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Article

Examining customer satisfaction and purchase intention toward a new product before its launch: Cookies enriched with spirulina

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MARKETING | RESEARCH ARTICLE

Examining customer satisfaction and purchase intention toward a new product before its launch: Cookies enriched with spirulina

Istijanto^{1*}, Yalun Arifin² and Nurhayati²

Abstract: This study aims to examine the effects of product attributes during the prototype stage on customer satisfaction and intention to buy. The new product examined was cookies enriched with spirulina. The theories serving as the foundation of explanation were Stimulus-Organism-Response (S-O-R) theory and Expectation Confirmation Theory (ECT). The current research employed a survey method. Using judgmental sampling, 316 respondents were given samples of a prototype product to experience the product realistically. The measuring items had a 7-point numerical rating scale. The data were collected and then analysed using Structural Equation Modelling with LISREL 8.7. The results showed that the cookies' aroma, taste, colour, shape, and perceived healthiness influenced customer



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PUBLIC INTEREST STATEMENT

Customer satisfaction is a vital measurement for companies after their customers have experiences with products. Hence, products consist of a bundle of attributes that are evaluated by consumers. The result of this evaluation, known as customer satisfaction, determines whether consumers purchase again or not in the future. For this reason, companies must identify product attributes that contribute to customer satisfaction. Measuring customer satisfaction is necessary not only for products that have been launched, but also more importantly for new products before their launch. This study strives to address how to measure customer satisfaction for a new product that has not been launched yet. Using both the Stimulus-Organism-Response (S-O-R) theory and the Expectation Confirmation Theory (ECT), the current research proposes and examines a research model for customer satisfaction and intention to purchase for a new product. The results of this study provide comprehensive insights for testing a new product.

satisfaction and intention to buy. However, two other attributes, the texture and thickness of the cookies, did not significantly influence customer satisfaction. The findings contribute to the knowledge of customer satisfaction with a new product and the literature on food product attributes. For practitioners, this study provides a valuable analytical technique for testing a new product comprehensively before its launch.

Subjects: Food Additives & Ingredients; Consumer Psychology; Business, Management and Accounting;

Keywords: customer satisfaction; purchase intention; prototype; new product; cookies; spirulina

1. Introduction

The food business fulfils a basic human need. According to Statista (2023), the global food market was valued at US\$9.43 trillion in 2023 and is predicted to grow annually by 6.21%. In particular, the value of the global cookies market was US\$ 219.42 billion in 2023 and is predicted to grow at a compound annual growth rate (CAGR) of 5.5% from 2022 to 2028 (Market Data Forecast, 2023). These figures suggest that cookies are estimated to experience growth rates similar to those of food in general. This potential gives cookie entrepreneurs opportunities within the market.

Nevertheless, customer attitudes have changed toward the food and beverage industry. Currently, customers want to more healthy food options to fit their healthy lifestyle (Iskusnykh et al., 2022). Healthy food is defined by specific nutrient criteria such as low fat, low sugar, and low sodium (Sharma et al., 2016). Healthy food can be produced by adding extra nutritional content that is well known or relatively new to consumers. Undoubtedly, this is not an easy task for entrepreneurs when launching new food products in the market. Many critical decisions need to be made regarding food sensory attributes such as aroma, taste, colour, shape, and the perceived healthiness of the food.

Recently, the authors developed a new food product: cookies enriched with spirulina (*microalgae spirulina platensis*). The addition of spirulina is intended to increase the nutritional value of the cookies, mainly the protein content. Since spirulina is a relatively new high-nutrition food ingredient for consumers, a sensory test was required to understand the consumer's acceptability of the spirulina-enriched cookies. As stated by Kotler and Armstrong (2014), one of the steps in the new product development is to test the market, which is carried out before launching the new product into the market.

Hence, the commonly used testing method for food acceptability is the sensory evaluation (Kaur et al., 2017). During the sensory acceptability test, the potential consumers evaluate the product using their senses. It requires only a small number of samples and does not require trained panellists. Fiorentini et al. (2020) explained that the sensory evaluation not only captured consumers' preference toward certain food products but also measured and interpreted responses regarding the food characteristics.

Studies of food using the sensory test have been directed toward product attributes independently without linking them to customer satisfaction and intention to buy as a comprehensive picture. For example, Sęczyk et al. (2017) tested the consumer preference of bread on each of the following attributes independently: colour, aroma, texture, taste, and overall evaluation. Meanwhile, a study conducted by Harder et al. (2012) on boiled eggs analysed the taste and appearance attributes as well as the overall acceptability. Batista et al. (2017) examined consumers' preference for colour, aroma, taste, and texture as well as the overall evaluation of cookies. De Marco et al. (2014) employed the sensory test on pasta

products. However, previous studies could not provide an overall view of consumer behaviour such as satisfaction and intention to buy. Researchers have devoted efforts to integrate the sensory test with the market research technique, generally using qualitative or semi-qualitative methods (Simeone & Marotta, 2010).

