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Analysis of Customer Preferences and Willingness to Pay for Healthy Salad in Malang, Indonesia

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Abstract. The growing trend of healthier eating habits, driven by increasing health awareness, presents a business opportunity for SMEs in the healthy food sector. This study investigates consumer preferences, attribute importance, and willingness to pay for vegetable salads in Malang, using a discrete choice experiment with a conditional logit model. A survey of 150 respondents who had purchased and consumed vegetable salads was conducted, analyzing key attributes, including health, mood, convenience, sensory appeal, natural content, and price, adapted from the food choice questionnaire and processed using R-Studio software. The findings indicate that consumers prefer vegetable salads that are high in fiber, free of additives, available in nearby shops, relaxing when consumed, and have a good taste. The ranking of attributes is important in purchasing decisions, as it follows the order of health, natural content, convenience, mood, and sensory appeal. Consumers' willingness to pay shows that they are willing to pay IDR 10,416 for "simple to make," IDR 19,410 for "ready in no time," IDR 11,549 for "contain natural ingredients," IDR 2,101 for "make them feel good when consumed," IDR 24,287 for "smell nice," and IDR 26,334 for "look good." These findings provide essential implications for SMEs, guiding product development towards fiber-rich and additive-free vegetable salads with appealing sensory attributes and easy preparation. Additionally, marketing strategies should emphasize health benefits, natural ingredients, and convenience while leveraging sensory appeal to attract a broader audience. Pricing strategies should reflect the premium consumers are willing to pay, and distribution channels should ensure accessibility. By aligning product offerings with consumer preferences and understanding their willingness to pay, SMEs can enhance their competitiveness and achieve sustainable growth in the expanding healthy food market.

Keywords: discrete choice experiment; healthy food; preferences; willingness to pay

INTRODUCTION

The development of technology has brought significant changes to public awareness. Social media platforms like Instagram, X, TikTok, Facebook, and YouTube have increased public health awareness through the dissemination of health information and the formation of supportive communities (Chukwuyere et al., 2020; Thapliyal et al., 2024) The increasing public health awareness has changed purchasing and consumption behaviors (Ali & Ali, 2020; Richetin et al., 2022). One example of this change is the increased desire of consumers to purchase and consume food outside the home (Chang et al., 2023). Rahmalia et al. (2022) also stated that in the current digital era, consumers are adapting by engaging in online purchases.

The need for convenient and healthy food is growing, especially as busy lifestyles leave many people no time to cook (Hill & Maddock, 2019; Noort et al., 2022). This opens up opportunities for SMEs to offer products that cater to their target consumers' preferences. Producers can better understand these consumer preferences and more effectively respond to market demand and develop products that meet consumer needs. To address the demands of health-conscious market segments, producers must understand the factors driving consumer preferences in food choices (Liñán et al., 2019). In this context, food choices often involve trade-offs, making Discrete Choice Experiment (DCE) a suitable methodology for understanding this complexity (Livingstone et al., 2020). Choice Experiments are often used to analyze consumer preferences in various fields, such as marketing, environmental economics, health economics, and transportation (Determann et al., 2019; Dewi et al., 2022). DCE can also be used to reflect consumer willingness to pay (Cantillo et al., 2020).

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Preferences also influence consumer willingness to pay (Illichmann, n.d.; Krömker, 2021). One tool that can be used to determine the preferences or food choices commonly consumed by consumers is the Food Choice Questionnaire (FCQ) (Daly et al., 2023; Koksal, 2019). Steptoe developed the FCQ to measure the motives underlying consumers' food choices (Verhagen & Ruben, 2019). The use of FCQ can identify important consumer attributes like health, mood, sensory appeal, convenience, and price. This information can be used to develop more effective marketing strategies, design products that align with consumer desires, and enhance consumer experiences. Such strategic planning is interpreted as an effort to develop the economic potential of commodities, product market share, and other opportunities (Dahliana & Tahir, 2021)

One popular choice for healthy food is salad (Barnard, 2020; Hoy et al., 2020). Although public awareness of the importance of nutritious food has increased, there are still differences in preferences and willingness to pay for such food. Research by Jacques (2023) shows that income does not influence willingness to pay in any model, indicating that income does not always affect WTP. However, other research has identified a significant and positive correlation between income and willingness to pay (Liu et al., 2019). Furthermore, most previous studies did not investigate preferences and willingness to pay using the food choice questionnaire. This gap highlights the need for further research to explore consumer preferences and willingness to pay for healthy foods like salads, using more comprehensive tools such as the food choice questionnaire to better understand the underlying factors influencing these decisions.

