




## Article

# Consumers' Intention to Purchase Functional Non-Dairy Milk and Gender-Based Market Segmentation

Teerapong Pienwisetkaew <sup>1,2</sup>, Peerapong Wongthahan <sup>1,2</sup>, Phaninee Naruetharadhol <sup>1,2</sup> , Sasichakorn Wongsachia <sup>1,2</sup> , Chonnipa Vonganunsuntree <sup>1</sup>, Siraphat Padthar <sup>1</sup>, Santi Nee <sup>1</sup>, Ping He <sup>1</sup> and Chavis Ketkaew <sup>1,2,\*</sup> 

<sup>1</sup> International College, Khon Kaen University, Khon Kaen 40002, Thailand

<sup>2</sup> Center for Sustainable Innovation and Society, Khon Kaen University, Khon Kaen 40002, Thailand

\* Correspondence: chaket@kku.ac.th

**Abstract:** The increasing awareness of the benefits of functional non-dairy milk has been growing significantly due to the increasing recognition of the benefits of functional foods. Functional non-dairy milk provides a valuable alternative for lactose-intolerant people with other dietary restrictions preventing them from consuming dairy milk. However, some evidence suggests that not all consumers benefit equally from food. Previous research indicated that women more often purchase foods that are perceived to be healthy, while men are more likely to purchase foods that are perceived to be hedonistic. Thus, this study aimed to examine the significant relationships among factors influencing functional non-dairy milk purchase intention based on the theory of planned behavior (TPB) and to identify behavioral differences between men and women. We conducted a quantitative study using structured questionnaires and with 413 valid respondents that consume functional non-dairy milk in six regions of Thailand. Further, we used a multi-group structural equation modeling approach to explore and compare consumers' intentions across genders. The results showed that trust and health consciousness positively influence an individual's perceived behavioral control and then directly affect their attitude and purchase intention of functional non-dairy milk products. Additionally, the multi-group analysis proposed that men and women consumers significantly differ in their requirements for enjoyable experiences while consuming functional non-dairy milk. More specifically, hedonic eating value has a greater impact on men's attitudes than women's attitudes. This study deepens our understanding of the functional non-dairy milk industry in Thailand in terms of market segments based on gender.

**Keywords:** functional non-dairy milk; gender differences; purchase intention; multi-group analysis; sustainable consumption



**Citation:** Pienwisetkaew, T.; Wongthahan, P.; Naruetharadhol, P.; Wongsachia, S.; Vonganunsuntree, C.; Padthar, S.; Nee, S.; He, P.; Ketkaew, C. Consumers' Intention to Purchase Functional Non-Dairy Milk and Gender-Based Market Segmentation. *Sustainability* **2022**, *14*, 11957. <https://doi.org/10.3390/su141911957>

Academic Editors: Giuseppe Antonio Di Vita and Gioacchino Pappalardo

Received: 19 August 2022

Accepted: 19 September 2022

Published: 22 September 2022

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

Throughout the decades, functional foods have attracted considerable scientific interest, particularly in enhancing food health and technology innovations. Functional non-dairy milk is the alternative solution to sustain and balance the environment through an environmental-friendly production method, releasing less waste and biodegradable products [1]. In addition, the dairy milk industry is a significant contributor to pollution, not only in the amount of effluent it generates but also in its toxicity. On average, 0.2–10 L of wastewater is produced per liter of processed milk. Wastewater can contain high levels of harmful chemicals, including nitrogen, phosphorous, and suspended solids [2]. Although a study found that the environmental impact of US dairy production practices in 2007 had a smaller environmental impact than historical dairy production practices in 1944, for every billion kilos of milk, waste outputs from modern dairy systems still produced 24% of the manure, 43% of the methane, and 56% of the nitrous oxide [3].

Functional non-dairy milk can substantially minimize the risk of various diseases and strengthen immune systems [4,5]. During the COVID-19 pandemic, many consumers have been consuming functional non-dairy milk products that nurture their physical and mental health to prevent and reduce the possibility of terminal diseases. As a result of the popularity of functional non-dairy milk products, consumers are becoming more cautious about food quality and the health advantages related to various foods and drinks [6]. However, several studies reveal that consumers' behavior toward functional foods can differ based on gender. Some evidence suggests that not all consumers benefit equally from food. Functional foods, for instance, could be more beneficial for men than women. Functional foods' effectiveness may depend on gender [7]. A study reported that women tend to have greater intention than men in several dietary activities such as weight management and healthy eating [7]. This study indicated that women live longer than men, by approximately 7 years, and reported that men tend to have less healthy eating behavior than women, as men consume fewer vegetables, higher fat foods, and drink more soft drinks and alcohol. Even though women have lower mortality rates, they still have higher chances of physical illness than men [8]. The following differences between men and women can contribute to the novel study of the purchase intention of functional non-dairy milk products.

According to the Food Technology Magazine (2020), the market size of functional foods globally is anticipated to reach approximately 268 billion US dollars in 2027 [9]. Functional non-dairy milk is the most active category of functional foods, as it is convenient and meets consumer demands for nutrients and bioactive compounds. Functional beverages such as non-dairy milk are easy to distribute and store and can be altered in size, shape, and appearance. In 2019, functional beverages made up more than half of the functional foods market, with a value of around 99 billion US dollars. The Asia-Pacific region contributed approximately 36 billion US dollars to this total market value of 168 billion US dollars [10]. The market research report of Fortune Business Insight (2020) showed that the global non-dairy market is expected to grow rapidly in the next few years. In 2020, the market size was 19.66 billion US dollars. The market is projected to grow to 53.97 billion US dollars by 2028, at a compound annual growth rate (CAGR) of 13.30% from 2021 to 2028. According to Statista (2021), in 2020, the market value of functional beverages in Thailand amounted to around 141 million US dollars. The functional foods segment in Thailand indicated that functional non-dairy milk had the highest CAGR at 7.01% from 1999 to 2013 compared with other beverages, such as dairy products at 5.89% and soft drinks at 6.57% [11].

In Thailand, functional non-dairy milk is consumed more frequently to prevent diseases and promote beneficial health effects. However, some Thai consumers cannot drink dairy milk products because they are lactose intolerant, while others might have a cholesterol problem or be allergic to milk protein [12]. For instance, functional non-dairy milk, such as soymilk, contains the component of isoflavones, which reduces cardiovascular disease and lowers low-density lipoprotein (LDL) and cholesterol [13]. Dairy milk can increase the diet's saturated fat, calorie, and cholesterol content in the long-term, leading to an increased risk of obesity, heart disease, and type 2 diabetes [11,14]. Consuming functional non-dairy milk products is a globally trending way to decrease the consumption of dairy milk in order to avoid the following risks. In addition, nearly 65% of the human population has a diminished capacity to digest lactose after infancy. Lactose intolerance in adulthood is the most common among individuals of East Asian ancestry, with 70% suffering from this condition. Allergies and intolerances are vital factors influencing demand for functional beverages, particularly given that dairy milk allergy is the most common food allergy in newborns and adolescents [15].

Moreover, it is essential to explore consumers' purchase intentions and attitudes toward differences between men and women since gender differences can contribute to a better understanding of the gender-based segmentation of functional non-dairy milk. Consumer segmentation can be quite complex. Some criteria used to segment consumers focus on personal characteristics, while others focus on group dynamics [16]. To illustrate, there are distinct gender differences in food preferences and eating habits. However,

women generally have been observed to participate in significantly more health-promoting actions and have healthier lifestyles than men [17]. Meat (particularly red meat), alcohol, and large portions are consistently associated with masculinity in studies of modern Western countries. At the same time, vegetables, fruit, fish, and sour dairy products are invariably connected with femininity [18]. Therefore, gender segmentation allows marketers to better comprehend consumers' behavior with different genders and interests. This method also enables marketers to adjust marketing strategies and supply products and services following the segment's needs. However, few studies on Thailand's functional non-dairy milk and food consumers are related to gender segmentation and purchase intention. Consequently, we contemplated investigating consumers' purchase intentions and functional non-dairy milk with gender-based market segmentation to bridge the knowledge gap.

Nevertheless, food companies must comprehend consumer views, attitudes, and purchase intentions regarding functional non-dairy milk. In a wide range of studies regarding food context, several employ the theory of planned behavior (TPB) by Ajzen (1991) as the basis for exploring the psychological aspects that influence the food consumption behaviors of consumers [19]. However, based on past studies, functional non-dairy milk could still be a new innovative food product, leaving a research gap in our understanding of consumer behavior. Moreover, this study applied TPB extended with three variables: hedonic eating value, health consciousness, and trust. Hedonic consumption pertains to the idea of making choices based on sensory gratification, or, simply put, choosing things that taste good. Regarding food selection, hedonic eating value considers the motives behind why consumers make certain choices. This could be anything from the importance placed on taste to pleasure [20]. Health consciousness is a term that describes consumers who prioritize their health and well-being. These consumers often seek information on how to improve their health and purchase products and services that support their goal of maintaining a healthy lifestyle. Studies have shown that health-conscious consumers are more likely to purchase products and services that promote their health and well-being [21]. Trust is a key factor in influencing purchase intention, especially regarding products such as functional non-dairy milk, where consumers may not know much about the product before they buy it. Studies have shown that consumer trust is crucial in food markets and that trust can impact both purchase intention and behavior. When choosing functional foods, product managers must consider how trust can affect consumer decision-making [22].

This paper explored the significant relationships among factors such as hedonic eating value, trust, health consciousness, perceived behavioral control, subjective norm, attitude, and purchase intention associated with gender segmentation of functional non-dairy milk products. Moreover, this study aimed to identify gender differences in purchase intention of functional non-dairy milk products. The variables are mainly derived from the extended theory of planned behavior [19]. It assists in predicting consumer behavior by investigating perceived behavioral control, subjective norms, attitude, and purchase intention. We added three additional variables: hedonic eating value, health consciousness, and trust. These variables can aid in theory testing and confirmation of the purchase intention of functional non-dairy milk consumers. The Covariance Based Structural Equation Modeling (CB-SEM) technique investigates the market segments and their relevant relationships. This method is appropriate for this study since we are attempting to develop a multi-factor model for buying intention based on a cross-sectional sample of multiple groups [23,24].

The format of this article is as follows. A review of the literature on the existing related theories and hypotheses development is presented in Section 2, before the research methodology, survey items, sampling, data collection, and analysis are described in Section 3. The findings and discussion are presented in Section 4, the research implications for theory and practice are discussed in Section 5, the conclusion is presented in Section 6, and the limitations and future research are summarized in Section 7.

## 2. Related Theories and Hypotheses Development

Several research publications on the marketing of functional foods have used SEM. Most studies' findings point to connections between consumer attitudes and marketing terminology as consumer perceptions and behavioral intention understands. We suggest that the relationship of variables in this research may be developed utilizing the SEM framework based on these previous publications. The ideas and relevant literature that helped develop a structural model and hypotheses for this research are discussed in more detail in the following parts.

### 2.1. Gender Effect and Segmentation

Regarding its simplicity in identification, accessibility, and profitability, gender is frequently utilized as a segmentation variable [25]. Three representative conceptions were developed by Fischer and Arnold (1994) [26] to conceptualize these alternative gender measurements. First, the terms "male" and "female," which are biological categories, denote gender. Second, gender identification was employed to gauge masculine and feminine personality qualities. The third concept, gender role attitudes, was used to describe the disparities in attitudes between men and women concerning the duties, rights, and obligations of each gender. Again, each person varies in the presence of the three structures we examined. Their empirical investigations demonstrated the predictive validity of each of the three components. Concerning the impact of gender on the acceptance of functional foods, the majority of research came to an agreement. Researchers discovered that women had greater possibilities of purchasing functional foods than men [27–30]. The explanation for these results is that women tend to have a greater role of purchasing and preparing food than men in family matters [31,32]. Furthermore, most research studies also discovered that women are more knowledgeable about functional foods than men are, and as a result, they are more likely to utilize them [33]. Functional foods are mainly used by women in both Europe and the USA [34].

