferences), with a Cronbach's Alpha of 0.810, falls in the 0.81 to 1.00 range, categorizing it as highly reliable. Z (Purchase Decision) has a value of 0.704, which, although within the 0.61 to 0.80 range, is still considered reliable. Lastly, Y (Consumer Satisfaction) has a Cronbach's Alpha of 0.838, placing it in the highly reliable category. In summary, all variables (X1, X2, X3, Z, and Y) are deemed reliable, demonstrating that the measurement instruments used exhibit good internal consistency and are appropriate for evaluating the constructs in this study.

The reliability of constructs or latent variables in the outer model is not only assessed through convergent and discriminant validity but also by evaluating the composite reliability values of the indicator blocks measuring the constructs.

Table 7. Composite Reliability Test Results

Variabel	Composite reliability
X1.	0.821
X2.	0.869
X3.	0.913
Y	0.885
Z	0.818

Based on the composite reliability values, all measured variables demonstrate acceptable reliability, as their CR values exceed the threshold of 0.70. Specifically, Product Quality (X1) has a CR value of 0.821, indicating consistent and reliable measurement of this variable. Similarly, Service Quality (X2) has a CR value of 0.869, confirming its reliability. Consumer Preferences (X3) shows a CR value of 0.913, demonstrating strong reliability. Purchase Decision (Z) with a CR value of 0.885, and Consumer Satisfaction (Y) with a CR value of 0.818, both reflect consistent and reliable measurements of their respective constructs. These results affirm that all variables in the model are measured reliably.

3.6 R-Square

The degree of determination of the exogenous variables on the endogenous variables is indicated by the R-Square value. The higher the R-Square value, the better the level of determination.

Table 8. R-Square Test Results

	R Square	R Square Adjusted
Y	0.627	0.616
Z	0.637	0.621

The R-Square values for each latent endogenous variable range from 0.627 to 0.637, as shown by the analysis. These values fall into the medium category. Although these variables significantly affect customer satisfaction, additional factors outside the model still contribute to the variance in customer satisfaction, as indicated by the moderate R-Square values.

3.7 F-Square

The structural model is evaluated using t-tests, the significance of path coefficient parameters, and the R-Square for dependent constructs (Ghozali, 2006). During this evaluation, the R-Square values for each latent dependent variable in the PLS model are first examined. The existence of meaningful relationships between independent and dependent latent variables is confirmed through changes in the R-Square values.

Table 9. F-Square Test Results

	X1.	X2.	X3.	Y	Z
X1.					0.071
X2.					0.363
X3.				0.035	0.169
Y			0.035		
Z	0.071	0.363	0.169	0.773	

Based on the analysis criteria, several conclusions can be drawn regarding the influences on purchase decisions and customer satisfaction. First, the influence of Product Quality (X1) on Purchase Decisions (Z) is minimal, reflected by a small F-Square value of 0.071. In contrast, Service Quality (X2) exhibits a more significant effect on Purchase Decisions (Z) with a medium F-Square value of 0.363, while Consumer Preferences (X3) also shows a moderate impact on Purchase Decisions (Z), indicated by an F-Square value of 0.169. Furthermore, Consumer Preferences (X3) has a minor influence on Customer Satisfaction (Y), as demonstrated by an F-Square value of 0.035. Finally, the relationship between Purchase Decisions (Z) and Customer Satisfaction (Y) is notably strong, characterized by a large F-Square value of 0.773.

3.8 **Hypothesis Testing**

Table 10. Direct Effects Hypothesis Test Results

	Original sample (O)	**Sample Mean (M)**	**Standard deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
X1. → Z	0.039	0.080	0.123	0.317	0.751
X2. → Z	0.534	0.508	0.134	3.986	0.000
X3. → Y	0.179	0.182	0.084	2.139	0.032
X3. → Z	0.293	0.281	0.112	2.612	0.009
Z → Y	0.604	0.620	0.086	7.029	0.000