This study aimed to determine consumer preferences for healthy food products in Malang City through the Food Choice Questionnaire, the order of importance values of the Food Choice Questionnaire indicators that shaped consumer preferences for healthy food products, and consumer willingness to pay for healthy vegetable salad food in Malang City. The preferences, the order of importance values of attributes, and consumer willingness to pay generated by this study were expected to form a product development strategy, which could serve as a reference or idea for healthy food culinary entrepreneurs in developing products according to consumer preferences in Malang City. Furthermore, they can identify the best customer segments and assess potential opportunities (Güney & Giraldo, 2019).

METHODS

The data employed in this study was obtained from the online survey conducted in Malang City from January to February 2024. The selection of Malang City was made intentionally because Malang was an educational city with many students pursuing their studies there. In addition, Malang City was chosen due to the abundance of culinary and non-culinary tourism options available. This study used respondents aged 17 to 60 years. The criteria for the respondents are those who have consumed healthy food in Malang City. A total of 150 respondents were obtained using the sample calculation formula from Lemeshow. The Lemeshow formula is used for sample calculation when the population is not known precisely (Kurniawan et al., 2024).The Lemeshow formula is as follows: (Saputra et al., 2023; Sujalu et al., 2021) $n = \frac{z^2 p(1-p)}{d^2}$. The purpose of using respondents in this study is to identify the essential attributes involved in decision-making for repeat purchases of health food products. Data collection techniques include both primary and secondary data. Primary data is collected using an online survey distributed via social media to reach a diverse range of respondents. Secondary data is gathered through a literature review, including reading scientific journals, books, research reports, and other relevant documents.This study uses multivariate analysis, namely discrete choice experiment (DCE) with a conditional logit model,

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aided by r- software studios. The attributes in this study were adapted from the multidimensional measures of the food choice questionnaire (FCQ) formulated by Steptoe (Filho, 2016). The food choice questionnaire (FCQ) used in this study has been adjusted to facilitate the research. The attributes and levels of the study are presented **IN** Table 1**.**

Table 1. Attributes and levels implemented in the Discrete Choice Experiment (DCE)

Attribute	Level
Health	High in vitamins
	Contains a lot of fiber
	Contains a lot of protein
Mood	Lifts my spirits
	Puts me in a good mood
	Helps me relax
Convenience	Simple to make
	Ready in no time
	Accessible at shops in close proximity
Sensory Appeal	Tastes good
	Smells nice
	Looks good
Natural Content	Without Synthetic Ingredients
	Made with natural ingredients
	Contains no additives
Price	Thirty thousand rupiahs
	Forty thousand rupiahs
	Fifty thousand rupiahs

Source: Primary data processed, 2024

Discrete Choice Experiment (DCE) acts as a research methodology that can identify preference coefficients, the relative importance of attributes and levels in making decisions, and can also provide estimates of willingness to pay (Cantillo et al., 2020; Raghavarao et al., 2010). Research using a *Discrete Choice Experiment* will give respondents choice sets, each consisting of choice Options and also a no-choice option if consumers do not like any of the options available. One of the advantages of using the *Discrete Choice Experiment* in research is that respondents can indicate that they do not like any of the presented Options, which increases realism by not forcing a decision if the Options are unacceptable (Eggers et al., 2018). The following is an example of the choice set presented on **Table 2**.

