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# Assessing consumer attitudes toward fermented drink consumption: an antecedent and mediation framework

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## ABSTRACT



The growing public concern about health and wellness has contributed to the increased interest in functional foods and beverages, including fermented drinks known for their potential health benefits. Understanding the psychological and behavioral factors that influence such acceptance has garnered significant attention. This study addresses this gap by investigating the influence of perceived healthism, perceived knowledge, beverage neophobia, and product price on consumer attitudes and purchase intentions toward fermented beverages. Attitude theory serves as the foundational framework, with trust examined as a potential mediating variable. A total of 398 data were collected through structured survey questionnaires from grocery shoppers. The results reveal that all the hypotheses are supported. Trust was found to significantly mediate the relationship between attitudes and purchase intentions, suggesting its crucial role in the decision-making process. These findings offer practical insights for policymakers, marketers, and public health advocates seeking to promote fermented beverages as part of a healthy and sustainable diet. The study contributes to both theoretical understanding and practical strategies for promoting healthier consumption patterns.

## KEYWORDS

Fermented beverage;  
healthism; knowledge;  
neophobia

## Introduction

Fermented beverages and foods are popular worldwide nowadays. The term “Fermentation” originated around 7000 B.C., with evidence of pottery used for fermenting rice, honey, and fruits (Leeuwendaal et al., 2022). The primary ingredients to start fermentation are either milk (such as cow, camel, sheep, or coconut milk), cereals (such as maize, rye, wheat, or rice), and fruits (such as apples, guavas, berries, or kiwis), which are excellent sources of natural sugars, as Table 1. During fermentation, microorganisms convert sugars and starches into acids and alcohols, which may occur naturally or be intentionally

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**Table 1.** Types of fermented products and key features.

Name	Main Ingredient	Country Origin	Key Characteristics
Amazake	Sweet rice	Japan	Mildly sweet, nonalcoholic (or low alcohol), used in desserts and drinks
Dahi	Cow/buffalo milk	India	Thick, slightly tangy yogurt, probiotic-rich
Kefir	Cow's milk	Eastern Europe	Tangy, probiotic-rich, contains lactic acid bacteria and yeast
Kombucha	Tea (black/green)	China	Slightly sour and fizzy, contains probiotics and organic acids
Koumiss	Horse's milk	Central Asia, Russia	Alcoholic, sour, thin consistency, contains lactic acid bacteria and yeast
Lassi	Yogurt-based	India	Sweet or salty, probiotic, digestive benefits
Miso	Fermented soy paste	Japan	Savoury, umami-rich, used in soups and sauces
Natto	Fermented soybeans	Japan	Sticky, pungent, rich in vitamin K2 and probiotics
Nyarmie	Camel's milk	Ghana	Thick, slightly sour, rich in probiotics, traditional African dairy product
Yakult	S med milk	Japan	Sweet, probiotic-rich, contains <i>Lactobacillus casei</i> Shirota
Tibicos	Water kefir grains	Mexico	Fizzy, slightly sweet, rich in probiotics

Sources: Kok and Hutkins (2018); Rezac et al. (2018); Tamang et al. (2016).

introduced to achieve the desired final product (Sharma et al., 2020). As the market for fermented products has notably accelerated, nutritional therapy has widely utilized them as effective interventions. For instance, Yuan et al. (2024) have demonstrated that fermented drinks offer a spectrum of health benefits, including improvements in blood sugar, blood pressure, and cholesterol levels. Moreover, it also possesses antioxidant, anticancer, anti-inflammatory, antidiabetic, and antimicrobial properties beneficial for human health (Cuamatzin-García et al., 2022). Beyond the aforementioned health benefits, fermented beverages are also recognized as a natural aid to improving gastrointestinal health, mainly due to their prebiotic and probiotic content, as well as the presence of bacterial strains such as *Lactobacillus* spp (Abrar & Jaffri, 2023). The collective benefits of fermented drinks have created opportunities for businesses to launch related products and expand their market presence. For instance, Yakult reported a surge in its revenue share from food and beverage sales, rising from slightly over 30% to nearly 70% in fiscal year 2022 (Yusuke, 2023). More specifically, the fermented food and beverage market is projected to grow significantly, reaching USD 846.73 billion by 2027, with a Compound Annual Growth Rate (CAGR) of 7.16% from 2022 (Yahoo Finance, 2023).

In several Asian countries, such as Malaysia, fermented beverages have long played a vital role in local culinary traditions. Indigenous vegetables and fruits, such as *ceri* Terengganu, *kuini*, and glutinous rice, are commonly used in Malaysia to produce fermented beverages (Kasron et al., 2021). Despite the well-documented health advantages of fermented beverages, some studies have shown that consumption remains low (Harmayani et al., 2019; Sa'aid & Tan, 2025). Similar to Kasron et al. (2021), who revealed that 70% of respondents had never tried fermented