For this purpose, a study investigating an integrated model was needed to produce more comprehensive findings related to consumer behaviour. A research model must be formulated to help shape thoughts, solve problems, describe a phenomenon, or understand a topic better (Sekaran & Bougie, 2016) and to help simplify reality to contribute to knowledge and business theories (Svensson, 2013). This study offered a research model that tested the influences of the prototype product attributes on customer satisfaction and intention to buy.

The research model was built on the S-O-R theory (Mehrabian & Russell, 1974) and the ECT (Oliver, 1980). Basically, the S-O-R theory posits that initially external stimuli (S) that someone receives will evoke an internal evaluation or a cognitive assessment of organism (O), which in turn will drive in responses in the form of behaviour (R). In this study, product attributes such as aroma, taste, and colour of food are considered stimuli. After consumers receive the stimuli, they will evaluate the experience. Hence, the assessment is based on what consumers expect and what they perceive as suggested by the ECT (Oliver, 1980). Lastly, consumers' response in the form of action is based on the level of their satisfaction or dissatisfaction with the stimuli.

To achieve the research objectives, this study poses two research questions. First, how do the seven attributes of cookies enriched with spirulina (i.e., aroma, taste, colour, texture, thickness, shape, and perceived healthiness) influence customer satisfaction? Second, how does customer satisfaction affect purchase intention?

This study offers several contributions. First of all, the current research offers both theoretical and practical contributions by adding the existing literature on food attributes and their effects on customer satisfaction, especially for a new product before its launch. Identifying the product attributes that influence customer satisfaction enables companies to gain a better understanding of consumer behaviour prior to launching new products into the market (Lucchese-Cheung et al., 2021). Furthermore, companies must identify customer satisfaction as an important strategy to apply within its long-term performance (Papaioannou et al., 2013). Thus, information related to customer satisfaction and intention to buy is essential for the pre-commercialization evaluation of a new product that has not been launched or is still in its prototype stage. Such a study has provided excellent insight based on the evaluation of consumers and the key attributes driving their purchasing behaviour (Lucchese-Cheung et al., 2021).

Second, this study provides a reference for similar studies related to new products still in their prototype stage. Food companies can conduct their product testing based on the consumer behaviour model. This will give companies opportunities to improve their new products and help reduce the risk of failure prior to launch.

Third, this study attempts to reveal the effects of various types of product attributes on customer satisfaction. According to Rha et al. (2022), food practitioners must verify which product attributes have a greater effect on consumer purchase intention. Lastly, the current research also contributes to the new product being tested, i.e., cookies enriched with spirulina, as a new innovation product in the market. Therefore, this study offers great benefits to researchers and business practitioners.

2. Literature review

2.1. *Spirulina plantesis*

The current research examined cookies enriched with spirulina as a new product. Spirulina is a blue-green algae (cyanobacterium) that can be consumed by humans (Mathew & Saral, 2023). Spirulina has several nutritional benefits, including vitamins, minerals, unsaturated fatty acids, carotenoids, and other nutrients (Fernández-Rojas et al., 2014). The pigment from spirulina is also a potential source of pro-vitamin A, which may help increase immunity and lower the risks of chronic degenerative and cardiovascular illnesses and several types of cancers (Lafarga et al., 2020). Spirulina is a safe product that is FDA approved with GRAS-GRN No. 127 certification and has received recognition from FAO and the WHO (FAO. Fisheries, 2008).

In light of its health-beneficial composition, Spirulina has the potential to become a functional food ingredient. Many scientists have conducted research and proven the benefits of spirulina (Lafarga et al., 2020; Soni et al., 2017), such as controlling the immune system, increasing antioxidant supply, providing anti-virus benefits, reducing harmful fat, promoting the growth of Lactobacillus cells which are beneficial bacteria inside the intestine, and helping prevent diabetes. In their recent study, Vrenna et al. (2021) found that spirulina is considered a superfood because it has a high content of protein (60–70% of its dry weight), a balanced dose of carbohydrates (12–25%), lipids, essential amino acids (18%), abundant vitamins (Vitamin E, Vitamin B12), pigments (carotenoids, chlorophyll, phycocyanin), and many minerals such as calcium, magnesium, phosphorus, sodium, potassium, and iron. Spirulina is a potential source of pigment in the food industry. Food products enriched with spirulina include pasta (De Marco et al., 2014), food supplementation (Santos et al., 2016), and biscuits (Batista et al., 2013).

2.2. *The stimulus-organism-response theory*

The Stimulus-Organism-Response (S-O-R) theory (Mehrabian & Russell, 1974) comes from environmental psychology and explicates how the physical environment or stimulus (S) elicits internal emotions or evaluations of organism (O) and then creates certain behavioral responses (R). This theory has been applied widely in many fields, such as the quality of education (Istijanto, 2021), shopping experiences (Peter et al., 2016), and business studies.

The S-O-R theory has universal principles as individuals give responses after their evaluation to the stimulus that they experience initially. Hence, the forms of stimulus (S) can be physical and social inputs. In the marketing context, customers encounter stimulus when they have interactions or experiences with goods, services, or other offerings from marketers. A product comprises a bundle of attributes; therefore, product attributes are considered as stimulus for customers. Attributes are physical characteristics of a product such as size, colour, taste, look, and aroma (Elangeswaran & Ragel, 2014). Each product has own specific attributes. For example, the aroma, taste, colour, texture, thickness, and shape of the cookies represent several attributes that act as stimulus when individuals consume cookies.