Table 2. Sample of the choice set

Attribute	Option A	Option B	
Health	Contains a lot of fiber	High in vitamins	No-choice option
Mood	Feel relax	feel good	
Convenience	Simple to make	Simple to make	
Sensory Appeal	Smells nice	Tastes good	
Natural Content	Without Synthetic Ingredients	natural ingredients	
Price	Rp. 50.000	Rp. 40.000	

Source: Primary data processed (2024)

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In discrete choice experiments, consumers were typically presented with multiple combined scenarios featuring different attributes and were asked to choose among them. Based on the results of these choices, it was possible to simulate and estimate the consumers' preference parameters for these characteristics or attributes by establishing a specific measurement model, which helped explain the consumers' choice behavior. Considering individual preferences and heterogeneity in the modelling process was crucial. The mixed logit model was one of the methods used to explain the heterogeneity of the respondents' preferences. Alternative specific constant (ASC) terms were set to analyze intrinsic, property-independent preferences. The constant term for Option A and Option B was set to 1, while the out-opt was set to 0 (Khan et al., 2019; Si et al., 2019). This allowed the parameters to vary randomly among individuals and was characterized by heterogeneity as a continuous function of the parameters (McFadden & Train, 2000; Wang et al., 2022).

RESULTS AND DISCUSSION

The average consumer of healthy vegetable salad in Malang City is predominantly female, accounting for 70%, while male consumers make up about 30%. According to Kurnianingsih et al., (2022) men have a 30% higher likelihood of having poor eating habits than women. Various factors, including societal expectations and awareness about health and nutrition, could influence this gender difference in healthy eating habits. The age distribution of respondents shows that healthy food consumption is predominantly among those under 25 years old, with 67% falling into this category. Meanwhile, those aged 26-35 years account for 31%, and the least are those over 36 years old, comprising only 2%. Educational attainment also plays a significant role in healthy food consumption. Respondents' highest average educational attainment was academic degrees at 76%, followed by high school at 17%, and the lowest was diploma at 7%. According to Yuliana & Hakim (2019), the level of a person's education influences their consumption patterns through the selection of food ingredients in terms of quality and quantity. This correlation suggests that education may provide individuals with better knowledge and understanding of the importance of a healthy diet. Occupation-wise, respondents were predominantly students at 37%, followed by entrepreneurs at 32%, private employees at 17%, housewives and state-owned enterprise employees each at 5%, civil servants at 3%, and teachers at 1%. Monthly income also influences healthy food consumption patterns. The highest average income of respondents is those earning more than Rp. 5,000,001 at 24%, followed by those earning between Rp.2,000,001 - Rp.3,000,000 at 22%, then those earnings between Rp.1,000,001 Rp.2,000,000 at 21%, and those earning less than Rp. 1,000,000 at 19%. Respondents earned between Rp.3,000,001 - Rp.4,000,000 at 9% and between Rp.4,000,001 - Rp.5,000,000 at 5%, respectively. The primary reason for consuming healthy food among respondents is to maintain health, at 78%, while dieting accounts for 17%. Individuals with a keen sense of health often gravitate towards healthier food options daily (Alam et al., 2022). This indicates a strong connection between health consciousness and the preference for healthy food options. The characteristics of the respondents are presented in **Table 3**.

This analysis provides insight into the main factors influencing consumer choices and their monetary valuation. The results are based on data collected through the *Discrete Choice Experiment* (DCE) and analyzed using advanced statistical techniques. These findings highlight the importance of specific attributes in driving consumer preferences and offer valuable information for

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manufacturers and marketers seeking to develop and promote healthy salad greens that meet consumer demands **Table 4**.

The ASC (Option Specific Constant) value represents the consumer's rejection or compromise value for selecting "None of the options" from the offered choices (Determann et al., 2019; Dewi et al., 2022; Hussain et al., 2020; Oecd, 2018). The ASC value is 2.099, indicating that overall, consumers have an inherent tendency or baseline preference towards the option or Option that is not included in the independent variables ("none of the options").