Differences in perspective, attitude, and food preference by gender have been examined as significant factors [35]. Numerous empirical studies have also examined how men and women differ in food consumption behaviors [36,37]. Recent research has found varying findings when examining the moderating effect of gender. In addition, several studies have shown a significant role of gender within the TPB framework. According to the study, men college students were more likely to be influenced by their attitude when buying fair trade products. In contrast, female college students were more likely to be influenced by their perceived behavioral control [38]. Although there is no difference between male and female consumers regarding the link between subjective norms and the intention to eat sweet snacks, women consumers are more likely to feel pressure from other women not to consume sweet snacks [39]. Based on the study, it was found that there are significant differences when it comes to food-related perceptions, preferences, and behaviors between men and women [40]. It is important to investigate the moderating effects of gender in order to understand consumers' underlying purchase intention for functional food non-dairy milk products.

### 2.2. Functional Foods in Thailand

Functional foods can be discovered in practically every food category, notably through the milk, cereal, soft drink, bakery, and infant formula markets, which offer solid nutritional qualities and additional health benefits. Functional food is consumed and used for various activities, for instance, sports nutrition, weight management, cardio health, and clinical nutrition. The philosophy of functional foods was initially discussed in Japan during the 1980s due to the concerns of the elderly segmented group related to their health and life expectancy [41]. The Thai food sector potentially expands in Thailand due to food innovation. There was growing interest in functional foods as the number of senior people and disorders related to lifestyle finally made it necessary to position the meals not only for function as nourishment but also for sensory/satisfaction and health. In order to

meet this new demand, manufacturers began investing more in developing products that taste good and offer additional health benefits. Thai functional foods are categorized as a set of foods for particular dietary applications and fortified foods with health claims, according to works of literature and papers. In 2014, Thailand's market for health foods was worth 160,000,000,000 Baht or 4.58 billion US dollars. Up to 2016, the market will increase at 6.0% or roughly 6.1% annually. Functional food dominates Thailand's health food sector, which accounts for over 60% of total sales (2.7 billion US dollars, or 96,000 million Baht) [42]. According to Krungthai Macro Research (2018), the Thai functional foods market was approximately 68,000 million baht or 1.8 billion US dollars, with the characteristics of a niche market to respond to specific behavioral consumer groups such as exercisers and beauty consumers. As for Thailand, the functional foods market is expected to have great growth potential. Euromonitor estimates that the Functional Foods market in Thailand is expected in 2018–2022 to grow an average of approximately 4% per year. These are an opportunity for Small and Medium Enterprises (SME) entrepreneurs to penetrate the market. In contrast, larger companies have not reached market leadership in this sector yet. In addition, consumers in this segmentation tend to focus on the value and benefits of the nutrients received more than the price factor. Moreover, regarding the report of Health Ingredients South East Asia (2018), Indonesia's functional food market was the largest in Southeast Asia (SEA), worth 4915 million USD, and promising strong growth of CAGR of 13%. On the other hand, Thailand was among the last compared with other countries in the SEA. The gap between Indonesia and Thailand came to the attention of investigating the functional foods market in order to deepen the understanding of consumers' purchase intention of what factors reflect the situation in the Thai functional foods market.

### 2.3. Theory of Planned Behavior (TPB)

Individual intention is considered a component that may impact people's behavior directly. Hence, knowing an individual's goal makes it conceivable to forecast their subsequent conduct. In the domain of social psychology, the TPB was established by Ajzen in 1985, who demonstrated that attitudes toward behavior, subjective norms, and perceived behavioral control could be used to appropriately forecast the intention of various behaviors [19].

In the current study, the researcher adopted the TPB model as a theoretical framework to describe functional non-dairy milk product consumption in Thai consumers [19]. Moreover, a previous study suggested that health-conscious consumers consume functional foods [43]. Consumers enjoy buying functional foods and improving their eating habits. The relationship between an individual's health consciousness (behavioral intention) and consumption of functional non-dairy milk can fairly be described by the theory of planned behavior, which associates with one's beliefs and behavior [19], and this theory was adapted into an extended version in a subsequent study [44].

The present study developed its conceptual framework partly from the Extended Theory of Planned Behavior. According to this hypothesis, a person's behavioral purpose affects their behavior. The behavioral intention construct measures one's propensity to carry out a specific action. Instead, the behavior construct refers to a person's observable behavior in response to a certain context and objective [19]. The real behavior construct is refrained owing to the difficulty of measuring the actual behavior [45].

#### 2.3.1. Perceived Behavioral Control

Perceived behavioral control refers to an individual's anticipation that their behavior's execution is within their control. The positive level of perceived behavioral control can rise by involving the connection of attitude and intention [46]. Ajzen recommended that intentions are significantly affected by personal elements, such as attitudes and perceived behavioral control [19]. Moreover, the previous study demonstrated that purchase intention was influenced by attitude toward the behavior, subjective norm, and perceived behavioral control [47]. Additionally, prior research claimed that intentions are significantly affected



by personal elements, such as attitudes and perceived behavioral control [19]. If consumers perceive the buying process of a product to be easy, consumers are more likely to make a purchase [48]. A study [49] found that when consumers feel they have more control over purchasing a product, their purchase intention towards that product will be high. If consumers perceive that they have greater control over purchasing functional foods, non-dairy milk, then their intention to make purchases of functional foods made with non-dairy milk will be higher. Hence, we developed the following hypotheses:

**Hypothesis 1 (H1).** *Perceived behavioral control has a positive impact on attitude.*

**Hypothesis 2 (H2).** *Perceived behavioral control has a positive impact on purchase intention.*

### 2.3.2. Subjective Norm

Subjective norms refer to the perceived societal practices that influence one to indulge or not to indulge in specific conduct [19]. Subjective norms indicate individuals' perceptions of how they would be perceived by their group norms if they engage in a given conduct. Past studies have shown that attitudes are substantially connected with subjective norms [50]. Tarkiainen and Sundqvist [51] revealed a strong positive link between subjective norms and attitudes regarding functional food consumption in Finland. The social influences that impact healthy food purchase and consumption habits most come from family, friends, and other reference groups [52]. Moreover, a study [53] found that people are more likely to try functional foods if they think that other people approve of them doing so. This means that subjective norms can have an impact on perceived behavioral control.

The subjective norm plays an important role in social settings. It refers to an individual's beliefs about the opinions of others regarding certain behaviors. This belief encourages the individual to either perform or not perform a particular behavior. However, a previous study suggested that subjective norms are not correlated with purchase intention [54]. Therefore, we proposed the following hypotheses:

**Hypothesis 3 (H3).** *Subjective norm has a positive influence on perceived behavioral control.*

**Hypothesis 4 (H4).** *Subjective norm has a positive influence on attitude.*

**Hypothesis 5 (H5).** *Subjective norm has a positive influence on purchase intention.*

### 2.3.3. Attitude

Attitude studies the customer's prominent character as it determines conceptions, feelings, and, most significantly, consumer decision-making procedures [55]. A study discovered a positive association between attitude and purchase intention over functional food products [56]. Another study indicated that retail shopping is positively affected by patron attitudes towards retailers, and this attitude influences a customer's purchase intention [57]. Hence, the consumer's attitude towards functional food is positive, so the probability of purchasing functional food products will also increase [58]. Positive views among consumers regarding healthy food are more likely to result in more determined purchasing intentions. Consumers' initial favorable reasons for healthy food items are important regarding their later good opinions concerning their purchase [59]. A study [19] found that stronger attitudes, subjective norms, and perceived behavioral control all lead to a stronger intention to perform a given behavior. Attitudes are a reflection of an individual's likelihood to engage or not engage in a behavior [52]. We, therefore, formulated the following hypothesis:

**Hypothesis 6 (H6).** *Attitude has a positive relationship with purchase intention.*

#### 2.3.4. Purchase Intention

According to prior research, consumers are more likely to follow through and purchase a product if they have a positive attitude [19]. The purchase intention measures how hard customers are willing to work to obtain natural and manufactured functional food. A product must be accepted by consumers for it to be successful on the market [60]. Therefore, for natural and synthetic functional foods to achieve commercial success, they require consumer acceptance, which has a substantial impact on consumers' purchase intentions and is highly connected with acceptability [61,62]. Few researchers have demonstrated that customers with a favorable attitude toward functional foods are more likely to purchase them [63–65].

#### 2.4. Hedonic Eating Value

Some domain specifics and the motivation influencing food purchasing decisions are the food eating values [43,66]. Hedonic value is considered to experience fun or happiness when consuming a product [67]. Hedonic eating value is defined as eating food and perceiving the pleasure or enjoyment of eating it and other positive [66]. The benefit of hedonic eating is the pleasure gained from the taste of eating the product [68]. The prior study found that hedonism is essential to food consumption, influencing attitudes toward eating functional foods [69].

In contrast, the hedonic eating value was negatively associated with consuming functional food [68]. Research suggests that the food industry improves functional food products by adding hedonic expectations to target new consumers and increase more consumers. The commercial for functional food will be a success. Moreover, hedonic values improve consumers' trust [70]. From the gender perspective, the study found that gender did not have any moderating effect on the relationship between consumption values [71]. We then established the following hypothesis:

**Hypothesis 7 (H7).** *Hedonic eating value has a positive impact on attitude.*

#### 2.5. Trust

The existing literature on functional foods reveals that people are more likely to accept functional foods if they trust the source. This trust must come from different levels of the socioeconomic system, such as government institutions, food manufacturers, and retailers [72]. The role of functional foods is mainly to help to improve recognition of the importance of good health and to provide general information about how to maintain healthy habits. However, people must also trust that these products will work to benefit from them [73]. The initial stage of purchasing functional food is a crucial step for customers in the trusting process since there are no fundamental requirements to differentiate the products, especially the chemical elements that are not shown, technical competence, and other resources [74]. The quality of functional foods is difficult to verify, both at the time of purchase and after consumption. Furthermore, consumers are not always fully informed about product quality. The confusing information available about functional foods further increases the perception of risk and complexity associated with them [75]. Thus, when choosing food, consumers often look for external cues to gauge quality. Trust is one such cue that can reduce perceived risk and complexity, making it easier to make a decision and encourage food consumption, especially when trying new foods [76]. Distrust among consumers can have a harmful effect on their purchase behavior. To encourage consumers to buy functional foods, it is important that they trust the product. Trust may help to ease perceived barriers and any behavioral control issues that could prevent someone from intending or performing a specific behavior. The current literature does not provide evidence of the relationship between trust and perceived behavioral control on functional foods or non-dairy milk. We then established the following hypothesis:

**Hypothesis 8 (H8).** *Trust has a positive influence on perceived behavioral control.*

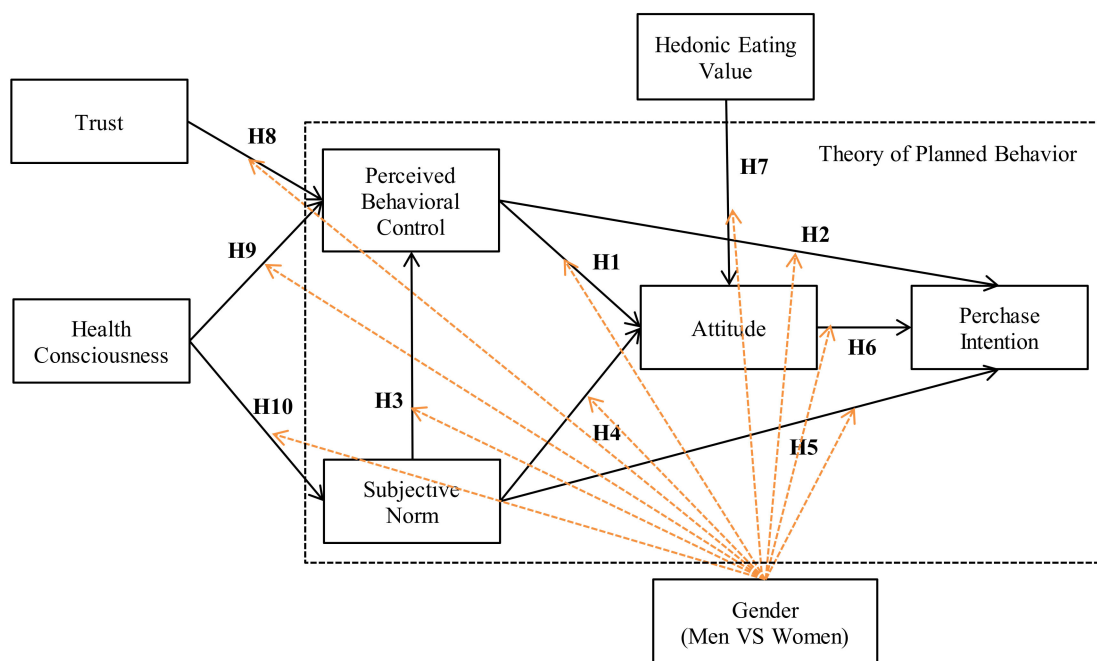
## 2.6. Health Consciousness

A person's health consciousness can be described as how health-ready they are. This term usually comes up in discussions about someone's readiness to change their lifestyle or adopt healthier habits [77]. Health-conscious consumers prioritize their wellness and work to improve or maintain their health. This usually looks like eating nutritious foods, exercising regularly, and getting enough sleep. Additionally, people often avoid risky behaviors such as smoking or drinking too much alcohol [78,79]. In addition, health consciousness significantly impacts increasing positive customer attitudes [80]. An individual's increased readiness to take healthy action is associated with a more positive attitude toward functional foods [43]. Prior research findings on the perceived healthiness of functional food are mixed. Numerous studies have shown that consumer health consciousness is positively related to functional food choices. According to previous research, consumers who are already living healthier lifestyles and engaging in positive health behaviors are more likely to view functional foods favorably and be open to trying them [43]. We proposed the following hypotheses:

**Hypothesis 9 (H9).** *Health consciousness has a positive impact on perceived behavioral control.*

**Hypothesis 10 (H10).** *Health consciousness has a positive impact on subjective norm.*

Hence, Figure 1 illustrates the conceptual model of this study in light of the literature reviews and hypotheses.



**Figure 1.** Proposed model. Source: Figure created by authors (2022).

## 3. Research Methodology

### 3.1. Sampling and Data Collection

This research employed the quota sampling approach. Data collected in this study were taken specifically from people ( $n = 450$ ) who shop at supermarkets in six regions (northeast  $n = 75$ , central 75, north 75, south 75, east 75, and west 75) throughout Thailand. The designated cities were Khon Kaen in the northeast, Bangkok in the central region, Chiang Mai in the north, Phuket in the south, Chon Buri in the east, and Kanchanaburi in the west. Data were collected from several selected supermarkets that sell functional non-dairy milk. Even though this was during the COVID-19 pandemic, all of the required health



standards were still met. This involves keeping a safe distance, using a mask, cleaning the hands, and checking the body temperature. The study consisted of respondent proportions that were purposively gathered. This approach can be considered a sampling technique for collecting representative data from a group [81]. When conducting a survey, it is important to focus on a specific population in order to gather accurate data [82]. Any SEM method analysis suggested that it should have a minimum sample size of 200 [83]. In this study, data from 450 respondents were collected. After removing irrelevant data, outliers, and errors, 413 responses were acceptable. Therefore, the rate of invalid samples was 8.2%.

A structured questionnaire was utilized to collect data. The questionnaire had three different types of questions: introductory questions, demographic questions, and questions about customer attitudes towards functional non-dairy milk (see more details in Appendix A). To assess consumers' attitudes toward functional non-dairy milk, researchers collected data via a survey using questionnaires, and then the data were analyzed by testing through a quantitative method. According to Leung [84], quantitative research is conducted by using primary numerical data and statistical interpretations under a reductionist, rational, and rigorously objective framework. Consequently, this study employed a questionnaire to explore the vital factors influencing functional non-dairy milk purchase intention. According to Bell and Bryman [85], quantitative research entails gathering numerical data and presenting the relationship between theory and study as a deductive. Therefore, this paper used a survey method for the data collection on functional non-dairy milk in Thailand.

In order to identify potential buyers of functional non-dairy milk products, the question of whether the participant is the potential buyer or not was designated to the first section on general introductory questions. The second section contained multiple-choice questions that gathered data on participants' demographic profiles, including gender, age, income, and family size. This data was then used as a nominal variable to classify the scale. In the third and final section, the survey provided a linear scale of seven indicators. This allowed individual participants to assess and rate their points of view. The linear scale had seven levels of agreement, ranging from strongly disagree to strongly agree, as mentioned earlier in this section. The survey questionnaire was based on the literature review and followed seven factors affecting functional non-dairy milk purchase intention, i.e., attitude (ATT), perceived behavioral control (PBC), subjective norm (SN), purchase intention (PI), hedonic eating value (H), trust (T), health consciousness (HC). The following seven constructs generated 29 questions in order to assess the influence on purchase intention. The data collected remained confidential and were used to measure different constructs on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). Furthermore, the original development of the questionnaire was first established in English and then translated into Thai since the target consumers of functional non-dairy milk are Thai. The questionnaire was translated from English to Thai by a competent English–Thai translator and reviewed by experts in the marketing and food-related fields.

### 3.2. Data Analysis

This study implemented Common Method Bias (CMB) before scrutinizing the data. Common Method Bias works when the various responses are formed by the questionnaire that seeks to reflect itself rather than a predisposition by the respondents themselves. Harman's one-factor test for common method bias measures whether the study is biased or not [86]. Common method bias is driven by the measurement method used in an SEM study and not by the network of causes and effects in the reviewed model. For illustration, the instructions at the top of a questionnaire may impact the responses from different respondents in the identical general direction, compelling the indicators to convey a certain amount of common variation. Another potential rationale for common method bias is the implicit social desirability associated with responding to questions in a questionnaire in a particular path, likewise causing the indicators to intercommunicate a certain amount of

common variation [87]. The total variance extracted by one factor was calculated at 39.17%, which clarified that there is no common method bias, since it should not exceed 50% [88].

This study's data analysis used the structural equation modeling (SEM) method, a statistical technique to estimate the relationships between variables. SEM confines various statistical techniques such as path analysis, confirmatory factor analysis (CFA), and SEM. The study's data analysis portrays causal modeling with latent variables using the SEM, a statistical technique to estimate the relationships between latent variables [24]. The first step involves validating the CFA model by verifying the CFA model in each indicator's variables to assess its credibility. This is followed by predicting the structural model to see whether the whole structure is trustworthy by investigating the goodness of fit (GOF), convergent validity, and discriminant validity. As for the GOF and convergent validity conditions, the designated thresholds included  $\text{CMIN}/\text{df} < 3.00$ ,  $\text{CFI} > 0.90$ ,  $\text{RMSEA} < 0.10$ ,  $\text{AVE} > 0.50$ , and  $\text{CR} > 0.70$  [37]. As for the discriminant validity condition, this research analyzed multicollinearity issues and the identity matrix of the indicator variables. The study employed Pearson's moment correlations with the threshold  $< 0.80$  to verify multicollinearity [89]. An identity matrix was tested using Bartlett's sphericity and Kaiser–Mayer–Olkin (KMO) analyses [90]. The following criteria were all accomplished. The structural model was assessed in the second stage to determine whether the overall structure, including the calculation of GOF, was valid. The selected fit indices thresholds for the study were as follows:  $\text{CMIN}/\text{df} < 3.00$ ,  $\text{CFI} > 0.90$ , and  $\text{RMSEA} < 0.10$ . The last step in our process was to execute a multi-group moderation analysis, which examines the segment's effect on the structural relationship [91]. To do this, we evaluated measurement invariance (MI) using the segment as a moderator. The segment divided the sample into two groups (men and women) and then conducted a z-test to see any differences between the two groups' factor loadings. The z-test is a statistical test commonly used in structural equation modeling (SEM) [45,82,92–94]. Thus, IBM SPSS statistics version 28 and IBM AMOS version 28 program were used. SPSS was used to accomplish the test of two phases of model estimation [95]. The results of our analysis are discussed in the next section.

## 4. Results and Discussion

### 4.1. Descriptive Statistics for Demographic Profile

Out of 195 men and 218 women participants, 413 usable data were reported. The demographic profiles indicate that women numbered slightly more than men at 52.1% of the total participants; Gen Y respondents made up 60% of the sample. Millennials, often known as Generation Y, were born between 1980 and 1994. Generation X represented 10.7% of the respondents. People born in 1960–1979 are known as Generation X. Generation X represented 27.1% of the respondents. The people that belong to Generation Z were born between 1995 and 2010. Boomers made up 2.2% of the respondents. The “Boomer” generation can be classified as being 58 years of age or older. With the following income of the participants, it shows that 12.6% have an income of 500–600 US dollars per month, 73.6% earn below 500 US dollars, 9.4% more than 1000 US dollars, 1.9% make in between 666 and 833 US dollars, and lastly, 2.4% make 833–1000 US dollars. The demographic profiles showed that most of the participants' occupations were office workers, which represented 3.4% of the total, while most participants were college students at 71.2%; 9.7% were government officers, 6.5% were unemployed, 4.8% were high school students, and lastly 4.4% were self-employed. The participant geographic data revealed that 36.1% are from the central region of Thailand, the northeast represents 21.3%, the west represents 12.3%, the north represents 12.1%, the east represents 10.2%, and the least participants are in the south, representing 8%.

The gender in this study was applied to use as a moderation factor on functional non-dairy milk consumers' purchase intention. In Table 1, group segment one, representing men, showed that most of the occupation data were from the college students, generation Y, who earned an income of less than 500 US dollars. Similar to group segment two, which represented women, the data indicated most of the participants' occupations, ages,

and incomes were much the same. Moreover, the percentage of both segments in the demographic variable of taste experience and becoming potential buyers in the future of functional non-dairy milk products were positive from both segments. However, the only difference in the following data was that segment 2 or women had more demand for and more experience with functional non-dairy milk than men.