Based on their experience with products, customers will evaluate their attributes. This affects the internal states of the individual organism (O), such as emotional and cognitive. Hence, customers evaluate these attributes based on their expectation and perception, which thereby creates their emotional and cognitive state. For example, customers are happy if what they expect regarding the products is fulfilled, and the converse is also true. This state represents Expectation Confirmation Theory (ECT) (Oliver, 1980), which will be explained in the next section.

Lastly, based on the emotional and cognitive processes, customers will respond (R) accordingly with either approach or avoidance behaviour. In the marketing context, an example of approaching behaviour is purchase intention (Xiao et al., 2019). Therefore, S-O-R theory depicts how the attributes of products as stimulus can motivate customers' emotional or cognitive state. Then, whether customers buy a product or not is based on their internal states.

2.3. The expectation confirmation theory

Expectation Confirmation Theory (ECT) (Oliver, 1980) suggests that people make an evaluation by developing their initial expectation and the confirmation of results that they perceive. Hence, people compare between the perceived outcomes and their expectation. If the result is confirmed, people will feel satisfied, and vice versa. Based on the ECT, the majority of customer satisfaction surveys have been carried out in various contexts. For example, Silaban et al. (2023) investigated customer satisfaction in traditional restaurants, while Rajput and Gahfoor (2020) examined customer satisfaction and revisit intention to fast food restaurants, among others.

Previous studies on customer satisfaction have found an important role of customer satisfaction in buying decisions. Customer satisfaction refers to the customer attitude or evaluation toward a product or a service that they have previously used (Safari et al., 2016). Measuring customer satisfaction is very important for a company today, since customer satisfaction is not the measurement of past performance such as financial reports, but an external measurement to identify a company's future performance (Best, 2014). Therefore, the measurement of customer satisfaction must have quantitative indicators to be used as tools for future improvement (Safari et al., 2016).

Customer satisfaction measurement is useful not only for products that have been launched in the market, but also for new products before their launch. Hence, customer satisfaction surveys can be carried out as long as customers have experiences with new products. The results can provide guidance for managers and contribute to the new knowledge of products being tested.

2.4. Hypotheses development

A product exhibits a bundle of attributes or characteristics that will be evaluated by customers. Each product category has attributes that may differ from others. Previous studies have investigated the attributes of various product categories, including food products. Jemziya and Mahendran (2015) examined potato cookies based on taste, texture, colour, and overall evaluation. Batista et al. (2017) investigated the attributes of cookies as colour, aroma, taste, texture, and overall evaluation. Meanwhile, Sęczyk et al. (2017) in their empirical research tested five attributes of bread: colour, aroma, texture, taste, and overall evaluation. Verain et al. (2017) studied several attributes of diet food: taste, health perception, price, sustainability, and comfort. Liu and Tse (2018) and Serhan and Serhan (2019) investigated the effects of food attributes such as taste, health perception, nutritional contents, serving size, and other food attributes on customer satisfaction. Recently, Şahin (2020) examined cookies based on the attributes of flavour, colour, appearance, mouth feel, crispness, hardness, and overall acceptance. Many studies investigated the product attributes based on a sensory test.

The current research used a prototypical product as a new product, i.e., cookies enriched with spirulina. Based on the previous literature, the attributes to consider are aroma, taste (flavour), colour, texture, thickness, shape, and perceived healthiness. Consumers will evaluate each attribute of the cookies and test its effects on customer satisfaction.

The first attribute is the cookies' aroma. Aroma refers to the extent of the characteristic odour or smell of food (Li et al., 2022). Aroma is one of the important attributes in determining the quality of food. Consumers evaluate the aroma based on the appropriateness between the type of aroma that they perceive and their expectation. Customers will hope that the cookies enriched with spirulina have a good cookie smell, not a rotten food or strange smell. This study proposes the first hypothesis as follows.

H1: The aroma of the cookies has a positive effect on customer satisfaction.

The second attribute is taste. Taste is defined as consumers' overall evaluation of food flavour (Lee et al., 2022). Taste is the vital aspect of food function. Consumers get sensory pleasure from taste. Hence, consumers hope food is tasty, delicious, or rich in flavour. Regarding the taste of cookies, we propose the following hypothesis.

H2: The taste of the cookies has a positive effect on customer satisfaction.

Food colour is considered an important factor that evaluates consumer perception of the food sensory quality (Stich, 2016). Food colour is one of the first characteristics that consumers observe in food. Consumers consider whether the food colour meets their expectations. For example, consumers will judge red as the most suitable colour for apples. In another situation, they hope to see an orange colour when a food is made from carrots. The colour of spirulina is originally green. In this study, cookies enriched with spirulina have a green colour. Thus, the third hypothesis is proposed as follows.

H3: The colour of the cookies has a positive effect on customer satisfaction.