drinks. While Yasin and Zanudin (2023) reported different results, only 9.8% of respondents did not consume fermented foods; 8.3% reported eating fermented foods daily; and the majority consumed fermented foods once a week or once a month. The low consumption rate of fermented beverages could be due to the dislike of sensory characteristics (e.g., taste, smell, and texture) (Deba-Rementeria et al., 2023) and a lack of awareness of the benefits of fermented products (Šikić-Pogačar et al., 2022). Healthy beverages, such as fermented drinks, are often perceived as costing more than unhealthy alternatives, such as sugar-sweetened beverages (SSB). People are likely to choose SSB due to the lower cost (Hallak et al., 2022). For instance, in the Malaysian context, Salleh et al. (2021) found that the median SSB consumption among Malaysian adolescents was 345.1 mL/day, approximately the size of a can of standard soft drinks. This high intake of SSBs has been linked to various health issues, including obesity, diabetes, and high blood pressure. As consumers become more conscious of health and nutrition, there is a growing trend toward healthier beverage options. This is reflected in a willingness to pay a premium for such alternatives compared to SSBs. Therefore, further investigation is needed to better understand Malaysian consumers' shifting dietary preferences from sugar-sweetened beverages to fermented drinks.

## Literature review

Recent reviews highlight that the global market for fermented drinks is expanding due to perceived wellness benefits (Cammarelle et al., 2025). Consumers who believe fermented beverages offer digestive and immune benefits are more likely to be willing to purchase them. The perceptions of a product's healthiness, price, and sensory qualities have significantly influenced consumer attitudes and purchase intentions (Lee & Yun, 2015). Furthermore, Hallak et al. (2022) have emphasized the importance of price and attitudes in shaping purchase decisions for healthy beverages in hospital settings. Cattaneo et al. (2019) also found that "neophilics" (those open to new foods) exhibited more positive attitudes toward novel food products than "neophobics." In contrast, individuals with a high level of food neophobia, such as fear of trying new foods, are identified as a barrier to adopting unfamiliar dietary options (Siegrist et al., 2013). Conversely, high price sensitivity in certain markets constrains purchase intention, even among health-conscious segments. Thus, the literature suggests that inconsistent feelings on probiotic effectiveness and differences in health benefits may have produced mixed feelings on health perception (Rezac et al., 2018). These discussions have highlighted the need for more studies that integrate social science with behavioral models to provide insights into the effects of marketing and regulatory interventions on actual purchase behavior.

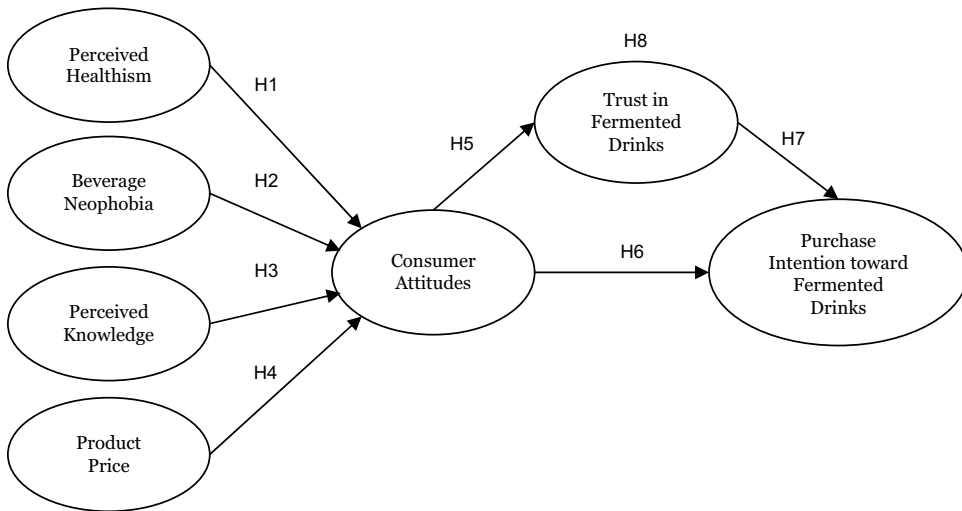
## Theoretical background and conceptual framework

Attitude theory (AT) explains how individuals develop and modify their evaluations of products based on personal beliefs, experiences, and perceived value (Argyriou & Melewar, 2011). Drawing on social psychology, consumer behavior, and organizational studies, AT explains the psychological mechanisms underlying individuals' evaluations and their influence on behavior (Ajzen et al., 2018). The components of attitude include affective, behavioral, and cognitive. Antecedents are the drivers or determinants that shape the way attitudes are formed or changed. The antecedent factors affect attitudes toward fermented drinks, supporting the idea that attitudes stem from underlying beliefs. In consumer behavior, personal, social, and situational antecedents can be combined to shape a favorable attitude toward a product (Wang et al., 2008). In this study, it is proposed that factors such as the importance of a healthy lifestyle, confidence in one's knowledge about fermented drinks, and perceptions of product pricing can shape positive or negative attitudes toward the product. In return, attitude influences consumers' willingness to accept and consume fermented beverages, and consumer trust is expected to predict purchase intentions. These belief-based factors shape attitudes, and those attitudes, supported by trust, lead to behavioral intentions.