**Table 1.** Descriptive statistics for demographic profile.

Demographic Variable	Category	Segment 1 (Men)		Segment 2 (Women)		Total		Significance Chi-Square Test
		n	%	n	%	n	%	
<b>Segment Size</b>		<b>195</b>	<b>47.2</b>	<b>218</b>	<b>52.8</b>	<b>413</b>	<b>100.0</b>	
<b>Occupation</b>	Student	8	4.1	12	5.5	20	4.8	0.652
	College Student	136	69.7	158	72.5	294	71.2	
	Self-employed	12	6.2	6	2.8	18	4.4	
	Government official	19	9.7	21	9.6	40	9.7	
	Office Worker	7	3.6	7	3.2	14	3.4	
	Unemployed	13	6.7	14	6.4	27	6.5	
<b>Age</b>	Gen Z	4.7	24.1	65	29.8	112	27.1	0.580
	Gen Y	121	62.1	127	58.3	248	60.0	
	Gen X	23	11.8	21	9.6	44	10.7	
	Boomer	4	2.1	5	2.3	9	2.2	
<b>Income</b>	Below \$500	136	69.7	168	77.1	304	73.6	0.215
	\$500–\$666	32	16.4	20	9.2	52	12.6	
	\$666–\$833	3	1.5	5	2.3	8	1.9	
	\$833–\$1000	4	2.1	6	2.8	10	2.4	
	More than \$1000	20	10.3	19	8.7	39	9.4	
<b>Taste experience</b>	Tasted	144	73.8	177	78.4	315	76.3	0.273
	Never	51	26.2	47	21.6	98	23.7	
<b>Will purchase again</b>	Will	160	82.1	200	91.7	360	87.2	0.003
	Will not	35	17.9	18	8.3	53	12.8	

Source: Data adapted from authors (2022). Statistical tests on structural equation modeling (SEM) have two primary stages: validating a measurement model and a structural model.

#### 4.2. Measurement Model (Confirmatory Factor Analysis)

The measurement model was analyzed using CFA. The model's internal consistency, reliability, convergent validity, and discriminant validity were all examined in this context. CFA was used to test how all the constructs were related to each other through covariances [19]. Each construct must be involved in the indicator before any testing occurs. The GOF relationship can be further improved by allowing covariances among errors to exist within the same construct. This process can ensure that the indicator more accurately reflects the data.

##### 4.2.1. The Goodness of Fit (GOF)

Table 2 demonstrates that the goodness of fit of measurement model statistics was adequate. To highlight, CMIN/df should not be over 3.00 (CMIN/DF < 3), indicating a justifiable fit [96]. At the same time, TLI, CFI, and IFI must exceed 0.90 (TLI > 0.90, CFI > 0.90, and IFI > 0.90), indicative of an acceptable fit [97,98]. RMSEA needs to be lower than 0.10, 0.05, and 0.08 demonstrating excellent, good, and mediocre fits, respectively [97].

##### 4.2.2. Convergent Validity

Convergent Validity was carefully examined by contrasting the model findings with the fit index thresholds. AVE, CR, and Cronbach's alphas were used to assess the measurement's dependability [99]. The average variance extracted was abbreviated as AVE, while composite reliability was abbreviated as CR. The suggested thresholds for the computed indicators and the convergent validity measures are shown in Table 3 as follows. This study illustrated Cronbach's alpha, which measures the internal consistency between a set of items within a group, and convergent validity was used to measure the correlation

between multiple indicators under the same constructs. Therefore, the value of Cronbach's alpha should be higher than 0.7 so that it is considered reliable [97]. The average variance extracted (AVE) and Composite reliability (CR) should exceed 0.5 and 0.7 [100]. Consequently, all the constructs passed the thresholds except the AVE of health consciousness (HC) at 0.499.

**Table 2.** The goodness of the fit of the measurement model.

Fit Index	Value	Threshold	Assessment
<i>p</i> -value	0.000		Acceptable for complex model
CMIN/df	2.863	<3.00	Passed
TLI	0.927	>0.90	Passed
CFI	0.94	>0.90	Passed
IFI	0.94	>0.90	Passed
RMSEA	0.067	<0.10	Passed

Source: Data adapted from authors (2022). Note that CMIN/df = Chi-square/degree of freedom; TLI = Tucker–Lewis index; CFI = comparative fit index; IFI = incremental fit index; RMSEA = root mean square error approximation.

**Table 3.** Convergent validity.

Construct	Indicator	Loading	Cronbach $\alpha$	AVE	CR.
Attitude	ATD2	0.671	0.844	0.744	0.895
	ATD4	0.937			
	ATD5	0.951			
Hedonic	H1	0.826	0.867	0.727	0.914
	H2	0.875			
	H3	0.882			
	H4	0.826			
Perceived Behavioral Control	PBC1	0.754	0.888	0.742	0.895
	PBC3	0.943			
	PBC4	0.876			
Subjective Norm	SN1	0.922	0.912	0.784	0.916
	SN2	0.936			
	SN3	0.792			
Trust	T1	0.85	0.925	0.689	0.917
	T2	0.758			
	T3	0.869			
	T4	0.85			
	T5	0.819			
Health Consciousness	HC1	0.799	0.707	0.499	0.744
	HC3	0.755			
	HC4	0.538			
Purchase Intention	PI1	0.763	0.750	0.50	0.749
	PI2	0.723			
	PI3	0.628			

Source: Data adapted from authors (2022). Note that AVE = average variance extracted; CR = composite validity.

#### 4.2.3. Discriminant Validity

When assessing discriminant validity, comparing the square root AVEs with the correlations in the associated matrices is important. The comparison reveals a good indication of how similar or different the constructs are. The Fornell and Larcker criterion is a good way to assess this [99]. The number of each latent variable as the AVE's square root was higher than the off-diagonal correlation coefficients, as shown in Table 4, showing that all the constructs could potentially measure the various constructs. This result was acceptable [101]. The heterotrait–monotrait (HTMT) ratio technique by Henseler et al. (2015) was also used

in this study to assess discriminant validity. The HTMT ratio technique was utilized to obtain more dependable findings because the reliability of the Fornell and Larcker (1981) criteria in addressing uniqueness among latent variables were questioned [102,103]. HTMT values less than 0.90 reveal the existence of discriminant validity between the associated latent variables [102,103]. All of the latent variables' HTMT values were less than 0.90, which satisfies the criteria for discriminant validity, as shown in Table 4.

**Table 4.** Discriminant validity.

Fornell & Larker Criterion									
Construct	CR	AVE	H	HC	T	SN	PBC	ATT	PI
H	0.914	0.727	<b>0.853</b>	-	-	-	-	-	-
HC	0.744	0.499	0.658	<b>0.706</b>	-	-	-	-	-
T	0.917	0.689	0.74	0.637	<b>0.83</b>	-	-	-	-
SN	0.916	0.784	0.357	0.543	0.346	<b>0.885</b>	-	-	-
PBC	0.895	0.742	0.454	0.569	0.51	0.522	<b>0.861</b>	-	-
ATT	0.895	0.744	0.621	0.515	0.537	0.327	0.634	<b>0.863</b>	-
PI	0.749	0.5	0.313	0.26	0.267	0.178	0.305	0.5	<b>0.707</b>
HTMT Ratio Approach									
PI	-	-	-	-	-	-	-	-	-
H	0.25	-	-	-	-	-	-	-	-
HC	0.22	0.55	-	-	-	-	-	-	-
T	0.23	0.65	0.6	-	-	-	-	-	-
SN	0.19	0.31	0.51	0.44	-	-	-	-	-
ATT	0.51	0.55	0.67	0.37	0.26	-	-	-	-
PBC	0.32	0.47	0.53	0.51	0.54	0.66	-	-	-

Source: Data adapted from authors (2022). Note that H = Hedonic Eating Values, HC = Health Consciousness, T = Trust, SN = subjective Norm, PBC = Perceived behavioral control, ATT = Attitude, and PI = Purchase intention, Bold numbers on diagonal = Square root AVEs.

#### 4.3. Structural Equation Modeling (SEM)

##### The Goodness of Fit of the Structural Model

After examining the measurement model, we developed a structural model incorporating all relevant constructs. Furthermore, the structural model with the primary objective allowed us to investigate the factors. The results of most of the goodness of fit (GOF) criteria were positive and showed how the constructs supported each other. All GOF indices were well within the acceptable thresholds [97] (see Table 5).

**Table 5.** The goodness of fit of the structural model (S.E.M.).

Fit Index	Value	Threshold	Assessment
<i>p</i> -value	0.000		Acceptable for complex model
CMIN/df	2.603	<3.00	Passed
TLI	0.937	>0.90	Passed
CFI	0.946	>0.90	Passed
IFI	0.947	>0.90	Passed
RMSEA	0.062	<0.10	Passed

Source: Data adapted from authors (2022). Note that CMIN/df = Chi-square/degree of freedom, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, IFI = Incremental Fit Index, RMSEA = Root Mean Square Error of Approximation.

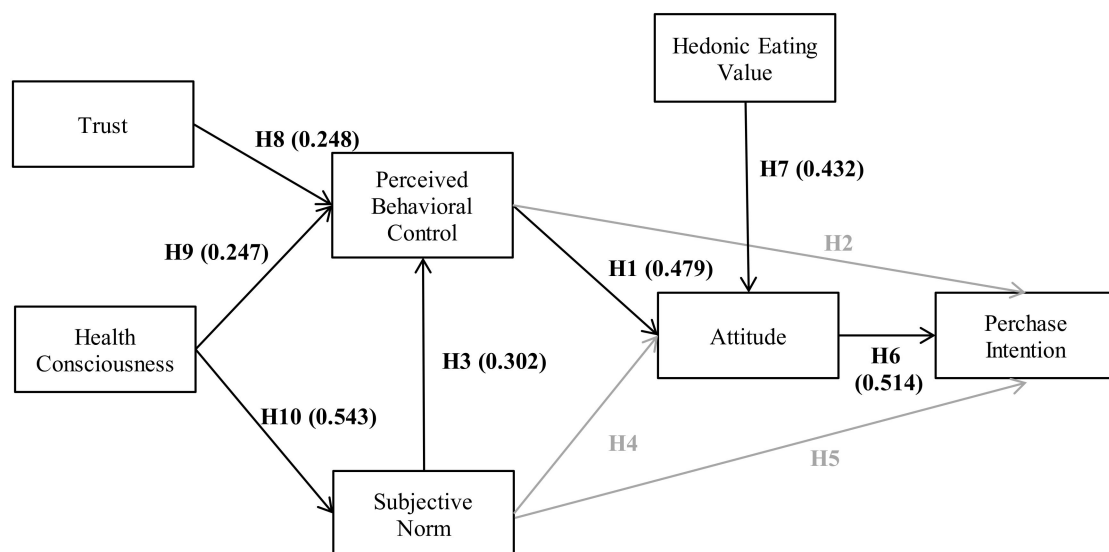
Table 6 summarizes all the ten hypotheses testing results from the structural model. H1 to H7 had a positive relationship among variables that support the hypotheses, whereas H8 to H10 relationship variables were rejected (also see Figure 2).



**Table 6.** Test results from the structural model.

Hypothesis	Endogenous Variable	Exogenous Variable	Model	Path	p-Value	Result
				Coefficients ( $\beta$ )		
H7	Hedonic Eating Value	Attitude	H→ATT	0.432	***	Supported
H8	Trust	Perceived behavioral control	T→PBC	0.248	***	Supported
H9	Health Consciousness	Perceived behavioral control	HC→PBC	0.247	0.002 **	Supported
H10	Health Consciousness	Subjective Norm	HC→SN	0.543	***	Supported
H3	Subjective Norm	Perceived behavioral control	SN→PBC	0.302	***	Supported
H1	Perceived Behavioral Control	Attitude	PBC→ATT	0.479	***	Supported
H6	Attitude	Purchase Intention	ATT→PI	0.514	***	Supported
H2	Perceived behavioral control	Purchase Intention	PBC→PI	−0.036	0.667	Rejected
H4	Subjective Norm	Attitude	SN→ATT	−0.077	0.105	Rejected
H5	Subjective Norm	Purchase Intention	SN→PI	0.029	0.656	Rejected

Source: Data adapted from authors (2022). Note: \*\*\*  $p$ -value < 0.001, \*\*  $p$ -value < 0.01.