The results of the PLS calculations, which illustrate the direct effects between variables, are summarized in the table above. Direct effects are deemed significant if the p-value is less than 0.05 and insignificant if greater. Based on the findings: (a) the Product Quality variable (X1) has a p-value of 0.751, indicating it can be disregarded in influencing Purchase Decisions (Z), as not all product quality features impact consumer choices; often, consumers may overlook quality for affordability, suggesting that purchase decisions are not solely determined by product quality and highlighting the importance of competitive pricing for marketability; (b) the Service Quality variable (X2) significantly impacts Purchase Decisions (Z) with a p-value of 0.000, establishing service quality as the most critical factor influencing consumer behavior, where excellent service not only enhances customer satisfaction but also fosters loyalty and encourages positive word-of-mouth; (c) the Consumer Preferences variable (X3) significantly influences Customer Satisfaction (Y) with a p-value of 0.032; (d) this variable (X3) also significantly affects Purchase Decisions (Z) with a p-value of 0.009; and (e) finally, the Purchase Decision variable (Z) has a significant effect on Customer Satisfaction (Y), demonstrated by a p-value of 0.000.

Table 11. Indirect Effects Hypothesis Test Results

	Original sample (O)	**Sample Mean (M)**	**Standard deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
X1. → Z → Y	0.024	0.056	0.083	0.283	0.777
X2. → Z→ Y	0.323	0.312	0.084	3.819	0.000
X3. → Z → Y	0.177	0.171	0.068	2.618	0.009

The indirect effects between the variables, as indicated in the table above based on PLS calculations, confirm that a p-value of less than 0.05 indicates the presence of an indirect effect, while a p-value greater than 0.05 suggests no effect. Specifically, there is no indirect effect of Product Quality (X1) on Customer Satisfaction (Y) through the mediating variable of Purchase Decisions (Z), as evidenced by a p-value of 0.777, which is greater than 0.05. In contrast, an indirect effect is observed for Service Quality (X2) on Customer Satisfaction (Y) via Purchase Decisions (Z), with a p-value of 0.000, indicating significance. Similarly, Consumer Preferences (X3) also demonstrate an indirect effect on Customer Satisfaction (Y) through Purchase Decisions (Z), as reflected by a p-value of 0.009, which is below the threshold of 0.05.

3.9 Goodness of Fit

After determining the AVE and R-Square values, the Goodness of Fit (GoF) is calculated. The GoF value ranges from 0 to 1, with values above 0.1 considered low, values above 0.25 considered moderate, and values above 0.36 considered high.

Table 12. Goodness of Fit Test Results

	Average variance extracted (AVE)	**R Square**
X1.	0,604	
X2.	0,769	
X3.	0,84	
Y	0,607	0,627
Z	0,531	0,637
	0,6702	0,632
GOF=	**0,65**	

The table shows a GoF value of 0.65, indicating a good model fit. Since a GoF value greater than 0.36 is considered a good fit, the performance of both the outer and inner models in this study can be classified as having a high Goodness of Fit.

4. Conclusion

The finding of this study indicate that product quality (X1) does not have a positive and significant impact on purchase decisions (Z), suggesting that not all aspects of product quality influence consumer decision-making. Consumers often lack a full understanding of the quality of the products they consume, and in many cases, lower prices take precedence, even if it means compromising on quality. Therefore, product quality is not always a decisive factor in purchasing decisions. In contrast, both service quality (X2) and consumer preferences (X3) have been shown to significantly affect purchase decisions, which in turn have a notable impact on consumer satisfaction (Y). Additionally, the analysis reveals that product quality (X1) has no significant effect on consumer happiness (Y), with an intervening variable effect of only 0.024. Conversely, customer preferences (X3) and service quality (X2) indirectly influence consumer happiness (Y) through their effect on purchase decisions (Z). These findings reflect the complexity of the various factors that shape consumer decision-making.

This study has several limitations that should be addressed in future research. Firstly, the focus on hydroponic lettuce purchases may limit the generalizability of the findings to other product categories, as consumer behavior can vary significantly across different markets. Additionally, the relatively small sample size may not fully capture the diverse perspectives of consumers, potentially affecting the robustness of the results. Future studies should consider expanding the scope to include a wider range of products and a larger, more diverse sample to enhance the applicability of the findings. Furthermore, investigating additional variables that could influence consumer satisfaction, such as brand loyalty and marketing strategies, may provide deeper insights into the complexities of consumer behavior. By addressing these limitations, future research can contribute to a more comprehensive understanding of the factors driving consumer satisfaction in various business contexts.

References

Cook, R. L. (2001). The US fresh produce industry: an industry in transition. *Postharvest Technology of Horticultural Crops*, *3311*, 27–117.