Table 3. Respondent Characteristic

Characteristic	Categories	Percentage (%)
Gender	Man	30%
	Woman	70%
Age	Under 25	67%
	26-35 years	31%
	Over 36	2%
Education	High School	17%
	Diploma	7%
	Academic Degrees	76%
Job	Student	37%
	Homemaker	5%
	Private Sector Employee	17%
	State-Owned Enterprise Employee	5%
	Government Employee	3%
	Teacher	1%
	Entrepreneur	32%
Income	<Rp.1.000.000	19%
	Rp.1,000,001 Rp.2,000,000	21%
	Rp.2,000,001 - Rp.3,000,000	22%
	Rp.3,000,001 - Rp.4,000,000	9%
	Rp.4,000,001 - Rp.5,000,000	5%
	>Rp.5,000,001	24%
Reasons for consuming healthy food	Diet	17%
	Maintaining Health	78%
	etc	5%

Source: Primary data processed, 2024

Customer preferences based on the Healthy attribute

There are 3 levels in the healthy attribute: High in vitamins, Contains a lot of fiber, and contains a lot of protein. Coefficient values for the fiber and protein levels are positive, with a coefficient value of 0.6497 for the fiber level and 0.1986 for the protein level (**Table 4**). The positive coefficient values for the fiber and protein levels in the Health attribute indicate that consumers prefer or are more inclined towards healthy food (vegetable salad) that Contains a lot of fiber and protein compared to those high in vitamins. From the coefficient values between the fiber and protein levels, it is also found that consumers prefer healthy food (vegetable salad) that Contains a lot of fiber, with a coefficient value of 0.6497, compared to those that contains a lot of protein, which have a coefficient value of 0.1986. This is in line conducted by Null (2010), where consumers

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choose certain foods because of their high fiber content. Inversely proportional to the results of research conducted by Mudawaroch & Rinawidiastuti (2020), which states that nutritious food purchasing decisions are not influenced by the high protein and vitamin content of the food because respondents in this study focused on students, so respondents in this study prioritized price even though the protein and vitamin content was not too high. On the other hand, respondents in this case already cover a wider range of both age and profession, so they are willing to pay more to get food with higher protein and vitamin content.

Table 4. Estimation result of preferences, Relative attribute impotence, and willingness to pay for healthy vegetable salad

Attribute	Existing	Level	Coefficient	WTP	Relative Attribute Importance (%)
ASC			2.099		
Health	High in Vitamins	Contains a lot of fiber	0.04514	-49824	51%
		Contains a lot of protein	00.20	-15230	
Mood	Lifts my spirit	Helps me relax	00.02	-1883	6%
		Puts me in good mood	-0.03	2101	
Convenience	Accessible at shops in close proximity	Simple to make	-0.14	10416	13%
		Ready in no time	-0.25	19410	
Sensory Appeal	Tastes good	Smells nice	-0.32	24287	3%
		Looks good	-0.34	26334	
Natural Content	Without Synthetic Ingredients	Made with natural ingredients	-0.15	11549	27%
		Contains no additives	00.09	-6550	
Price		Price	1,30E-02		

Source: Primary data processed, 2024

Customer preferences based on the Mood attribute

The Mood attribute has three levels: lifts my spirits, helps me relax, and puts me in a good mood. Lifts my spirits is the control variable, while Helping me relax and Puts me in a good mood are the comparison variables for preference analysis. Data indicates that the coefficient value for the Helps me relax level is positive at 0.02455, while the Puts me in a good Mood level has a negative coefficient value of -0.0274 (**Table 4**). The positive coefficient value for the Helps me relax level in the Mood attribute indicates that consumers prefer or are more inclined towards healthy food (vegetable salad) that helps them feel relaxed when consumed. On the other hand, the negative coefficient for the puts me on the good mood level suggests that it lifts my spirits control level and helps me relax level (both of which have positive coefficient). This attribute is less preferred by

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consumers, the negative value indicates that foods perceived as putting them in a good mood (such as vegetable salad) are less likely to be chosen, as they offer lower utility or preference to the other two levels. In other words, consumers seem to prefer foods that help them relax (with a positive coefficient) over those believed to improve their mood (with a negative coefficient). Similar findings were also obtained by (Guadagnino & Rose, 2012), where consumers tend to choose foods that help them feel relaxed when choosing certain foods to consume.