Additionally, commitment-trust theory posits that trust is central to successful relational exchanges. In the context of consumer behavior, trust in market players (Wu et al., 2021), product labels (Tonkin et al., 2015), or third-party endorsements (Hassan et al., 2013) plays a critical role in reducing uncertainty. Hence, consumers who trust the certification body, the seller, or the product claims are more committed and are more likely to intend to purchase. Thus, this study adopts attitude theory and commitment-trust theory to understand consumer responses to purchase intention for fermented beverages. A proposed conceptual framework as shown in [Figure 1](#) was developed to examine (1) the influence of perceived healthism, beverage neophobia, perceived knowledge, and product price on consumer's attitudes toward fermented drinks, (2) consumer's attitudes and trust for purchase intention toward fermented drinks, and (3) trust serves as a mediator in the relationship between consumer's attitudes and purchase intention toward fermented drinks.

## Consumption behaviour of fermented products

The rising global health awareness has reshaped consumer behavior toward sustainable product choices (Ali & Ali, 2020). Consumption behavior refers to the decision-making processes and actions individuals or groups take when selecting and using products or services (Salem & Wagner, 2025). As society evolves, consumer consumption has shifted from general dietary preferences



**Figure 1.** Conceptual framework.

to more health-conscious choices. Consumers are now actively pursuing dietary alternatives that promote personal health and support environmental sustainability, driven by growing global environmental concerns. They are more environmentally conscious by engaging in sustainable consumption, such as sourcing organic products (Kamboj et al., 2023; Mai et al., 2023), plant-based goods (Teangsompong & Sawangproh, 2024; Chopra et al., 2025), and vegan foodstuffs (Habib et al., 2024; Martinelli & De Canio, 2022). This shift has further evolved to include diets enriched with probiotics to boost the immune system and balance the intestinal microbiomes. Consumer decisions regarding fermented products are influenced by taste preferences, health trends, and cultural background (Tamang et al., 2020). Among health-conscious individuals, particularly younger urban consumers, fermented foods are increasingly favored for their probiotic benefits and associated health advantages (Rezac et al., 2018). Additionally, socio-demographic factors influence consumption patterns, including age, income, and education (Tamang et al., 2020). For instance, while older generations prefer traditional fermented foods, younger consumers are more likely to explore newer options, such as fermented drinks. In this study, purchase intention toward fermented drinks is a key indicator of market acceptance and provides insights into how specific attributes of fermented products can influence consumer decision-making processes, especially in the Malaysian context.

### ***Perceived healthism***

Due to the immense impact on food selection, perceived healthiness has been the focus of intensive research over the past few years. Plasek et al. (2020) explained

that perceived healthiness is a consumer's expectation of a product's potential impact on their health status. These expectations can be shaped by three primary factors: nutritional value (nutrient composition), pleasure (sensory characteristics), and purity (free of contamination). For instance, Folkvord et al. (2021) found that Nutri-Score labels significantly affect consumers' attitudes and purchase intentions, respectively. This is because clear and attractive product nutrition labeling can encourage consumers to choose healthier food options (Hallez et al., 2025). However, overly complex nutrition labeling may confuse consumers when assessing a product's health benefits accurately. A similar result was found by Hati et al. (2021), who found that perceived sensory appeal significantly affects consumers' attitudes toward frozen meat. Consumers consider a product's nutritional and production attributes and associate its appeal with sensory factors such as taste, texture, and aroma. When consumers perceive favorable sensory attributes, they form more positive attitudes toward frozen meat and, in turn, show increased purchase intention. Likewise, Jang and Cho (2022) revealed that ugly food value positively affected attitudes as consumers perceive ugly food as valuable regardless of its atypical shape, size, or color; they are more likely to develop positive attitudes and consider purchasing it. Based on prior studies, this study proposed the following hypothesis:

**H1:** Perceived Healthism significantly influences consumer attitudes toward fermented drinks.

### ***Beverage neophobia***

Food neophobia refers to people's reluctance to try unfamiliar or novel foods, which can significantly affect the acceptance of new dietary options (Jaeger et al., 2021). Individuals with high food neophobia tend to avoid foods that are not part of their usual diet due to concerns about taste, safety, or cultural unfamiliarity. From a Spanish context, Losada-Lopez et al. (2021) revealed that food neophobia significantly affects consumer attitudes toward seaweed. Their study claimed that consumers with higher levels of food neophobia exhibit lower acceptance of seaweed products even when these options offer health or environmental benefits. Likewise, Khanna et al. (2022) found similar results in the Indian context, where food neophobia significantly affects tourists' attitudes toward street food consumption. Tourists' perceived risk of eating street food may increase food neophobia, making them reluctant to buy or recommend these products (Khanna et al., 2022). This study contradicts the findings of Çıtak and Yılmaz (2023), who discovered that students in Turkey exhibited higher food neophilia tendencies than neophobia tendencies. In other words, students were more open to trying new foods, demonstrating a greater willingness to explore unfamiliar street tastes. This suggests that cultural and demographic factors may influence food

neophobia, with younger individuals or those exposed to diverse food environments showing greater acceptance of street foods. Based on existing literature, this study proposes the following hypothesis:

**H2:** Beverage Neophobia significantly influences consumer attitudes toward fermented drinks.

### ***Perceived knowledge***

Perceived knowledge refers to individuals' self-reported beliefs about their understanding of a subject (Wallace et al., 2020). A higher level of perceived knowledge can enhance personal decision-making in pursuit of a desired outcome and vice versa. From an urban China perspective, Wang et al. (2021) found that individuals with higher perceived knowledge of genetic testing were more likely to develop favorable attitudes toward it. This result implied that greater perceived knowledge can enhance their confidence level in decision-making, leading to increased acceptance of new technologies. From a food-behavioral perspective, Roh et al. (2022) found that perceived knowledge significantly influenced consumers' attitudes toward organic products in China. Consumers with extensive knowledge of organic food were more likely to trust its benefits and perceive it as healthier, which turned into purchasing decisions. In the Ethiopian context, Gebre et al. (2023) found that food safety knowledge among fruit and vegetable handlers influenced their attitudes, which, in turn, affected their behavior regarding safe handling practices for fruits and vegetables in rural Ethiopia. When individuals acquire relevant knowledge, their attitudes and behaviors tend to change in ways that align with their values. Consequently, all collective empirical studies have shown that knowledge plays a crucial role in shaping an individual's attitudes, serving as a foundational element that sustains long-term behavioral patterns (Pratiwi et al., 2022). Based on existing literature, this study proposes the following hypothesis:

**H3:** Perceived Knowledge significantly influences consumer attitude toward fermented drinks.

### ***Product price***

Price represents the exchange rate at which money or other goods are traded for the benefits derived from a product or service, varying based on time, location, and consumer context (Cakranegara et al., 2022). Especially in the competitive commodities market, product pricing significantly shapes the

consumer's attitude and behavior toward goods, whether its cost aligns with its perceived value (Ngo & Le, 2025; Zhao et al., 2021). When the price is compatible with consumers' purchasing power, they are more likely to switch from alternative products to the one that offers the best value. These notions aligned with Rezeki et al. (2022), who identified price as a critical factor influencing consumer decisions on air conditioning purchases in Indonesia. Similar to Majeed et al. (2024), who highlighted that price significantly affects consumers' online purchase intention toward luxury fashion products. The result suggests that consumers compare prices across luxury brands to secure better deals, driven by their desire to buy costly flagship items at the lowest possible prices. As prices are attractive, consumers shop online rather than in brick-and-mortar stores. Further reinforced by Wijaya and Wahyudi (2024), price significantly affects consumers' attitudes and influences their repurchase intention toward fashion products in the Indonesian context. Therefore, price sensitivity has been amplified as consumers access instant price comparisons and promotions, further shaping their attitudes and purchasing behaviors. Consequently, this study proposed the following hypothesis:

**H4:** Product Price significantly influences consumer attitudes toward fermented drinks.

### ***Consumer attitudes and trust***

In behavioral studies, consumers' attitudes play a crucial role in shaping their trust levels, particularly in purchasing decisions. A more favorable attitude toward a product increases the likelihood of building trust in its consumption (Deng & Hu, 2019). For instance, Issock et al. (2020) found that customers' attitudes can significantly affect customer trust in eco-label products. Consumer confidence can be cultivated when they exhibit a positive attitude toward environmental concerns (Annunziata & Pascale, 2009). Similar to the modern market perspective, Arfansyah and Marsasi (2023) found that attitudes significantly affect minimarket customers' trust in Indonesia. Consumers tend to increase their confidence in the minimarket company and make purchases due to the positive attitude expressed. Moreover, attitude is a strong foundation for enhancing customer satisfaction and loyalty, particularly in the banking sector. Ha (2020) found that consumer attitudes significantly influence trust in commercial banks in Vietnam. When customers perceive banking services as reliable, their trust in the bank will be strengthened, which builds a long-term relationship between consumers and bankers. Furthermore, Abdulaziz et al. (2024) found similar results, indicating that attitudes positively affect tourists' trust in Egypt. Thus, when consumers perceive that an influencer shares their attitudes or beliefs, their confidence in

the brand promoted by that influencer increases. As aforementioned, prior research consistently shows that a positive consumer attitude fosters trust by shaping their perceptions of product or service value. Hence, the following hypothesis is proposed:

**H5:** Consumer Attitude significantly influences trust in fermented drinks.

### ***Consumer attitudes and purchase intention toward fermented drinks***

Attitude refers to the psychological tendency that shapes an individual's favorability or unfavorability toward a specific product (Babaç et al., 2025; Gupta & Duggal, 2021). It can vary among individuals due to various backgrounds, social influences, and past personal experiences (Chetioui et al., 2021). Eberle et al. (2022) and Bazhan et al. (2024) found that consumer attitudes significantly influence purchase intentions toward organic products. Likewise, Ahmed et al. (2021) showed that young consumers' purchase intentions for organic food could be predicted through their attitudes, as they tend to have stronger intentions to take actions that they can control. Chopra et al. (2025) found that consumers' environmental attitudes significantly influence their intention to purchase plant-based foods in India. Due to their concerns for both the environment and health, consumers are increasingly developing positive attitudes toward plant-based products. These findings are also consistent with Cunningham (2023), Thomas et al. (2021), and Wang (2020), where consumers who shift in their diet enhance their intent to buy plant-based products aligns with their dietary values. Therefore, based on the aforementioned literature summary, this study has proposed the following hypothesis:

**H6:** Consumer Attitudes significantly influence purchase intention toward fermented drinks.

### ***Trust in fermented drinks and purchase intention toward fermented drinks***

Trust is a fundamental element in cultivating long-term relationships with consumers and mitigating perceived risks associated with credence products or services (Prakash et al., 2023). Past studies indicate that consumer trust positively influences purchase intentions, particularly in the context of organic food (Curvelo et al., 2019; Mai et al., 2023). Consumers are more trusting of familiar products than of unfamiliar ones because of lower anxiety and uncertainty (Fandos Herrera & Flavián Blanco, 2011). Further, an attractive design and a credible

brand image increase perceived product quality, particularly among consumers unfamiliar with fermented beverages (Mosikyan et al., 2024). Trust reduces perceived risk and uncertainty, and increases consumers' willingness to engage in purchasing behavior (Lăzăroiu et al., 2020). For food and beverage, trust in product safety, labeling, and brand credibility has been found to enhance consumers' purchase intentions (Wang et al., 2020; Zafar et al., 2022). When customers view organic products as trustworthy and reliable in meeting their expectations, they are more willing to purchase (Amin & Tarun, 2021; Prakash et al., 2023). For instance, Hasim et al. (2020) and Tai et al. (2022) found a significant effect of consumer trust on their purchase intention. Consumers who trust the benefits of functional food tend to stimulate their intention to purchase and reinforce their confidence level in the product's health claims. From an e-commerce perspective, consumers cannot physically inspect products before purchase, and trust plays a critical role in their decision-making (Qalati et al., 2021). When consumers perceive positive endorsements of sellers, their trust becomes a stronger predictor of purchase intention than other influencing factors (Wang et al., 2022). Based on prior literature, this study proposes the following hypothesis:

**H7:** Trust in fermented drinks significantly influences purchase intention toward fermented drinks.

### ***The mediating role of trust in fermented drinks***

This shift in consumer purchasing behavior is influenced by their positive norms, attitudes, and trust associated with the product (Li et al., 2021). Prior studies have confirmed that trust significantly mediates the relationship between attitudes and consumer purchase intention in green product contexts (Ayyub et al., 2021; Gil & Jacob, 2018). The research findings have highlighted that product credibility can drive consumers' trust, enhancing product perception and leading to consumer purchase intention. Further, trust is found to be crucial for developing positive perceptions of the product and the company and, subsequently, influencing consumer purchase intentions (Wu et al., 2021). In addition, Gamama et al. (2020a) also comprehended that trust mediates the influence of attitude and purchase intention. Based on the above discussion, the effect on purchase intention may not be due to the direct influence of attitude, but rather to the indirect influence of trust. Consequently, trust in fermented drinks has the potential to influence the consumer's purchase intention by acting as a mediator. This rationale leads to the formation of the following indirect hypotheses:

**H8:** Trust significantly mediates the relationship between consumer attitude and purchase intention toward fermented drinks.

## Methodology

### *Research method and data collection*

The research design was quantitative, with a cross-sectional approach employing a survey questionnaire. The instrument was first developed in English and translated into Bahasa Malaysia. Using the back-translation method, the translation was retranslated into English by an independent translator, and discrepancies were resolved through further discussion to ensure accuracy and cultural relevance (Brislin, 1970). Data were collected via judgmental sampling of Malaysian adults aged 18 and over residing in the Selangor and Kuala Lumpur areas. The respondents' criteria were consumers who had previously tried or intended to try fermented drinks, such as ginger beer, kombucha, and other probiotic drinks. The selection was due to individual factors, such as a positive attitude toward and consumer awareness of fermented drinks, which are believed to influence trust and purchase intention for fermented drinks. Screening questions were used to ensure that the samples met the inclusion criteria. The data used in this study were collected through a questionnaire distributed by the four trained representatives (three researchers and one student assistant). We distributed 500 survey questionnaires in several supermarkets where most fermented drinks are available. Individuals aged 18 years and above were recruited at retail grocery outlets and were classified as grocery shoppers based on their responses to screening questions. Participants were invited to self-complete the approximately 10-minute, anonymous, paper-based survey. Data were collected through survey questionnaires administered for six weeks. The valid response rate was 78.4%, resulting in 398 usable responses, as summarized in Table 2. Most respondents were female (51.5%), followed by male (48.5%). From an age perspective, the majority of

**Table 2.** Demographic profile.

Demographic variables	Category	Frequency	Percentage
Gender	Male	193	48.5
	Female	205	51.5
Age	18 to 24	136	34.2
	25 to 34	66	16.6
	35 to 44	61	15.3
	45 to 54	64	16.1
	55 to 64	49	12.3
	65 and above	22	5.5
Frequency of drinking fermented drinks	Daily (6 – 7 days)	47	11.8
	Frequent (3 – 5 days)	74	18.6
	Rarely (1 – 2 days)	171	43.0
	None (0 day)	106	26.6

respondents were between 18 and 24 years (34.2%), followed by 25 to 34 years (16.6%) and 45 to 54 years (16.1%). Lastly, concerning the frequency of fermented drinks, most respondents consumed fermented drinks frequently (18.6%), followed by on a rare basis (43%), and about 26.6% had not consumed any fermented drinks before.