**Figure 2.** The structural model. Source: Figure created by authors (2022).

These results were contradictory to the theory of planned behavior hypothesis proposed by Ajzen (1991) [19], which implied that the intention of purchasing functional non-dairy milk products was not dependent on an individual's perceived behavioral control and subjective norm; moreover, the hypothesis of the subjective norm having a positive relationship to attitude was also rejected. On the other hand, an individual's purchase intention solely depends on the attitude towards functional non-dairy milk. The result was confirmed by H6 (ATT→PI), demonstrating  $\beta = 0.514$  and  $p < 0.001$ . The second-highest standardized loading implied the attitude could affect the decision-making of buying behavior to functional food products by the determining perspective to the product. This hypothesis supports the theory of planned behavior when the attitude positively impacts

purchase intention; this would affect the consumers' behavior to purchase functional food products during the COVID-19 pandemic.

To shed light on the most significant hypothesis, H10 (HC→SN) demonstrated  $\beta = 0.543$  and  $p < 0.001$ . Therefore, H10 is supported, where the previous theory [80] also confirmed the relationship that eco-friendliness also plays a significant role when choosing healthful and sustainable food in Norway, which has impacted developing countries such as Thailand. The role of developed countries in terms of healthiness and sustainability can influence developing countries' consumers' perceptions and awareness of changing the approaching intention of their consumption. This finding indicated that people concerned about health could influence the actions of their individual activity, reflecting the consciousness of health, especially with the COVID-19 pandemic that changed individual behavior by the health consciousness. This result implied that the health awareness people influenced the surrounding community or group of influencers that changed the norm's perspective of health awareness on a wider range.

Subsequently, for H1 (PBC→ATT),  $\beta = 0.479$  and  $p < 0.001$ , supporting that H1 has a positive impact. This result leads to a prior theoretical [104] suggestion that the prognosis benefit of perceived behavioral control varies when a person is driven and goal-directed to accomplish the desired behavior. The optimistic degree of perceived behavioral control can increase by engaging the link of attitude and intention. This supporting hypothesis indicated that individual action behavior could impact the attitude toward functional food products in the way of action to the perspective of the product.

H7 (H→ATT), stating that hedonic eating value has a positive influence on attitude, was supported ( $\beta = 0.432$ , and  $p < 0.001$ ). Consistent with the literature, refs. [43,44,67,69,70] suggested that hedonic eating ideals influence attitudes toward consuming functional foods. This demonstration implied that consumers eating meals with experiencing pleasure or satisfaction of eating has a beneficial impact on customer feeling attitude, which may contribute to the purchase intention of functional non-dairy milk products. This research article's findings on H7 demonstrated that the hedonic eating value significantly influenced a consumer's attitude with a standardized loading of 0.432. This result supports studies by ref. [46].

Afterward, H3 (SN→PBC), where  $\beta = 0.302$  and  $p < 0.001$ , confirmed that H3 was supported. This result supports early literature [105] that essential aim considerations when the social condition allows for healthy food intake. The finding implied that the group of similar communities could influence the individual action behavior to follow the trend of consuming functional soymilk products in the COVID-19 crisis.

Followed by H8 (T→PBC), the result has illustrated that trust has a positive influence on perceived behavioral control ( $\beta = 0.248$ , and  $p < 0.001$ ). Prior studies in the theoretical framework have supported the assumption of trust towards perceived behavioral control [106–109], which demonstrates that trust is crucial in the beginning step. Trust from receiving experiences or word of mouth from their surrounding environment could affect the perceived behavioral control in terms of individual action and activity, which is influenced by trust.

As a final point, H9 (HC→PBC) was given statistical support with  $\beta = 0.247$  and  $p < 0.01$ . The previous studies [110–113] revealed that consumers who care about the health and the environment have a positive impact on organic product purchase intentions.

#### 4.4. Multigroup Moderation Analysis (MGA)

##### 4.4.1. Measurement Invariance (MI)

Measurement invariance (MI) is the approach to determine if the measurement model is not statistically different across two groups. Based on the CFA model, the MI approach further conducts the following: (a) organizing configural invariance (unconstrained model); (b) organizing metric invariance (equal factor loading); and (c) organizing scalar invariance (equal intercepts). If configured invariance, metric invariance, and organizing scalar invariance are satisfied, then the full measurement invariance is formed. Then, it is possible

to compare factor loadings between different groups. However, if partial MI is not satisfied, scalar invariance must be accepted in order to compare factor loadings between groups. The evaluation of MI that was accomplished following the CFA model is shown in Table 7.

**Table 7.** Measurement invariance.

Fit Index	Configural Invariance (Unconstrained Model)	Metric Invariance (Equal Factor Loading)	Scalar Invariance (Equal Intercept)	Threshold
<i>p</i> -value	0.000			
CMIN/df	1.916	1.894	1.884	<3.00
TLI	0.923	0.931	0.931	>0.90
CFI	0.939	0.939	0.938	>0.90
IFI	0.940	0.939	0.938	>0.90
RMSEA	0.047	0.047	0.046	<0.10
Assessment	Passed	Passed	Passed	

Source. Data adapted from authors (2022).

Table 7 demonstrates that the configural invariance, metric invariance, and scalar invariance CMIN/df values were all above the 3.00 cutoff. Other fit indices passed the criteria of >0.90, >0.90, >0.90, and 0.10, respectively, including the TLI, CFI, IFI, and RMSEA of configural invariance, metric invariance, and scalar invariance. As a result, complete MI was formed, enabling us to continue an additional analysis in the next section.

#### 4.4.2. Z-Test for Loading Differences

In this section, the Z test was conducted to compare the factor loading between two segments ((1) men and (2) women) using the critical ratio differences in multi-group analysis. By conducting the z test, the researcher can acquire a list of critical ratios for the structural model differences [45]. The factor loadings will differ between the groups if the critical ratio is higher than the absolute value of 1.96 by assuming a two-tailed test with an alpha of 0.05 percent. As a result, 0.025 percent of the samples are in each tail; the alpha has a critical value of  $\pm 1.96$ . According to Table 8, the H7 critical ratio difference was less than the absolute ratio ( $-2.807 < -1.96$ ), indicating the significant critical ratio of the difference between male to female consumers. For both genders, the pathways H7, H8, H9, H10, H3, H1 and H6 were statistically significant.

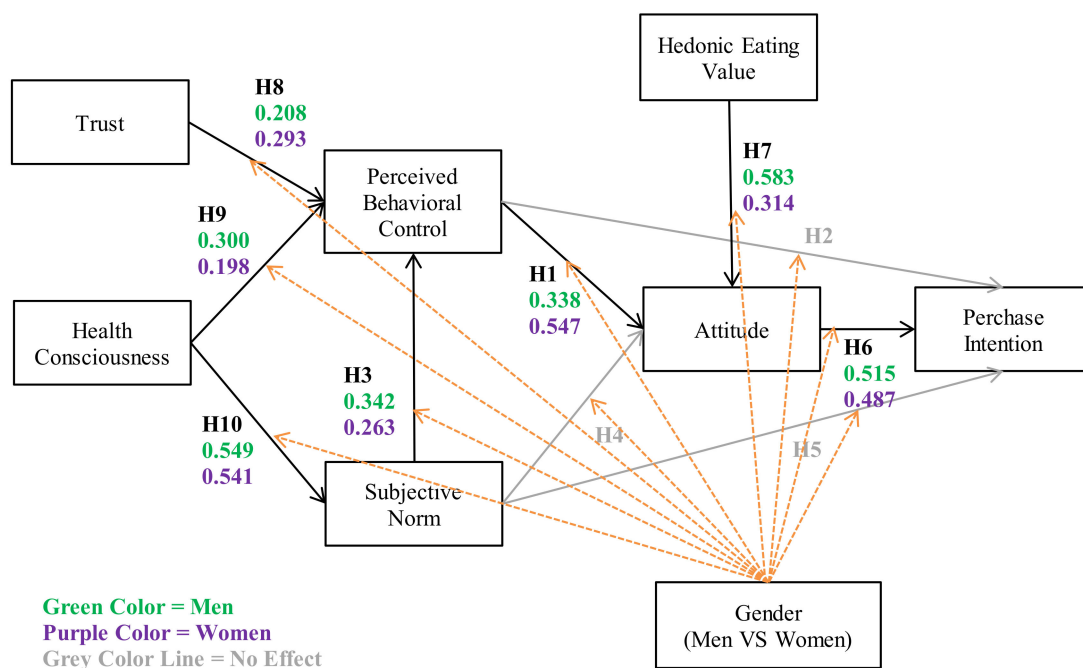
The results in Tables 6 and 8, and Figure 3 reveal the courses of H7, H8, H9, H10, H3, H1 and H6; there were statistically significant loadings for both men and women consumers (see the stars). In addition to being consistent with the outcomes in Table 6, both segments' paths of H2, H4, and H5 were not statistically significant. However, for H7, there was only one path difference (see the stars under the critical ratio difference column).

The critical ratio value of H7 is higher than the threshold, indicating that men and women consumers have divergent viewpoints on the value and attitude of hedonic eating. This result is consistent with the existing literature that stated gender did not have any moderation effect on the relationship between consumption values [66,71]. However, this study found that hedonic eating value on attitude has a different perspective based on gender as a moderation effect. Additionally, a hedonic eating value significantly affects the attitudes of men consumers (loading = 0.583) rather than women consumers (loading = 0.314). The pleasure gained from the taste of eating functional non-dairy milk can impact the attitude of consumers since we discovered that attitude positively influences purchase intention [66]. This study [71] also stated that hedonic eating values play a more important role in behavioral intentions, and we discovered that hedonic eating values could impact the attitude differently between men and women consumers, which leads to the purchase intention of functional non-dairy milk products.

**Table 8.** Test results from loading differences.

Path	Relationship	Standardized Loading		Critical Ratio Difference	Threshold
		Men	Women		
H7	Hedonic Eating Value→Attitude	0.583 ***	0.314 ***	−2.807  *	1.96
H8	Trust→Perceived Behavioral Control	0.208 *	0.293 **	0.758	1.96
H9	Health Consciousness→Perceived Behavioral Control	0.300 **	0.198*	−0.522	1.96
H10	Health Consciousness→Subjective Norm	0.549 ***	0.541 ***	−0.47	1.96
H3	Subjective Norm→Perceived behavioral control	0.342 ***	0.263 ***	−0.201	1.96
H1	Perceived Behavioral Control→Attitude	0.338 ***	0.547 ***	1.034	1.96
H6	Attitude→Purchase Intention	0.515 ***	0.487 ***	0.525	1.96
H2	Perceived behavioral control→Purchase Intention	−0.162	0.125	1.7	1.96
H4	Subjective Norm→Attitude	−0.103	−0.063	−0.322	1.96
H5	Subjective Norm→Purchase Intention	0.081	−0.033	−0.832	1.96

Source: Data adapted from authors (2022). Note: \*\*\*  $p$ -value < 0.001, \*\*  $p$ -value < 0.01, \*  $p$ -value < 0.05.