The next attribute of cookies is texture. Based on the literature review, Park et al. (2021) define texture as "the degree of firmness and [it] is measured by the strength needed for the first bite". Consumers can evaluate the degree of textures of food by using their hands (such as hardness, softness, crumbliness), in the first bite (for example, crustiness), or by chewing down (such as smoothness, adhesiveness) (Foegeding & Drake, 2007). Consumers have expectations for the texture attribute of the cookies, and this influences their satisfaction.

H4: The texture of the cookies has a positive effect on customer satisfaction.

The next attribute is thickness. Thickness is related to the distance from one surface to the opposite surface of an object. Thickness has various levels. In their study, Ng et al. (2022) classified thickness into four categories: slightly thick, mildly thick, moderately thick, and extremely thick. Consumers can evaluate the thickness of cookies directly by seeing, touching, and finally by biting. In this study, the cookies enriched with spirulina are around two millimetres in thickness. Customers considered the thickness of cookies as one of the attributes that influence their satisfaction.

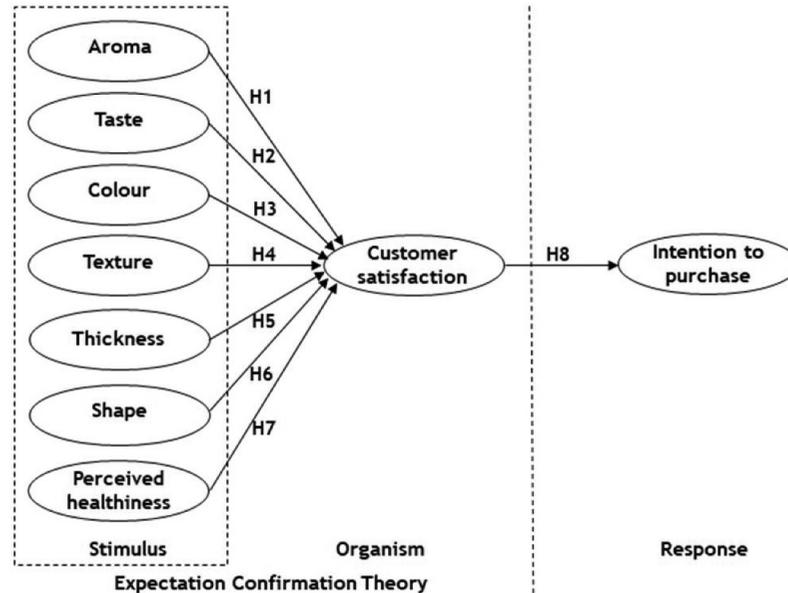
H5: The thickness of the cookies has a positive effect on customer satisfaction.

Each product has its own shape. Shape is "the visible makeup characteristic of a particular item or kind of item" (Merriam-Webster Dictionary, 2023). This means that consumers receive visual stimuli directly from the food shape. Perceptions of consumers toward food products are built based on its shape (Li et al., 2022). The cookies in this study had an elongated oval shape. If customers like the shape of cookies, they will be satisfied by the cookies.

H6: The shape of the cookies has a positive effect on customer satisfaction.

The next attribute is perceived healthiness. Perceived healthiness is defined as "a consumer's expectation of a product's influence on his or her state of health" (Howlett et al., 2009). In recent times, consumers have become more health conscious and inclined to select healthy food products.

Figure 1. The research model.



Therefore, consumers are more receptive to food products that promote healthiness. The new cookies enriched with spirulina contain ingredients that boost human health. This will satisfy consumer needs.

H7: The perceived healthiness of the cookies has a positive effect on customer satisfaction.

Previous studies also found the effect of customer satisfaction on the intention to buy in various contexts such as a hotel (Faizan, 2016), shopping apps (Thakur, 2018), and juice (Nodira & Přemysl, 2017), among others. Therefore, the last hypothesis proposed in this study is as follows.

H8: Customer satisfaction has a positive effect on purchase intention.

“Based on the hypotheses above, the research model is presented in Figure 1.”

3. Research method

This study employed a survey method, which is used to collect data by asking the respondents structured questions related to behaviour, intention, attitudes, knowledge, motivation, and other characteristics (Malhotra, 2020). The survey was carried out by sending questionnaires directly to the respondents (Sekaran & Bougie, 2016) after they were given samples of the cookies.

As stated by Abril and Rodríguez-Cánovas (2016), a study is only valid when the respondents are familiar with the product and have purchased it. Considering that the product in this study, which is cookies enriched with spirulina, was not yet available on the market, samples of the cookies was produced. Then, the respondents were given the prototypical product to taste before they answered the questionnaires. This type of survey was considered the most appropriate for this study.

Respondents had opportunities to touch and taste the new cookies. Then, they answered the questionnaire. The measured items or questionnaires in this study were adapted from Wei et al. (2018) for the measurement of perceived healthiness and purchase intention and from McNeill (2000) for the attributes of aroma, taste, colour, texture, thickness, and shape. For customer satisfaction, the items were adapted from Kitapci et al. (2013) and Garg et al. (2016). Each variable consists of three items.

Figure 2. New cookies enriched with spirulina.