## **Measures**

The survey questionnaire was developed to measure perceived healthism, beverage neophobia, perceived knowledge, price, attitude, trust in fermented drinks, and purchase intention. All measurement scales were adapted from previous studies and adjusted based on consumer behavior insights. Content validation and pilot testing were conducted to ensure the scales were suitable for the study context. Respondents answered the items using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The scale for measuring perceived healthism comprised three questions and was adapted from Anisimova (2016), demonstrating this scale's high reliability. An example representative item is "Fermented beverages have health-promoting effects.," with the original item being "Organic food has health-promoting effects." Beverage neophobia (3-item scale) was adapted from Pliner and Hobden (1992), with a sample item being "I am afraid to try beverages I have never had before (e.g., fermented drinks)." The original item is "I am afraid to eat things I have never had before." The perceived knowledge scale (3-item) used in this study was adapted from Hoque et al. (2018). An example representative item is "Compared to an average person, I know a lot about fermented drinks.," with the original sentence for the representative item being "Compared to an average person, I know a lot about liquid milk."

A 5-item scale was used to evaluate respondents' product price perceptions and consumer attitudes toward fermented drinks. The scales of product price were adapted from Finisterra Do Paço and Raposo (2010), Sparks and Shepherd (1992), and Tanner and Wölfling Kast (2003), while the scales of consumer attitude were adapted from Salmani et al. (2020). Both scales have shown reliability and validity. A sample price item is "I am willing to pay more for fermented drinks," and a sample consumer attitude item is "Fermented drinks help to improve my mood." The original item for price is "I am willing to pay more for [...].," while the original item for consumer attitude is "Functional foods help to improve my mood." Trust in fermented drinks was measured using a 6-item scale from Anisimova (2016). A sample item includes "I trust fermented drinks that are sold in the market," with the original item from Anisimova (2016) being "trust Australian organic food sellers." The dependent variable, purchase intention for fermented drinks, was measured using a 5-item scale adapted from Anisimova (2016). A sample item includes "I will continue purchasing fermented drinks," where the original item was "I will continue

purchasing organic foods.” The reliability score for both scales was above 0.7 (Anisimova, 2016). Apart from all items being adapted from established literature, two assistant professors were appointed to pretest the items to further verify their intended meaning and to gather feedback on their reliability (Memon et al., 2023). Respondents were asked whether they had any difficulties with the questions, and none indicated any issues.

### **Data analysis and results**

The procedure followed for data analysis is the covariance-based structural equation modeling (CB-SEM). The CB-SEM model type in SmartPLS version 4 software was used for this purpose. The analyses included a confirmatory factor analysis (CFA) to assess the scales’ reliability and validity, and a path analysis to test the hypotheses. In this sense, we assessed the model fit, convergent validity, and discriminant validity of the measurement model. A normed Chi-square reflects a good model fit in the range of 1 to 5, RMSEA value of less than 0.10, and TLI and CFI values of higher than 0.9. [Figure 1](#) shows that the absolute fitness of all constructs in the model has been achieved.

The AVE, standardized factor loadings, and constructs’ reliability were examined to assess the convergent validity (Chan & Abdul Halim, 2025). Hair et al. (2021) point out that the items intended to measure the variables, if the AVE is more than 0.5, factor loadings, and composite reliability (CR) exceeded the threshold values of 0.7 and 0.8. Five items were removed due to low factor loading. [Figure 2](#) and [Table 3](#) reveal that the constructs maintain adequate reliability and convergent validity regarding the variable they intend to measure.

Discriminant validity was assessed using the HTMT ratio. [Table 4](#) shows that all the research constructs also met the conditions recommended by Schubert (2021). That is, the ratio should be less than 0.90 for the property of discriminant validity. Hence, discriminant validity was supported.

The bootstrapping process determines the significance of each relationship (p-value) (Seow et al., 2025). In [Table 5](#), the results clearly state that the data supported all the hypotheses (H1-H7). The relationships of product healthism ( $\beta = 0.227, p < 0.05$ ), beverage neophobia ( $\beta = -0.089, p < 0.05$ ), perceived knowledge ( $\beta = 0.227, p < 0.05$ ), and product price ( $\beta = 0.459, p < 0.05$ ) with consumer attitude were supported at a level of confidence 95%, and this was also a case for the relationship of consumer attitude with trust in fermented drinks ( $\beta = 0.407, p < 0.05$ ). The last two direct relationships of consumer attitude ( $\beta = 0.845, p < 0.05$ ) and trust in fermented drinks ( $\beta = 0.199, p < 0.05$ ) with purchase intention of fermented drinks were significant at 0.05 or 95% level of confidence. Moreover, the last hypothesis is that trust in fermented drinks mediates between consumer attitude and purchase intention of