**Figure 3.** Moderation effects and structural model. Source: Figure created by authors (2022).

## 5. Discussion

The researchers discovered that hedonic eating value has a positive impact on attitude toward functional non-dairy milk. This proved that the benefit of hedonic eating value is a vital factor in food consumption, such as this case implemented in the form of beverage and non-dairy; still, the variable of hedonic eating has a significant impact on the attitude that leads to affecting purchase intentions in functional non-dairy milk consumers [69]. Moreover, according to the test result of loading differences, we found that gender has a moderation effect on the hedonic eating value and attitude, which, regarding the existing literature, did not observe the differences in the variable of gender moderation's effect on gender. However, according to ref [71], hedonic eating value still has a positive effect on attitude. This study discovered that trust has a positive impact on perceived behavioral control. Trust comes from different levels of the socioeconomic system, such as food manufacturers, retailers, and government institutions [72]. Consumers are aware of the good benefits and importance of functional foods and beverages, such as non-dairy milk products, e.g., that these inventories can boost their immune system. However, consumers have to trust that these products can maintain and improve healthy habits, affecting the perceived behavior of each individual [73]. Trust is the initiative's inner source that can trigger self-behavior to adjust. We found that health consciousness has a positive influence on perceived behavioral control. Health consciousness is the awareness of health and hygiene [77]. The knowledge of being cautious of the surrounding environment, especially healthiness, would change the behavior to protecting oneself from harm or improving healthy habits. Allergy to dairy milk-based products can be discussed on the matter of health consciousness since, recently, consumers have started realizing their dairy products allergies [15]. This research discovered that health consciousness has a positive impact on the subjective norm. During the COVID-19 pandemic, there was significant demand for functional foods, including non-dairy milk [114]. The situation indicates the awareness of the health consciousness of consumers impacting society due to the spreading of diseases. This action proved that health consciousness has the ability to influence the norm and change the perspective of people. We found that subjective norm has a positive impact on perceived behavioral control. The subjective norms surrounding non-dairy milk have shifted in recent months due to the outbreak of COVID-19. Many people now perceive non-dairy milk as a more behaviorally controlled option, as it does not require close contact with others in the dairy process. This heightened perception of control has led to increased demand for non-dairy milk products, as consumers seek out products that they perceive to be lower risk in the current climate [10]. The study also revealed evidence that perceived behavioral control has a significant effect on attitude. A growing body of evidence suggests that perceived behavioral control, or the belief that one can successfully engage in a behavior, is a key determinant of attitude and behavior. This is especially relevant when it comes to health-related behaviors, such as choosing to consume non-dairy milk. Studies have shown that when people perceive that they have control over their ability to consume non-dairy milk, they are more likely to have a positive attitude towards it and are more likely to consume it. Perceived behavioral control is associated with a sense of self-efficacy or the belief that one can complete a behavior [115,116]. We found a positive relationship between attitude and purchase intention. Another study also discovered a positive relationship between attitude and purchase intention on functional foods [56]. The possibility that a buyer might purchase a good or service is known as a purchase intention. A customer's attitude is how consumers assess a good or service. Numerous elements might affect a customer's buying decision and perception of a good or service. Non-dairy milk is a product that some customers could choose to buy due to their allergies or intolerance to dairy. Some people might purchase non-dairy milk because they think it is better than dairy milk. For any reason, customers who have a positive attitude towards non-dairy milk are more likely to purchase it than those who do not [55]. Lastly, according to the result of this study, there were three rejected results from H2, H4, and H5.



## 6. Research Implications

Two major stakeholders, producers, and food-related institutions were presented with the following recommendations. Understanding the purchase intention of segmented consumers is the key factor in gaining a competitive market. In terms of the current demand for functional non-dairy milk, when compared with other countries in Southeast Asia, there is a significant gap in terms of prospective growth in the functional foods sector. This study directly benefits marketers and producers in this business field of functional non-dairy milk. With the additional constructs that this study has tested, marketers can understand a variety of points of perspective of this study's selected segmentation that can generate and design the product which suits their target market.

Furthermore, food-related institutions or policymakers, such as the food and drugs administration, can directly benefit from health matters by understanding consumers' concerns, such as cleanliness, organicity, an added ingredient in the product, and their well-being. This is in order to make policy on food control that can protect and benefit the consumer of functional foods and beverages products so as to gain sustainable outcomes because functional foods and beverages are categorized as sustainable innovation products.

Moreover, the research conducted practical implications and provided theoretical descriptively related practical implications. This study showed connections between consumer attitudes and marketing phrases as seen by consumer perceptions and functional non-dairy milk purchase intention. Hedonic eating value has a significant impact on attitude; trust has a positive influence on perceived behavioral control; health consciousness has a significant impact on perceived behavioral control; health consciousness has a positive influence on the subjective norm; subjective norm has a positive effect on perceived behavioral control; perceived behavioral control has a significant influence on attitude; and attitude has a significant impact on purchase intention for functional non-dairy milk. The findings of this study provide evidence for the planned behavior theory.

## 7. Conclusions

The rising awareness of the advantages of functional foods has significantly impacted the expanding understanding of the advantages of functional non-dairy milk. Functional non-dairy milk products offer a beneficial substitute for lactose-intolerant people who cannot consume dairy milk due to other dietary constraints. Dairy milk production is among the ecologically harmful processes. Dairy cows create enormous amounts of the potent greenhouse gas methane and dangerous substances that can poison waterways, which are also present in their manure. Since producing milk requires a lot of land and water, dairy farming may cause deforestation and water shortages in the areas where it is practiced. Functional non-dairy milk is a substitute for dairy milk since it employs a process that generates less waste and is made of biodegradable ingredients. We then analyzed market segmentation and collected data based on the theory of planned behavior with the extended variables, hedonic eating value, trust, and health consciousness. Researchers selected a segmentation in the topic of gender, and then we divided it into (1) men and (2) women. The objective of this study was to examine the significant relationships among factors, for instance, hedonic eating value, trust, health consciousness, perceived behavioral control, subjective norm, attitude, and purchase intention. Structured equation modeling (SEM) was used to analyze the proposed hypothesis. Most hypothesis test results supported the previously formed hypotheses, except for H2, H4, and H5, which concluded that perceived behavioral control and subjective norm were unrelated to their attitude and purchase intention of functional non-dairy milk. Additionally, the multi-group analysis proposed that men and women significantly differ in their requirements for enjoyable experiences while consuming functional non-dairy milk. More specifically, hedonic eating value has a greater impact on men's attitudes than women's attitudes. This study deepens our understanding of the functional non-dairy milk industry in Thailand in terms of market segments based on gender.

## 8. Limitation and Future Research Directions

The study's findings are insufficient to support the market for functional foods in general since we only responded to functional non-dairy milk products, which are distinctive in the marketplace compared with other conventional beverages and foods. Future studies may incorporate more antecedent factors, such as price, into the existing structural model to comprehend customers' behavioral intentions. Additionally, it could shift the moderator of the customer segment to a more diverse section, such as the non-health-conscious and the health-conscious consumers.

**Author Contributions:** Conceptualization, C.K.; methodology, T.P.; formal analysis, T.P.; resources, P.N.; data curation, S.W., C.V., S.P., S.N. and P.H.; writing—original draft preparation, T.P.; writing—review and editing, C.K., P.N. and S.W.; supervision, P.W., C.K. and P.N.; project administration, C.K. All authors have read and agreed to the published version of the manuscript.

**Funding:** The research on Consumers' Intention to Purchase Functional Non-dairy Milk and Gender-Based Market Segmentation by Khon Kaen University has received funding support from the National Science, Research and Innovation Fund or NSRF (Ref. 65A103000127).

**Institutional Review Board Statement:** Khon Kaen University Ethics Committee for Human Research, Khon Kaen University, Khon Kaen, Thailand, has made the agreement that this study has met the criteria of the Exemption Determination Regulations (HE653125).

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Not applicable.

**Acknowledgments:** We would like to thank the International College and the Center for Sustainable Innovation and Society, Khon Kaen University, Thailand, for providing research facilities.

**Conflicts of Interest:** The authors declare that they have no conflict of interest.

## Appendix A. Questionnaire

### Appendix A.1. Introductory Questions

- (a) Do you buy functional non-dairy milk regularly?
- (b) Are you a potential buyer of functional non-dairy milk?

### Appendix A.2. Demographic Data of Respondents

1. Gender  
Male, Female
2. Occupation  
Student, College Student, Self-Employed, Government Officer, Office Worker, Unemployed
3. Age (years)  
Gen Z, Gen Y, Gen X, Baby Boomer
4. Income (Thai Baht)  
<\$500, \$500–\$666, \$666–\$833, \$833–\$1000, >\$1000
5. Have you ever tasted functional non-dairy milk  
Tested, Never
6. Will you buy functional non-dairy milk in the future?  
Will, Will not

*Appendix A.3. Questionnaire*

Items	Measure/Question
ATD1	Is it good to drink functional non-dairy milk?
ATD2	Drinking functional non-dairy milk regularly would make you feel pleasure.
ATD3	Drinking functional non-dairy milk regularly would make you smarter.
ATD4	I am interested in drinking functional non-dairy milk.
ATD5	I have a desire to consume functional non-dairy milk.
H1	Drinking functional non-dairy milk that brings joy and happiness is very important to me.
H2	Drinking a delicious smell product of functional non-dairy milk is important to me.
H3	I focus on drinking functional non-dairy milk that gives me pleasure.
H4	For me, functional non-dairy milk always has a good taste.
T1	I believe that functional non-dairy milk provides the benefits that the seller promises.
T2	I believe that functional non-dairy milk is innovative products.
T3	I believe the consumption of functional non-dairy milk is safe.
T4	I believe in the quality of the functional non-dairy milk brand that I brought.
T5	I believe in the institution that certifies functional non-dairy milk products.
HC1	I am very concerned with my health and wellbeing.
HC2	I try to make healthy choices.
HC3	Normally, I am more attentive to my health.
HC4	I have regular check-ups on my health.
PBC1	I can control myself to drink functional non-dairy milk everyday.
PBC2	Drinking functional non-dairy milk depends on me whether I drink regularly or not.
PBC3	I believe that I have the ability to drink functional non-dairy milk regularly
PBC4	If it is up to me, I'm sure I will be able to drink functional non-dairy milk regularly
SN1	I will buy functional non-dairy milk when I see my friends drink them
SN2	I will buy functional non-dairy milk when a group of my friends suggests me
SN3	I will buy functional non-dairy milk when it becomes a trend
PI1	If there is a functional non-dairy milk product available in the store, I would intend to buy it
PI2	I intend to buy functional non-dairy milk products next time when I go shopping
PI3	I want to buy functional non-dairy milk next time
PI4	Functional non-dairy milk products are my first thought to buy in the store

Source. Data adapted from authors (2022).