The scale used in this study was a 7-point numerical rating scale (Cooper & Schindler, 2014) ranging from 1 to 7, with the anchors being “do not like at all” to “like very much”, “bad” to “good”, “strongly disagree” to “strongly agree” for each attribute and “not at all likely” to “extremely likely” regarding purchase intention. The prototypical product is shown in Figure 2.

For data analysis, this study employed the Structural Equation Modeling (SEM) analysis method (Byrne, 2013) using the LISREL 8.7 software. LISREL used a covariance-based analysis and was suitable to test the model fit (Jöreskog & Sörbom, 1996). The process calls for a two-step analysis: validating the measurement model and testing the structural model (Anderson & Gerbing, 1988). Firstly, it runs the descriptive, validity, and reliability analysis. The descriptive analysis is conducted to identify the profiles of the respondents and the mean values of the variables. To test the validity of the measurements, this study used convergent validity shown by the factor loadings and the Average Variance Extract (AVE) value. The discriminant validity is determined by the root square value of AVE and compared to the correlation matrix of each construct. The reliability analysis is conducted by using the Cronbach Alpha and Composite Reliability (CR). Secondly, we examined the structural equation model including the hypotheses test. This study used the Confirmatory Factor Analysis (CFA), t-test, and p-value <0.05 to determine the significance of the estimated value or standardized β .

4. Result and discussion

4.1. Respondent profiles

This study involved 316 respondents. The sampling method used was judgmental sampling that was considered non-probability sampling (Malhotra, 2020). This method was beneficial in selecting appropriate respondents. Only those who enjoy cookies could participate in this study. Respondents were selected from Jakarta, a capital city in Indonesia where this survey was carried out. This study employed WhatsApp groups, a list of student emails, and a list of referrals as sampling frames. The respondents were approached and invited by researchers using social media and email. The survey required that respondents come physically to the research place, because they need to have experiences with the new product. They were scheduled based on their time availability.

The venue was in a campus building, and some cubical rooms were provided on the campus. During the survey, the respondents sat in separate cubical spaces. Then, they were given a sample of the prototypical product: cookies enriched with spirulina. Respondents were asked to observe, touch, and eat the cookies for about 5–10 minutes. This time period was chosen to allow all respondents to have experience consuming the product, even though this new product had not been launched in consumer markets. After participating in this study, the respondents were given souvenirs. Table 1 presents the details of the characteristics of the respondents.

4.2. Validity and reliability analysis

The result of SEM using the Lisrel 8.7 software showed that the testing of the measurement model through CFA fulfilled the requirement of convergent validity, discriminant validity, and reliability.

Table 1. Profile of respondents

No.	Characteristics	Category	Frequency	Percentage
1.	Gender	Male	185	58.5%
		Female	131	41.5%
2.	Age group	Under 20 years old	89	26.6%
		20–25 years old	83	26.3%
		26–30 years old	56	17.7%
		31–35 years old	42	13.3%
		36–40 years old	29	9.2%
		More than 40 years	22	6.9%
3.	Occupation	Student	157	49.7%
		Employee	137	43.3%
		Businessman/ woman	16	5.1%
		Others	6	1.9%
4.	Location	Jakarta city	316	100.0%

For the convergent validity, the factor loading for each variable of the construct was between 0.773 and 0.932. This means that the values had fulfilled the minimum requirement, i.e., 0.50 (Hair et al., 2014). The AVE value of the testing was between 0.811 and 0.921, which is greater than the recommended limit of 0.50 (Anderson & Gerbing, 1988). The high factor loading and AVE values indicate that each construct fulfilled the requirement of convergent validity. This means that each measurement variable effectively reflected the measured construct.

Next, the test of discriminant validity was conducted according to the work of Fornell and Larcker (1981). The results showed that the square root of the AVE values for each construct were greater than the correlation values of the constructs, which were related to other constructs. This indicated that the discriminant validity requirement had been fulfilled. Furthermore, to test the reliability, each construct had CR values between 0.927 and 0.971. The values were greater than the requirement, which is 0.70 (Anderson & Gerbing, 1988). This means that the reliability requirement had been fulfilled. In addition, the reliability testing using the Cronbach Alpha value shows a range between 0.924 and 0.972. This means that all constructs had high internal consistency, since the Cronbach Alpha values were greater than 0.70 as a threshold (Nunnally, 1978).

The descriptive analysis was also employed to calculate the mean value and the standard deviation of each variable observed. The values indicated that the respondents evaluate each of the product attributes, customer satisfaction, and purchase intention. Based on the results, using the 7-point numerical rating scale, the mean values of each measurement were in the range of 3.42 (the lowest) and 5.16 as the highest. Tables 2 and 3 summarize the discriminant analysis, values of mean, standard deviation (SD), factor loading, AVE, CR, and Cronbach's Alpha for each measuring item that fulfilled the validity and reliability requirement.