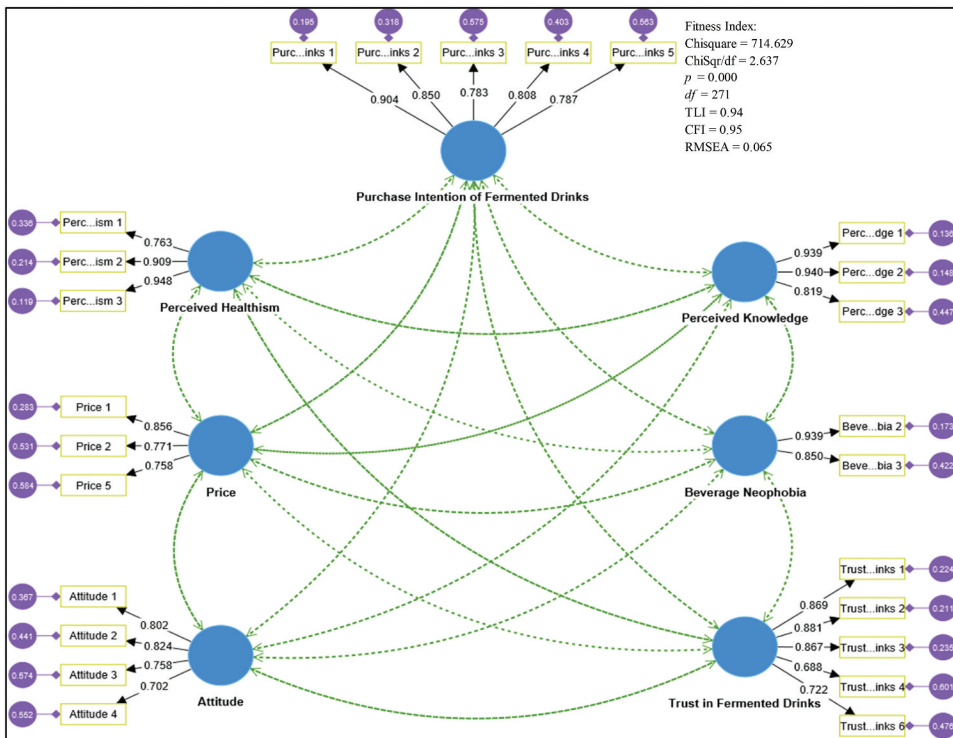


Figure 2. Model fit indicators and factor loadings.

Table 3. Convergent validity.

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Attitude	0.791	0.884	0.658
Beverage Neophobia	0.784	0.890	0.802
Perceived Healthism	0.869	0.930	0.820
Perceived Knowledge	0.793	0.937	0.832
Product Price	0.742	0.865	0.681
Purchase Intention of Fermented Drinks	0.814	0.932	0.734
Trust in Fermented Drinks	0.900	0.934	0.704

Table 4. Discriminant validity.

	1	2	3	4	5	6	7
1. Attitude							
2. Beverage Neophobia	0.373						
3. Perceived Healthism	0.817	0.338					
4. Perceived Knowledge	0.708	0.400	0.679				
5. Product Price	0.649	0.185	0.547	0.604			
6. Purchase Intention	0.792	0.295	0.755	0.713	0.734		
7. Trust in Fermented Drinks	0.629	0.219	0.603	0.303	0.496	0.573	

**Table 5.** Hypothesis testing.

Hypothesis	Variable	Effect	SE	p-value	Decision
H1	PH → ATT	0.227	0.066	0.001	Supported
H2	BN → ATT	-0.089	0.042	0.033	Supported
H3	PK → ATT	0.227	0.066	0.001	Supported
H4	PP → ATT	0.459	0.061	0.000	Supported
H5	ATT → TR	0.407	0.035	0.000	Supported
H6	ATT → PI	0.845	0.077	0.000	Supported
H7	TR → PI	0.199	0.038	0.000	Supported
H8	ATT → TR → PI	0.113	0.028	0.000	Supported

Note: Significant results at  $**p < 0.05$ .

fermented drinks, which was significant at  $\beta = 0.113$ ,  $p < 0.05$ . Thus, H8 was accepted as a research hypothesis.

## Discussion

Despite its significance in the food and beverage industry, there is still limited research on fermented products in the existing literature. The current study successfully contributed to existing knowledge by examining the antecedents of consumers' purchase intention for fermented drinks, particularly in the Malaysian context. These findings confirmed that perceived healthism significantly influences consumer attitudes toward fermented drinks, consistent with past empirical studies (Dorce et al., 2021; Nagaraj, 2021; Ren et al., 2024). A positive shift in consumer health benefits associated with fermented drinks leads to more favorable attitudes, ultimately increasing drink consumption behavior. This scenario particularly emerged after the pandemic; the growing perceived health consciousness further reinforced consumers' attitudes toward fermented products, given their rich probiotic benefits, which can modulate the immune system against the virus. Besides, beverage neophobia can significantly affect consumer attitudes toward fermented drinks, as confirmed in this study, consistent with the findings of Losada-Lopez et al. (2021) and Khanna et al. (2022). Consumers are less likely to develop positive attitudes toward new or unfamiliar beverages because they are reluctant to try them. This reluctance may also stem from a lack of interest, unfamiliarity with fermentation processes, or concerns about the taste and texture of fermented products. Therefore, consumers with high food neophobia are less likely to develop favorable attitudes toward fermented drinks, which reduces their perception of these beverages' benefits.