## References

1. Betoret, E.; Barrera, C.; Seguí, L.; Betoret, N. Sustainable Strategies in the Development of Functional Foods. In *Innovation Strategies in the Food Industry*; Academic Press: Cambridge, MA, USA, 2022; pp. 145–156. [\[CrossRef\]](#)
2. Shete, B.S.; Shinkar, N.P.; Kamaltai Gawai, S. Dairy Industry Wastewater Sources, Characteristics & Its Effects on Environment Department of Civil Engineering. *J. Curr. Eng. Technol.* **2013**, *3*, 1611–1615.
3. Capper, J.; Cady, R.A.; Bauman, D.E. The environmental impact of dairy production: 1944 compared with 2007. *J. Anim. Sci.* **2009**, *87*, 2160–2167. [\[CrossRef\]](#)
4. Siciliano, R.; Reale, A.; Mazzeo, M.; Morandi, S.; Silvetti, T.; Brasca, M. Paraprobiotics: A New Perspective for Functional Foods and Nutraceuticals. *Nutrients* **2021**, *13*, 1225. [\[CrossRef\]](#) [\[PubMed\]](#)
5. Luvián-Morales, J.; Varela-Castillo, F.O.; Flores-Cisneros, L.; Cetina-Pérez, L.; Castro-Eguiluz, D. Functional foods modulating inflammation and metabolism in chronic diseases: A systematic review. *Crit. Rev. Food Sci. Nutr.* **2021**, *62*, 4371–4392. [\[CrossRef\]](#) [\[PubMed\]](#)
6. Bigliardi, B.; Galati, F. Innovation trends in the food industry: The case of functional foods. *Trends Food Sci. Technol.* **2013**, *31*, 118–129. [\[CrossRef\]](#)
7. Wardle, J.; Haase, A.M.; Steptoe, A.; Nillapun, M.; Jonwutiwes, K.; Bellis, F. Gender differences in food choice: The contribution of health beliefs and dieting. *Ann. Behav. Med.* **2004**, *27*, 107–116. [\[CrossRef\]](#)
8. Austad, S.N. Why women live longer than men: Sex differences in longevity. *Gend. Med.* **2006**, *3*, 79–92. [\[CrossRef\]](#)
9. IFT. Top 10 Functional Food Trends. Available online: <https://www.ift.org/news-and-publications/food-technology-magazine/issues/2020/april/features/the-top-10-functional-food-trends> (accessed on 18 August 2022).
10. Cong, L.; Bremer, P.; Miroso, M. Functional Beverages in Selected Countries of Asia Pacific Region: A Review. *Beverages* **2020**, *6*, 21. [\[CrossRef\]](#)
11. Nor, N.A.A.M.; Masdek, N.R.N.M.; Sulaiman, N.H. Functional Food Business Potential Analysis in Malaysia, Thailand, Indonesia and The Philippines. *Econ. Technol. Manag. Rev.* **2016**, *11b*, 99–110.
12. Trevanich, S. Probiotic beverages in Thailand: Health attributes and future trends. *Probiotic Beverages* **2021**, *2021*, 81–97. [\[CrossRef\]](#)
13. Ju, S.; Song, S.; Lee, J.; Hwang, S.; Lee, Y.; Kwon, Y.; Lee, Y. Development of Nano Soy Milk through Sensory Attributes and Consumer Acceptability. *Foods* **2021**, *10*, 3014. [\[CrossRef\]](#) [\[PubMed\]](#)
14. Roila, R.; Branciar, R.; Verdini, E.; Ranucci, D.; Valiani, A.; Pelliccia, A.; Fioroni, L.; Pecorelli, I. A Study of the Occurrence of Aflatoxin M1 in Milk Supply Chain over a Seven-Year Period (2014–2020): Human Exposure Assessment and Risk Characterization in the Population of Central Italy. *Foods* **2021**, *10*, 1529. [\[CrossRef\]](#) [\[PubMed\]](#)
15. Market Study on Soy Milk: East Asia & Europe to Account for Bulk of Demand. Available online: <https://www.persistencemarketresearch.com/market-research/soy-milk-market.asp> (accessed on 15 March 2022).
16. Gazdecki, M.; Goryńska-Goldmann, E.; Kiss, M.; Szakály, Z. Segmentation of Food Consumers Based on Their Sustainable Attitude. *Energies* **2021**, *14*, 3179. [\[CrossRef\]](#)
17. Manippa, V.; Padulo, C.; Van Der Laan, L.N.; Brancucci, A. Gender Differences in Food Choice: Effects of Superior Temporal Sulcus Stimulation. *Front. Hum. Neurosci.* **2017**, *11*, 597. [\[CrossRef\]](#)
18. Morse, K.L.; Driskell, J.A. Observed sex differences in fast-food consumption and nutrition self-assessments and beliefs of college students. *Nutr. Res.* **2009**, *29*, 173–179. [\[CrossRef\]](#)
19. Ajzen, I. The Theory of Planned Behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [\[CrossRef\]](#)
20. Nystrand, B.T.; Olsen, S.O. Consumers' attitudes and intentions toward consuming functional foods in Norway. *Food Qual. Preference* **2020**, *80*, 103827. [\[CrossRef\]](#)
21. Park, J.; Ahn, J.; Yoo, W.S. The Effects of Price and Health Consciousness and Satisfaction on the Medical Tourism Experience. *J. Heal. Manag.* **2017**, *62*, 405–417. [\[CrossRef\]](#)
22. Loera, B.; Murphy, B.; Fedi, A.; Martini, M.; Tecco, N.; Dean, M. Understanding the purchase intentions for organic vegetables across EU: A proposal to extend the TPB model. *Br. Food J.* **2022**, *8*, 875. [\[CrossRef\]](#)
23. Hair, J.; Black, W.; Babin, B.; Anderson, R. *Multivariate Data Analysis*, 8th ed.; Cengage Learning: Hampshire, UK, 2019.
24. Byrne, B.M. *Structural Equation Modeling with Mplus: Basic Concepts, Applications, and Programming*; Routledge: New York, NY, USA, 2016; ISBN 9780203807644.
25. Yelkur, R.; Chakrabarty, S. Gender Differences in Service Quality Expectations in the Fast Food Industry. *Serv. Mark. Q.* **2006**, *27*, 141–151. [\[CrossRef\]](#)
26. Fischer, E.; Arnold, S.J. Sex, Gender Identity, Gender Role Attitudes, and Consumer Behavior. *Psychol. Mark.* **1994**, *11*, 163–182. [\[CrossRef\]](#)
27. Brecic, R.; Gorton, M.; Barjolle, D. Understanding variations in the consumption of functional foods—Evidence from Croatia. *Br. Food J.* **2014**, *116*, 662–675. [\[CrossRef\]](#)
28. Verneau, F.; La Barbera, F.; Furno, M. The Role of Health Information in Consumers' Willingness to Pay for Canned Crushed Tomatoes Enriched with Lycopene. *Nutrients* **2019**, *11*, 2173. [\[CrossRef\]](#)
29. Büyükkaragöz, A.; Bas, M.; Sağlam, D.; Cengiz, E. Consumers' awareness, acceptance and attitudes towards functional foods in Turkey. *Int. J. Consum. Stud.* **2014**, *38*, 628–635. [\[CrossRef\]](#)
30. Akıroğlu, F.P.; Uçar, A. Consumer Attitudes towards Purchasing Functional Products. *Prog. Nutr.* **2018**, *20*, 257–262. [\[CrossRef\]](#)

31. Bech-Larsen, T.; Scholderer, J. Functional foods in Europe: Consumer research, market experiences and regulatory aspects. *Trends Food Sci. Technol.* **2007**, *18*, 231–234. [[CrossRef](#)]
32. Verbeke, W. Consumer acceptance of functional foods: Socio-demographic, cognitive and attitudinal determinants. *Food Qual. Preference* **2005**, *16*, 45–57. [[CrossRef](#)]
33. Sääksjärvi, M.; Holmlund, M.; Tanskanen, N. Consumer knowledge of functional foods. *Int. Rev. Retail. Distrib. Consum. Res.* **2009**, *19*, 135–156. [[CrossRef](#)]
34. Siró, I.; Kápolna, E.; Kápolna, B.; Lugasi, A. Functional food. Product development, marketing and consumer acceptance—A review. *Appetite* **2008**, *51*, 456–467. [[CrossRef](#)]
35. Bellows, A.C.; Alcaraz, G.; Hallman, W.K. Gender and food, a study of attitudes in the USA towards organic, local, U.S. grown, and GM-free foods. *Appetite* **2010**, *55*, 540–550. [[CrossRef](#)]
36. Joung, H.-W.; Choi, E.-K.; Wang, E. Effects of Perceived Quality and Perceived Value of Campus Foodservice on Customer Satisfaction: Moderating Role of Gender. *J. Qual. Assur. Hosp. Tour.* **2016**, *17*, 101–113. [[CrossRef](#)]
37. Mikolajczyk, R.T.; El Ansari, W.; Maxwell, A.E. Food consumption frequency and perceived stress and depressive symptoms among students in three European countries. *Nutr. J.* **2009**, *8*, 31. [[CrossRef](#)]
38. De Leeuw, A.; Valois, P.; Morin, A.; Schmidt, P. Gender Differences in Psychosocial Determinants of University Students' Intentions to Buy Fair Trade Products. *J. Consum. Policy* **2014**, *37*, 485–505. [[CrossRef](#)]
39. Grogan, S.C.; Bell, R.; Conner, M. Eating Sweet Snacks: Gender Differences in Attitudes and Behaviour. *Appetite* **1997**, *28*, 19–31. [[CrossRef](#)] [[PubMed](#)]
40. Rapport, M.D.; Carlson, G.A.; Kelly, K.L.; Pataki, C. Methylphenidate and Desipramine in Hospitalized Children: I. Separate and Combined Effects on Cognitive Function. *J. Am. Acad. Child Adolesc. Psychiatry* **1993**, *32*, 333–342. [[CrossRef](#)] [[PubMed](#)]
41. Supachaturat, S.; Pichyangkura, R.; Chandrachai, A.; Pentrakoon, D. Perspective on Functional Food Commercialization in Thailand. *Int. Food Res. J.* **2017**, *24*, 1374–1382.
42. Kessuvan, A.; Akanit, R. The Perceived Service Quality of Chain Restaurants in Bangkok. In Proceedings of the 12th SARD Workshop, Bangkok, Thailand, 28–30 November 2014.
43. Chen, M.-F. The joint moderating effect of health consciousness and healthy lifestyle on consumers' willingness to use functional foods in Taiwan. *Appetite* **2011**, *57*, 253–262. [[CrossRef](#)]
44. Conner, M.; Armitage, C. Extending the Theory of Planned Behavior: A Review and Avenues for Further Research. *J. Appl. Soc. Psychol.* **1998**, *28*, 1429–1464. [[CrossRef](#)]
45. Byrne, B.M. Structural Equation Modeling with EQS. In *Basic Concepts, Applications, and Programming*, 7th ed.; Routledge: New York, NY, USA, 2013; pp. 1–440. [[CrossRef](#)]
46. Kim, H.Y.; Chung, J.-E. Consumer purchase intention for organic personal care products. *J. Consum. Mark.* **2011**, *28*, 40–47. [[CrossRef](#)]
47. Kim, E.; Ham, S.; Yang, I.S.; Choi, J.G. The roles of attitude, subjective norm, and perceived behavioral control in the formation of consumers' behavioral intentions to read menu labels in the restaurant industry. *Int. J. Hosp. Manag.* **2013**, *35*, 203–213. [[CrossRef](#)]
48. Quevedo-Silva, F.; Freire, O.; Lima-Filho, D.D.O.; Brandão, M.M.; Isabella, G.; Moreira, L.B. Intentions to purchase food through the internet: Developing and testing a model. *Br. Food J.* **2016**, *118*, 572–587. [[CrossRef](#)]
49. Fishbein, M.; Ajzen, I. Theory-based Behavior Change Interventions: Comments on Hobbis and Sutton. *J. Heal. Psychol.* **2005**, *10*, 27–31. [[CrossRef](#)]
50. Wan, C.; Shen, Q.; Choi, S. Experiential and instrumental attitudes: Interaction effect of attitude and subjective norm on recycling intention. *J. Environ. Psychol.* **2017**, *50*, 69–79. [[CrossRef](#)]
51. Tarkiainen, A.; Sundqvist, S. Subjective norms, attitudes and intentions of Finnish consumers in buying organic food. *Br. Food J.* **2005**, *107*, 808–822. [[CrossRef](#)]
52. Scalco, A.; Noventa, S.; Sartori, R.; Ceschi, A. Predicting organic food consumption: A meta-analytic structural equation model based on the theory of planned behavior. *Appetite* **2017**, *112*, 235–248. [[CrossRef](#)]
53. O'Connor, E.L.; White, K.M. Willingness to trial functional foods and vitamin supplements: The role of attitudes, subjective norms, and dread of risks. *Food Qual. Preference* **2010**, *21*, 75–81. [[CrossRef](#)]
54. Bai, L.; Wang, M.; Gong, S. Understanding the Antecedents of Organic Food Purchases: The Important Roles of Beliefs, Subjective Norms, and Identity Expressiveness. *Sustainability* **2019**, *11*, 3045. [[CrossRef](#)]
55. Zsóka, Á.; Szerényi, Z.M.; Széchy, A.; Kocsis, T. Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *J. Clean. Prod.* **2013**, *48*, 126–138. [[CrossRef](#)]
56. Woo, E.; Kim, Y.G. Consumer attitudes and buying behavior for green food products: From the Aspect of Green Perceived Value (GPV). *Br. Food J.* **2019**, *121*, 320–332. [[CrossRef](#)]
57. Zendejdel, M.; Paim, L.H.; Osman, S.B. Students' online purchasing behavior in Malaysia: Understanding online shopping attitude. *Cogent Bus. Manag.* **2015**, *2*, 1078428. [[CrossRef](#)]
58. Barauskaite, D.; Gineikiene, J.; Fennis, B.M.; Auruskeviciene, V.; Yamaguchi, M.; Kondo, N. Eating healthy to impress: How conspicuous consumption, perceived self-control motivation, and descriptive normative influence determine functional food choices. *Appetite* **2018**, *131*, 59–67. [[CrossRef](#)] [[PubMed](#)]