4.3. Hypotheses testing

The goodness of fit (GoF) was used as the assessment of the fitness of the model (Hair et al., 2014). This study employed the GoF index commonly employed in previous studies: Cmin (χ^2)/df, RMSEA (Root Mean Square Error of Approximation), GFI (Goodness of Fit Index), and CFI (Comparative Fit Index). The results of the analysis showed the Cmin values as χ^2 /df = 1.694 (below 3.00 as prerequisite), GFI = 0.89 (closed to 0.90), CFI = 0.99 (above 0.90), and RMSEA = 0.047 (below 0.05). This means that all GoF values fulfilled the requirement (Hair et al., 2014), and therefore, the measurement model was considered a good fit.

Table 2. Discriminant validity

Construct	AVE	1	2	3	4	5	6	7	8	9
1. Aroma	0.92	0.95								
2. Taste	0.91	0.62	0.95							
3. Color	0.91	0.25	0.25	0.95						
4. Texture	0.81	0.27	0.41	0.35	0.90					
5. Thickness	0.91	0.16	0.24	0.26	0.49	0.95				
6. Shape	0.85	0.23	0.20	0.34	0.42	0.46	0.92			
7. Perceived healthiness	0.81	0.04	0.15	0.21	0.17	0.20	0.23	0.90		
8. Customer satisfaction	0.92	0.56	0.73	0.43	0.47	0.36	0.38	0.32	0.95	
9. Purchase intention	0.87	0.53	0.66	0.42	0.33	0.21	0.29	0.30	0.79	0.93

Notes: diagonal values (bold) display the square root of AVE.

Table 3. Descriptive statistics, validity, and reliability of measurements

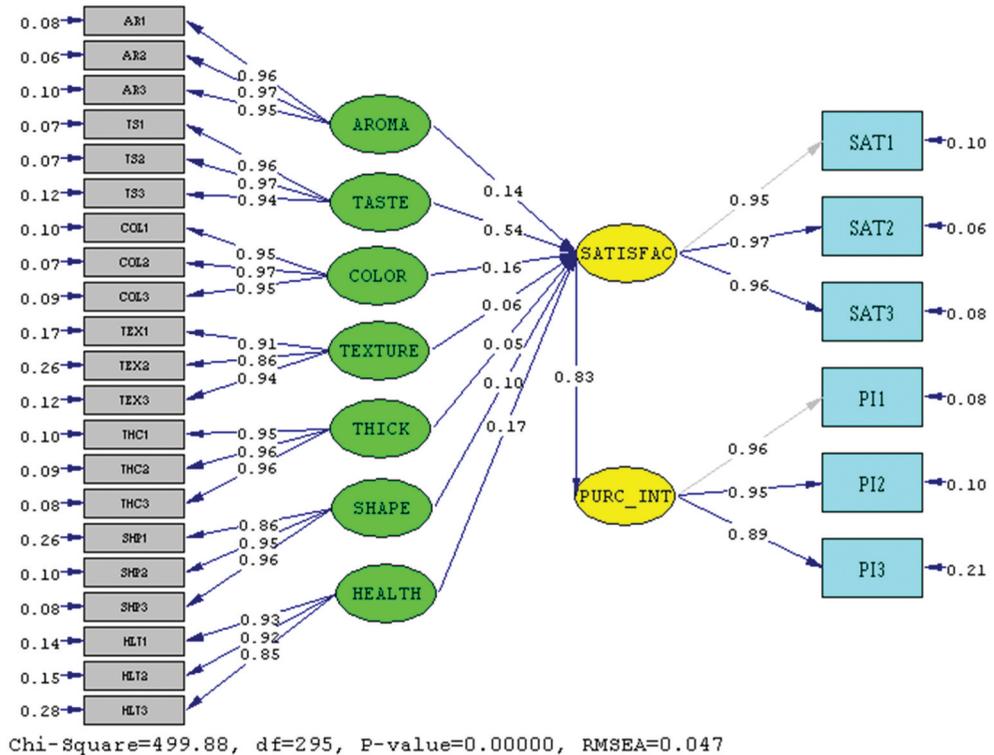
Constructs and items	Mean	Standard deviation	Factor loadings
Aroma Mean = 3.986; SD = 1.547; Cronbach's α = 0.972; CR = 0.971; AVE = 0.921 (adapted from McNeill, 2000; Wei et al., 2018)			
How do you like the aroma of these cookies?	3.99	1.572	0.868
How is the aroma of these cookies?	4.03	1.604	0.868
I like the aroma of these cookies.	3.94	1.594	0.858
Taste Mean = 4.687; SD = 1.381; Cronbach's α =0.969; CR = 0.969; AVE = 0.915 (adapted from McNeill, 2000; Wei et al., 2018)			
How do you like the taste of these cookies?	4.72	1.414	0.773
How is the taste of these cookies?	4.75	1.395	0.781
I like the taste of these cookies.	4.59	1.463	0.800
Color Mean = 4.230; SD = 1.555; Cronbach's α = 0.970; CR = 0.969; AVE = 0.915 (adapted from McNeill, 2000; Wei et al., 2018)			
How do you like the colour of these cookies?	4.30	1.576	0.920
How is the colour of these cookies?	4.22	1.633	0.921
I like the colour of these cookies.	4.17	1.596	0.906
Texture Mean = 5.066; SD = 1.080; Cronbach's α = 0.930; CR = 0.930; AVE = 0.817 (adapted from McNeill, 2000; Wei et al., 2018)			
How do you like the texture of these cookies?	5.16	1.122	0.838
How is the texture of these cookies?	4.98	1.160	0.821
I like the texture of these cookies.	5.06	1.178	0.866
Thickness Mean = 5.060; SD = 1.258; Cronbach's α = 0.969; CR = 0.968; AVE = 0.915 (adapted from McNeill, 2000; Wei et al., 2018)			
How do you like the thickness of these cookies?	5.13	1.289	0.908