Dutu, R. (2015). *Making the most of natural resources in Indonesia*.

Fernadeds, S. (2019). Hydroponics: A Method of Growing Plants without Soil. *Journal of Extension Systems*, *35*(2), 51–56.

Galanakis, C. M. (2024). The future of food. *Foods*, *13*(4), 506.

Hasan, D. S., & Sangadji, S. S. (2024). Assessing the Influence of Healthcare Service Quality on Patient Satisfaction at Dr. Soetomo General Hospital, Surabaya. *JUSTE (Journal of Science and Technology)*.

Kelly, D. (2020). *The Art of Healthy Living: How Good Nutrition and Improved Well-being Leads to Increased Productivity, Vitality and Happiness*. John Wiley & Sons.

Kusmaria, K., Fitri, A., Sudiyo, S., & Anggraini, D. (2021). Analisis Kelayakan Usaha Sayuran Selada (Lactuca Sativa, L) Hidroponik di PT XX Kabupaten Tanggamus, Provinsi Lampung. *Jurnal Agrimanex: Agribusiness, Rural Management, and Development Extension*, *2*(1), 85–90.

Mariyono, J. (2019). Stepping up to market participation of smallholder agriculture in rural areas of Indonesia. *Agricultural Finance Review*, *79*(2), 255–270.

Mariyono, J., Abdurrachman, H., Suswati, E., Susilawati, A. D., Sujarwo, M., Waskito, J., Suwandi, & Zainudin, A. (2020). Rural modernisation through intensive vegetable farming agribusiness in Indonesia. *Rural Society*, *29*(2), 116–133.

Ochel, E. (2018). *Healing & Prevention Through Nutrition: A Holistic Approach to Eating and Living for Optimal Health, Weight, and Wellness*. Matrix Fusions.

Purboyo, S. H., Kusuma, G. P. E., Sudirman, A., Sangadji, S. S., Wardhana, A., Kartika, R. D., Erwin, N. H., Syamsuri, S. S., & Marlena, N. (2021). *Perilaku Konsumen (Tinjauan dan Praktis)*. Bandung: CV. Media Sains Indonesia.

Rahmandika, N. (2023). *Pengaruh Produk, Harga, Tempat dan Promosi Terhadap Keputusan Pembelian Sayuran Hidroponik Secara Online Di Pt. Sayuran Pagi Pada Masa Pandemi Covid-19*. Fakultas Sains dan Teknologi UIN Syarif Hidayatullah Jakarta.

Roidah, I. S. (2014). Pemanfaatan lahan dengan menggunakan sistem hidroponik. *Jurnal Bonorowo*, *1*(2), 43–49.

Sangadji, S. S., Handriana, T., Wisnujati, N. S., & Karim, S. A. (2024). Applying Structural Equation Modeling to Explore the Intention to Use Midi Kriing App. *Journal of Applied Data Sciences*, *5*(1), 71–83. https://doi.org/10.47738/jads.v5i1.157

Sari, D. C., Wardhana, A., Darwin, M., Sulaiman, E., Rahmawan, G., Ridwan, M., Hastutik, S., Poltak, H., & Sangadji, S. S. (2021). *Manajemen Pemasaran*. Media Sains Indonesia.

Silitonga, H. P., Syamsuri, A. R., Halim, A., Haryani, D. S., Sangadji, S. S., & Samad, A. (2020). *PEMASARAN" Hasil pemikiran dari Para Dosen Berbagai Perguruan Tinggi di Indonesia (Book Chapter-)"*. Center for Open Science.

Solimun, M. S. (2002). Structural Equation Modelling (SEM) Lisrel dan Amos. *Malang: Fakultas*

MIPA Universitas Brawijaya.

Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Supriatin, F., Marliana, I., S. Sangadji, S., Afkar, Paerah, A., & Dharta, F. (2022). *Metodologi Penelitian*. Cendikia Publisher. https://doi.org/10.31219/osf.io/ywemh

Syahrir. (2023). Analysis Of Service Quality at The Department of Population and Civil Registration In Bogor Regency. *PROCURATIO: Jurnal Manajemen & Bisnis*, *2*(1), 26–38. https://doi.org/10.5281/ZENODO.8207030

Talukdar, N. (2022). Luxury food experiences: A proposition of a conceptual framework for food innovation and well-being. In *The rise of positive luxury* (pp. 192–213). Routledge.