Customer preferences based on the Convenience attribute

This study has three levels of convenience attributes: It is accessible at shops nearby, is simple to make, and takes no time to prepare. The control variable in the choice sets (existing): Accessible at shops nearby, making it Simple to make and Ready the reference points for the consumer preference analysis results in no time. Coefficient values for the levels available Simple to Make and Ready in No Time are negative, with the coefficient for the Simple to Make level being -0.1358 and for Ready in No Time level being -0.2531 (**Table 4) .** The negative coefficient values for the simple-to-make and quick preparation levels in the Convenience attribute indicate that consumers prefer or are more inclined towards healthy food (vegetable salad) that is accessible at shops in close proximity. Consumers prefer the level "It is Accessible at shops in close proximity" compared to the level "Simple to make" and "takes no time to prepare" because the accessibility and convenience it offers save more time and effort. According to (Barjolle et al., 2013), Convenience refers to the level of ease, practicality, or comfort perceived by consumers in obtaining or consuming a product.

Customer preferences based on the Sensory Appeal attribute

There are 3 levels in the sensory appeal attribute: tastes good, smells nice, and looks good. Tastes good is the control variable, while smells nice and looks good are the comparison variables in preference analysis. Based on the information presented in the (**Table 4)**, the data indicates that the coefficient value for the Smells good level is negative at -0.3167, and the coefficient value for the Looks good level is also negative at -0.3434. This indicates that consumers prefer or are more inclined towards healthy food (vegetable salad) that tastes good compared to food that smells nice or looks good. According to (Winando & Toruan, 2024)the results showed that taste is the most influential factor on purchasing decisions for healthy food (salad) taste is an attribute that includes appearance, odor, texture, taste, and temperature.

Customer preferences based on the natural content attribute

The Natural Content attribute has three levels: without synthetic ingredients, made with natural ingredients, and without additives. Synthetic Ingredients are the control variable in this study, while Made with natural ingredients and Containing no additives are variables for preference analysis. The data indicates that for the natural content attribute, the coefficient value for the level Made with natural ingredients is negative at -0.1506. In contrast, the level containing no additives is positive at 0.08541 (**Table 4**). This indicates that consumers prefer or are more inclined towards healthy food (vegetable salad) that contains no additives. Consumers prefer the level "Contains no additives" compared to the level "Without Synthetic Ingredients" and "Made with natural ingredients" because they perceive food without added additives as healthier, providing a sense of security against potential health risks posed by additives. Food additives can reduce the nutritional value of food (El-Samragy, 2012).

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Customer preferences based on the Price attribute

Price is one of the most essential factors that people consider when purchasing. The Price attribute in this study only produces one coefficient value, which is 1.304e-05, as it is a continuous variable. According to Bhatnagar (2019), attributes with numeric values, such as time, cost, etc., can be defined as continuous variables as they provide additional information. In this study, the Price attribute will provide information regarding willingness to pay. If the coefficient has a negative value, consumers are willing to pay a lower price (Dewi et al., 2022). Conversely, if the coefficient has a positive value, consumers' Willingness to Pay increases, or they continue purchasing despite the higher price, as they perceive the product to have more excellent value or benefits (Putri et al., 2023)

Willingness to Pay

Choice experiments can provide estimates of willingness to pay, although the estimated WTP results in choice experiments are sometimes too high (Noor et al., 2022). Consumers show a tendency to pay an additional Rp. 10,416 for the vegetable salad that is simple to make and is willing to pay an additional Rp. 19,407 for the vegetable salad that takes no time to prepare (**Table 4**). Convenience is one of the motivations considered by consumers when buying and consuming ready-to-eat foods. This is what causes consumers to be still willing to pay more for salads that are Ready in no time and are Simple to make. Ready-to-eat salads are seen as convenient products because they require little time and effort to prepare (Aviles et al., 2020; Massaglia et al., 2019). For the Natural Content attribute, consumers are willing to pay an additional Rp. 11,549 for a vegetable salad that is Made with natural ingredients. Another study by Migliore et al. (2018) also found that the majority of consumers (more than 68%) are willing to pay more for products with "natural" attributes. Research by Hasselbach & Roosen (2015) shows that consumers who like organic food prioritize health over price. For the Mood attribute, consumers are willing to pay a higher amount of Rp. 2,101 for the vegetable salad that makes them feel good when consumed. Heidari et al., (2023) stated that consuming vegetables can increase happiness, imagination, and curiosity, which can affect consumer satisfaction. The happiness consumers feel also provides satisfaction, which can be an added value for them and makes them willing to pay more. Additionally, according to (Kim et al., 2019), healthy food significantly impacts consumer satisfaction, especially for consumers who are dieting. However, consumers' willingness to pay is negative for the Health attribute. Nevertheless, for the Sensory Appeal attribute, it is evident that consumers are willing to pay an additional Rp. 24,290 for the vegetable salad that smells good. Furthermore, consumers are also willing to pay an additional Rp. 26,331 for the vegetable salad that looks good.