(Continued)

Table 3. (Continued)

Constructs and items	Mean	Standard deviation	Factor loadings
How attractive is the thickness of these cookies?	5.01	1.285	0.908
I like the thickness of these cookies.	5.04	1.318	0.917
Shape Mean = 4.688; SD = 1.174; Cronbach's α = 0.944; CR = 0.945; AVE = 0.854 (adapted from McNeill, 2000; Wei et al., 2018)			
How do you like the shape of these cookies?	4.85	1.235	0.834
How attractive is the shape of these cookies?	4.60	1.252	0.906
I like the shape of these cookies.	4.62	1.228	0.905
Perceived healthiness Mean=4.957; SD = 1.198; Cronbach's α = 0.924; CR = 0.927; AVE = 0.811 (adapted from Wei et al., 2018)			
According to you, how healthy are these cookies?	5.08	1.286	0.932
How suitable are these cookies for your healthy menu?	4.77	1.366	0.917
These cookies are health food.	5.02	1.204	0.878
Customer satisfaction Mean=4.506; SD=1.239; Cronbach's α =0.970; CR=0.971; AVE=0.921 (adapted from Garg et al., 2016; Kitapci et al., 2013)			
Overall, I am very satisfied with the cookies that I just tried.	4.59	1.209	0.821
I am satisfied with the cookies that I just tried.	4.45	1.280	0.817
I enjoyed the cookies.	4.48	1.334	0.821
Purchase intention Mean = 3.829; SD = 1.472; Cronbach's α = 0.952; CR = 0.952; AVE = 0.872 (adapted from Wei et al., 2018)			
How likely is it for you to buy these cookies?	4.02	1.547	0.844
If you are buying cookies, how likely are you considering buying these cookies?	4.04	1.567	0.833
I will often buy these cookies.	3.42	1.507	0.845

Figure 3. Structural equation modeling (SEM) output.



The next step was to test the hypotheses. The effect of each independent variable on the dependent variables was shown by the values of standardized beta (β). The structural model showed the effect of aroma ($\beta = 0.14$, $t = 3.16$, $p < 0.05$), taste ($\beta = 0.54$, $t = 10.26$, $p < 0.05$), color ($\beta = 0.16$, $t = 4.06$, $p < 0.05$), shape ($\beta = 0.10$, $t = 2.53$, $p < 0.05$), and perceived healthiness ($\beta = 0.17$, $t = 4.73$, $p < 0.05$) of the cookies on customer satisfaction. In addition, this study also corroborated the effect of customer satisfaction on purchase intention ($\beta = 0.83$, $t = 21.44$, $p < 0.05$). Taken together, six hypotheses (H1, H2, H3, H6, H7, and H8) were proved to be supported by data. On the other hand, this study found that the texture and thickness of the cookies did not significantly

Table 4. Results of hypotheses testing

	Path	Beta (β)	p-value	Status
H1	Aroma → Customer satisfaction	0.14	.000871	Supported
H2	Taste → Customer satisfaction	0.54	.000000	Supported
H3	Colour → Customer satisfaction	0.16	.000031	Supported
H4	Texture → Customer satisfaction	0.06	.095607	Not supported
H5	Thickness → Customer satisfaction	0.05	.097308	Not supported
H6	Shape → Customer satisfaction	0.10	.005963	Supported
H7	Perceived healthiness → Customer satisfaction	0.17	.000000	Supported
H8	Customer satisfaction → Intention to buy	0.83	.000000	Supported

affect customer satisfaction. Therefore, H4 and H5 were not supported by the data. Figure 3 and Table 4 demonstrate the results of the hypothesis testing with β value, t-test value, and p-value.

5. Conclusion and discussion

The results of this study have several contributions to the theory and practical implications.

5.1. Theoretical contributions

From the theoretical contributions, the current research adds the existing literature related to customer satisfaction, especially for a new product before its launch. As the majority of prior customer satisfaction surveys focused on the products that had been launched in the market for a long time, similar studies on new products were quite limited.

Furthermore, ECT was originally applied for the studies on customer satisfaction with customer purchase products (Liu & Wang, 2021). This study expands to the new product before its launch. This means that a new product can be evaluated prior to its launch by building and testing the research model on it. This study also contributes to the existing literature as a reference to similar studies investigating prototypical products from the consumer perspective.

This research confirms that the combination of S-O-R Theory and ECT as a basis of explanation can elucidate how product attributes elicit customer satisfaction, which encourages intention to purchase. The results support previous studies, such as Kühn (2021) and Rajput and Gahfoor (2020). This study also shows that customer satisfaction with products is formed through various attributes embedded in the products.