These findings also confirmed that perceived knowledge significantly influences consumer attitudes toward fermented drinks, aligning with prior literature (Dhir et al., 2021; Menozzi et al., 2023). Consumers who are knowledgeable about fermented products are more likely to develop positive attitudes, driven by their health benefits and environmental impacts. Fermented products have gradually become a significant part

of human life, not only as a source of nutrition but also as a sustainable food option that reduces environmental footprint (Abrar & Jaffri, 2023). Therefore, consumers who know these aspects can further promote their attitude toward fermented products. In line with previous studies (Andrie, 2023; Sutanto & Wulandari, 2023; Wahida & Shah, 2022), product prices significantly influence consumer attitudes toward fermented drinks. The consumption barrier will arise when the price of fermented products is high, particularly among price-sensitive consumers who perceive fermented drinks as premium or niche products. Hence, product pricing becomes a crucial antecedent of consumer attitudes, as consumers are more likely to develop positive attitudes when the price meets their expectations (Kasron et al., 2021). In addition, the consumer attitude that significantly influences trust in fermented drinks has been confirmed, with results similar to those of Arfansyah and Marsasi (2023) and Ha (2020). When consumers have a positive attitude toward fermented drinks, their confidence in the product will increase due to favorable responses.

Furthermore, these results confirmed that consumer attitudes significantly influence purchase intention toward fermented drinks, consistent with previous findings (Khan et al., 2023; Thuy et al., 2024; Wang et al., 2023). When customers had only a positive attitude toward fermented drinks, it was not enough to increase their intention to consume them. Instead, a positive attitude is crucial in influencing their purchasing decisions and increasing their likelihood of consumption. Therefore, a positive consumer attitude may switch into a positive purchase intention, ultimately fostering actual buying behaviors (Khan et al., 2023). Likewise, trust significantly influences purchase intention toward fermented drinks, which has also been supported. This result is consistent with Ilhamalimy and Ali (2021) and Husain et al. (2022). When consumers trust that fermented beverages provide beneficial impacts, they are more likely to develop a stronger purchase intention. This trust significantly reduces risk perceptions, making consumers more confident in purchasing fermented drinks as part of their regular diet. Beyond the direct effect, trust significantly mediated the relationship between consumer attitude and purchase intention toward fermented drinks. These findings aligned with the aforementioned direct effect, including those of Arfansyah and Marsasi (2023), Ha (2020), Ilhamalimy and Ali (2021), and Husain et al. (2022). Consumers' favorable attitudes toward fermented drinks will influence their trust, enhancing their purchase intentions. These findings imply that consumers' trust bridges consumer attitudes and purchase intentions toward fermented drinks.

## Implications

Based on the current research's findings, several implications are presented. Theoretically, this study addresses a research gap by extending the understanding of the antecedents influencing consumer attitudes and purchase intentions toward fermented drinks. This study broadens the application of attitude theory by emphasizing that health beliefs, personal inclinations, perceived knowledge, and price perceptions jointly influence consumer attitudes toward fermented beverages. The results implied that when individuals view health as a personal priority, they are more likely to form significant attitudes toward products that align with that value, such as fermented drinks. This supports the idea that product features and broader lifestyle orientations shape attitudes. Furthermore, including trust as a mediating variable between attitudes and purchase intention enriches the existing literature by demonstrating the indirect influence of psychological constructs on consumer behavioral intentions.

The findings provide practical insights for businesses in the food and beverage industry, particularly for those producing fermented drinks. Marketing strategies should emphasize the health benefits of fermented drinks, leveraging consumer interest in probiotics and immunity-boosting properties post-pandemic. Further, initiating educational campaigns to help reduce beverage neophobia by increasing consumer familiarity with fermentation processes associated with product benefits. To build consumer trust, institutions can highlight credible certifications, ensure transparent labeling, and deliver consistent product quality. From a policy perspective, regulatory bodies and public health agencies play an important role in shaping consumer confidence in functional beverages. Regulatory health advocates can shape fermented beverages as part of a sustainable, nutritious diet, in line with dietary guidelines. Moreover, integrating fermented beverages into broader public health campaigns could encourage healthier consumption patterns and lend additional legitimacy to this product category.

## Conclusion, limitations, and future recommendations

This study contributes to the growing body of consumer behavior research by integrating attitude with trust-based relational mechanisms. The findings provide a comprehensive understanding of both the cognitive and relational factors shaping consumer decisions in the functional beverage market. The study is limited to consumers residing in Selangor and Kuala Lumpur and employs solely a quantitative approach using a self-administered questionnaire. The authors recommend that subsequent research include respondents from different states to provide a more comprehensive perspective on the generalizability of the findings to other demographic groups. Future

scholars can adopt a qualitative approach, such as interviews or focus groups, or a mixed-method approach to gain deeper insights into the exploration by fully capturing the depth of consumer perceptions. As the study focuses on psychological and attitudinal factors, future researchers may include external influences such as social norms, marketing strategies, and product availability to make the study more inclusive of fermented drinks.

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## Data availability statement

The data supporting this study's findings are available on request from the corresponding author. However, the data are not publicly available due to privacy or ethical restrictions.

## Ethical approval statement

This study received ethical approval from [research management center, multimedia university] (ref: [ea0452025]). Participants provided written informed consent and were assured of confidentiality, voluntary participation, and the right to withdraw at any time.

## Informed consent

Participants provided written informed consent and were assured of strict confidentiality, voluntary participation, and the right to withdraw at any time without repercussions. Data were anonymized and securely stored to ensure privacy.

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