Relative Attribute Importance

The importance level of attributes is calculated by comparing the difference between the best and worst levels with the total number of attributes, which is then converted into a percentage (Feldman et al., 2024). The attributes considered in this study consist of Convenience, Natural Content, Mood, Health, and Sensory Appeal. Data indicates that overall, the Health attribute is the most considered factor by consumers when making a purchase, with a percentage of 51%. The Natural Content attribute is the second consideration, with a percentage of 27%, followed by the Convenience attribute, with a percentage of 13%, and the Mood attribute, with a percentage of 6% (**Table 4**). The Sensory Appeal attribute is the last consideration consumers consider when making decisions. Research conducted by Huang *et al*. (2022) shows that the perception of nutritional value (high in vitamins, fiber, and protein) and the perception of food content (free of synthetic additives, organic,

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preservative-free) positively influence the intention to purchase healthy food. Another study by Wahyuningtyas et al. (2021) also found that health is a key factor motivating consumers in food choices.

Product Development Recommendations Based on Preference Results, Attribute Importance Levels, and Consumer Willingness to Pay

The results of the consumer preference analysis indicate that consumers tend to choose vegetable salads that are available around them, made from preservative-free ingredients, high in fiber, can provide a relaxing feeling, and have a delicious taste. The most essential attributes in purchasing vegetable salads are Health, Natural Content, Convenience, Mood, and Sensory Appeal.

For the Health attribute, consumers want vegetable salads that are rich in fiber, with product development suggestions such as adding varieties of fiber-rich vegetables and providing nutritional information. The Natural Content attribute reflects consumers' desire for preservative-free vegetable salads, with suggestions like partnering with trusted suppliers and emphasizing product authenticity through organic labels and marketing.

Based on the Convenience attribute, consumers want vegetable salads that are easily accessible around them, both at home and at work, with a suggestion to collaborate with delivery services. The Mood attribute indicates that consumers want vegetable salads that can provide a relaxing feeling, with product development suggestions such as adding ingredients with relaxation effects and creating a calming atmosphere in the presentation.

Finally, based on the Sensory Appeal attribute, consumers want vegetable salads that taste good, with a suggestion to serve the salad using fresh ingredients to maintain its taste, aroma, and nutritional quality.

CONCLUSION

This study enhances the understanding of consumer preferences, willingness to pay (WTP), and Relative Attribute Importance in the context of vegetable salad products. The findings indicate that consumers prefer vegetable salads that are high in fiber, free from additives, easily available in nearby stores, provide a relaxing effect when consumed, and have a good taste. The order of attribute importance in purchasing decisions is Health, Natural Content, Convenience, Mood, and Sensory Appeal. The WTP analysis reveals that consumers are willing to pay a premium for vegetable salads that are simple to make (IDR 10,416), ready in no time (IDR 19,410), contain natural ingredients (IDR 11,549), make them feel good when consumed (IDR 2,101), smell pleasant (IDR 24,287), and look good (IDR 26,334). These findings provide strategic implications for SMEs in the healthy food sector, suggesting that product development should prioritize fiber-rich, additive-free salads with appealing sensory characteristics and convenient preparation methods. Marketing strategies should emphasize health benefits, natural content, and convenience while leveraging sensory appeal to attract a broader audience. Pricing strategies should reflect the premium consumers are willing to pay for key attributes, and distribution should ensure product accessibility to meet market demand. However, this study has some limitations, including a limited sample size of 150 respondents and a restricted number of attributes analyzed—Health, Mood, Convenience, Sensory Appeal, Natural Content, and Price. Additionally, the study assumes that consumer decisions are entirely rational, whereas emotional and contextual factors may also influence preferences. Future research should consider expanding the attributes by incorporating Weight Control, Familiarity, and Ethical Concern, involving a larger sample to improve generalizability.

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