Considering the importance of the product attributes, many studies seek to reveal the typical attributes that customers take into account when purchasing (Istijanto & Handoko, 2022; Rha et al., 2022). This study identified seven attributes of cookies enriched with spirulina: aroma, taste, colour, texture, thickness, shape, and perceived healthiness.

This study built a research model and tested the effect of the aforementioned product attributes on customer satisfaction and then the effect of customer satisfaction on purchase intention. The results showed that the aroma of the cookies has a positive effect on customer satisfaction. The aroma or smell of food activates consumers' sense of smell, and many businesses have used this technique to attract consumers' attention (Spence, 2015). For cookies, aroma is crucial for attracting and satisfying consumers.

Second, taste is the most important factor considered by consumers when buying food. This study revealed that taste is the main indicator of cookies' performance, and therefore it has the greatest effect on satisfaction. As stated by Hansen and Melbye (2020), taste is one of the dominating attributes when consumers decide to purchase or repurchase food products. The finding is also supported by Zhang et al. (2013), who show that, in the restaurant context, taste influences customer satisfaction.

This study also found that colour is a significant attribute in satisfying consumers. Most people have a certain perception of taste based on a food's colour (Cho et al., 2019). Attractive, unique, and recognizable food colours are among the factors that attract people to food (Paakki et al., 2019). The dark green colour of the cookies enriched with spirulina tested in this study was expected to catch the consumers' eye. This study proved that colour had a significantly positive influence on customer satisfaction. This finding is supported by Han et al. (2020), who investigated colour as the food sensory quality variable in in-flight food service.

The fourth attribute was the shape or physical appearance of the cookies. Food with a certain shape is evaluated positively by consumers. In this study, the prototypical product has a unique

shape similar to a cat's tongue. This study showed that the shape of the cookies had a significantly positive influence on customer satisfaction. The next attribute is the ingredients of the cookies. A positively considered ingredient will evoke a favourable evaluation. In this study, the new cookies contain spirulina. The spirulina was valued positively by the consumer regarding its health benefits. This means that the consumer evaluation of healthy cookies had a significantly positive influence on customer satisfaction. This finding supported Han et al. (2020), who also found that the perceived healthiness of food had a positive influence on satisfaction.

As an empirical study, this research also found two food attributes that had no significant effect on customer satisfaction; i.e., the texture and thickness of the cookies. Texture, specifically the smoothness or roughness of the surface of food, can be felt when the respondents touched the cookies. Just like texture, the current research also revealed that the thickness of cookies did not significantly influence customer satisfaction. Texture and thickness are factors that could be determined initially when the consumers touched the cookies with their hands. These two attributes are not related to the main function of cookies such as taste. Therefore, the consumers relatively do not consider these two attributes when evaluating the food quality.

Finally, this study corroborated that customer satisfaction is the indicator of the consumers' intention to buy (Bi & Kim, 2020). ECT proposes that satisfaction is the key motivating factor for customers to purchase products (Oliver, 1980). Customer satisfaction is proved as the focal successful indicator on purchase intention. Therefore, the more satisfied the consumers feel, the greater their intention to buy the new product.

5.2. Managerial implications

The findings of this study provide guidelines for entrepreneurs in the food industry when formulating business strategies. They should manage the product attributes that bring customer satisfaction. They must ensure that the new products they launch have been tested with consumers before commercialization. Specifically, the findings can be used to identify the prototype product attributes that need to be improved and/or maintained. For example, the taste of the cookies must be a priority. Then, other important attributes such as aroma or perceived healthiness also need to be continuously managed well. Entrepreneurs also need to highlight the product attributes in the selling efforts, as stated by Dalecki (2019), recently entrepreneurs have paid attention to entrepreneurial selling.

This study also confirms previous findings that customer satisfaction significantly influenced the consumers' intention to buy. Therefore, entrepreneurs must provide offerings that satisfy customers. They should always strive to improve or maintain the dimensions of product quality (Garvin, 1984) to achieve customer satisfaction. Further study on a new product or brand before launching it to the market is necessary for identifying the determinants of the consumers' willingness to pay for and consume it (Lucchese-Cheung et al., 2021). This study recommends that food business practices test for customer satisfaction with their new products before launching.

6. Limitations and future research

Like other studies, the current research has several limitations. First, the result is only applicable to the prototypical product which is tested in this research, i.e., cookies enriched with spirulina. Therefore, future studies can investigate other prototypical food products such as staple food, candies, and snacks. Second, the seven product attributes used in this study do not represent all attributes of the cookie products. This means other attributes that have not been tested can be included in future studies depending on the product categories. Other product attributes may also be added according to the context of the study, such as volume, portion, salt content, or brand relatedness. This research can be complemented by exploring other attributes through qualitative research. Lastly, all respondents in this study lived in Jakarta and, therefore, the local taste might

influence the results of this study. Broader characteristics of the respondents can also be included in future research. This could enrich the findings and the generalizability of future research.

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