59. Chen, J.; Lobo, A.; Rajendran, N. Drivers of organic food purchase intentions in mainland China—Evaluating potential customers' attitudes, demographics and segmentation. *Int. J. Consum. Stud.* **2014**, *38*, 346–356. [\[CrossRef\]](#)
60. Mauricio, R.A.; Campos, J.A.D.B.; Nassu, R.T. Meat with edible coating: Acceptance, purchase intention and neophobia. *Food Res. Int.* **2022**, *154*, 111002. [\[CrossRef\]](#) [\[PubMed\]](#)
61. Fan, Y.-W.; Miao, Y.-F. Effect of Electronic Word-of-Mouth on Consumer Purchase Intention: The Perspective of Gender Differences. *Int. J. Electron. Bus. Manag.* **2012**, *10*, 7.
62. Vahdat, A.; Alizadeh, A.; Quach, S.; Hamelin, N. Would you like to shop via mobile app technology? The technology acceptance model, social factors and purchase intention. *Australas. Mark. J.* **2020**, *29*, 187–197. [\[CrossRef\]](#)
63. Patch, C.S.; Tapsell, L.C.; Williams, P. Attitudes and Intentions toward Purchasing Novel Foods Enriched with Omega-3 Fatty Acids. *J. Nutr. Educ. Behav.* **2005**, *37*, 235–241. [\[CrossRef\]](#)
64. Wądołowska, L.; Danowska-Oziewicz, M.; Stewart-Knox, B.; de Almeida, M.D.V. Differences between older and younger Poles in functional food consumption, awareness of metabolic syndrome risk and perceived barriers to health improvement. *Food Policy* **2009**, *34*, 311–318. [\[CrossRef\]](#)
65. Rezai, G.; Teng, P.K.; Shamsudin, M.N.; Mohamed, Z.; Stanton, J.L. Effect of perceptual differences on consumer purchase intention of natural functional food. *J. Agribus. Dev. Emerg. Econ.* **2017**, *7*, 153–173. [\[CrossRef\]](#)
66. Martín-Consuegra, D.; Díaz, E.; Gómez, M.; Molina, A. Examining consumer luxury brand-related behavior intentions in a social media context: The moderating role of hedonic and utilitarian motivations. *Physiol. Behav.* **2019**, *200*, 104–110. [\[CrossRef\]](#)
67. Ferguson, J.L.; Mohan, M. Use of celebrity and non-celebrity persons in B2B advertisements: Effects on attention, recall, and hedonic and utilitarian attitudes. *Ind. Mark. Manag.* **2019**, *89*, 594–604. [\[CrossRef\]](#)
68. Maehle, N.; Iversen, N.M.; Hem, L.E.; Otnes, C. Exploring consumer preferences for hedonic and utilitarian food attributes. *Br. Food J.* **2015**, *117*, 3039–3063. [\[CrossRef\]](#)
69. Loebnitz, N.; Grunert, K.G. Impact of self-health awareness and perceived product benefits on purchase intentions for hedonic and utilitarian foods with nutrition claims. *Food Qual. Preference* **2018**, *64*, 221–231. [\[CrossRef\]](#)
70. Kim, S.; Ham, S.; Moon, H.; Chua, B.-L.; Han, H. Experience, brand prestige, perceived value (functional, hedonic, social, and financial), and loyalty among GROCERANT customers. *Int. J. Hosp. Manag.* **2018**, *77*, 169–177. [\[CrossRef\]](#)
71. Nejati, M.; Moghaddam, P.P. Gender differences in hedonic values, utilitarian values and behavioural intentions of young consumers: Insights from Iran. *Young-Consum.* **2012**, *13*, 337–344. [\[CrossRef\]](#)
72. Dolgoplova, I.; Teuber, R.; Bruschi, V. Consumers' perceptions of functional foods: Trust and food-neophobia in a cross-cultural context. *Int. J. Consum. Stud.* **2015**, *39*, 708–715. [\[CrossRef\]](#)
73. Nguyen, N.-T. Attitudes and repurchase intention of consumers towards functional foods in ho chi minh city, vietnam. *Int. J. Anal. Appl.* **2020**, *18*, 212–242. [\[CrossRef\]](#)
74. Siegrist, M.; Stampfli, N.; Kastenholz, H. Consumers' willingness to buy functional foods. The influence of carrier, benefit and trust. *Appetite* **2008**, *51*, 526–529. [\[CrossRef\]](#)
75. Falguera, V.; Aliguer, N.; Falguera, M. An integrated approach to current trends in food consumption: Moving toward functional and organic products? *Food Control* **2012**, *26*, 274–281. [\[CrossRef\]](#)
76. Roosen, J.; Bieberstein, A.; Blanchemanche, S.; Goddard, E.; Marette, S.; Vandermoere, F. Trust and willingness to pay for nanotechnology food. *Food Policy* **2015**, *52*, 75–83. [\[CrossRef\]](#)
77. Oude Ophuis, P.A.M. Measuring Health Orientation and Health Consciousness as Determinants of Food Choice Behavior: Development and Implementation of Various Attitudinal Scales. In *Athens School of Economics and Business; Athens School of Economics and Business*: Athens, Greece, 1989. [\[CrossRef\]](#)
78. Identifying the Health Conscious Consumer—ProQuest. Available online: <https://www.proquest.com/openview/0dde829e457e501295727eb2a5106938/1?cbl=36770&pq-origsite=gscholar&parentSessionId=vYovVjflGdBITM%2Bhqu2vnE1ycHVI8%2FVENX2NRZpFx8%3D> (accessed on 15 August 2022).
79. Newsom, J.T.; McFarland, B.; Kaplan, M.S.; Huguet, N.; Zani, B. The health consciousness myth: Implications of the near independence of major health behaviors in the North American population. *Soc. Sci. Med.* **2005**, *60*, 433–437. [\[CrossRef\]](#)
80. Yadav, R.; Pathak, G.S. Young consumers' intention towards buying green products in a developing nation: Extending the theory of planned behavior. *J. Clean. Prod.* **2016**, *135*, 732–739. [\[CrossRef\]](#)
81. Kahle, L.R. Book Review: Marketing Research: An Applied Orientation. *J. Mark. Res.* **1994**, *31*, 137–139. [\[CrossRef\]](#)
82. Naruetharadhol, P.; Wongsachia, S.; Zhang, S.; Phonthanakitithaworn, C.; Ketkaew, C. Understanding Consumer Buying Intention of E-Commerce Airfares Based on Multivariate Demographic Segmentation: A Multigroup Structural Equation Modeling Approach. *Sustainability* **2022**, *14*, 8997. [\[CrossRef\]](#)
83. Kline, R.B. Response to Leslie Hayduk's Review of Principles and Practice of Structural Equation Modeling, 4th Edition. *Can. Stud. Popul.* **2018**, *45*, 188–195. [\[CrossRef\]](#)
84. Leung, L. Validity, reliability, and generalizability in qualitative research. *J. Fam. Med. Prim. Care* **2015**, *4*, 324–327. [\[CrossRef\]](#)
85. Bell, E.; Bryman, A. The Ethics of Management Research: An Exploratory Content Analysis. *Br. J. Manag.* **2007**, *18*, 63–77. [\[CrossRef\]](#)
86. Aguirre-Urreta, M.I.; Hu, J. Detecting Common Method Bias. *ACM SIGMIS Database: Database Adv. Inf. Syst.* **2019**, *50*, 45–70. [\[CrossRef\]](#)

87. Kock, N. Common Method Bias in PLS-SEM: A Full Collinearity Assessment Approach. In *Partial Least Squares Path Modeling*; Springer: Berlin/Heidelberg, Germany, 2017.
88. Kock, N. Harman's Single Factor Test in PLS-SEM: Checking for Common Method Bias. *Data Anal. Perspect. J.* **2020**, *2*, 1–6.
89. Franke, G.R. Multicollinearity. In *Wiley International Encyclopedia of Marketing*; Wiley: Hoboken, NJ, USA, 2010.
90. Balicki, J.; WSEAS (Organization). International Conference on Mathematical, C. and S.S. (2nd: 2014: G.; International Conference on Finite Differences, F.E. Exploratory Factor Analysis. *Concepts Theory* **2014**, *27*, 375–382.
91. Steenkamp, J.-B.E.M.; Baumgartner, H. Assessing Measurement Invariance in Cross-National Consumer Research. *J. Consum. Res.* **1998**, *25*, 78–90. [[CrossRef](#)]
92. Wongsachia, S.; Naruetharadhol, P.; Schrank, J.; Phoomsom, P.; Sirisoonthonkul, K.; Paiyasen, V.; Srichaingwang, S.; Ketkaew, C. Influences of Green Eating Behaviors Underlying the Extended Theory of Planned Behavior: A Study of Market Segmentation and Purchase Intention. *Sustainability* **2022**, *14*, 8050. [[CrossRef](#)]
93. Ketkaew, C.; Sukitprapanon, C.; Naruetharadhol, P. Association between retirement behavior and financial goals: A comparison between urban and rural citizens in China. *Cogent Bus. Manag.* **2020**, *7*, 1739495. [[CrossRef](#)]
94. Ketkaew, C.; Wongthahan, P.; Sae-Eaw, A. How sauce color affects consumer emotional response and purchase intention: A structural equation modeling approach for sensory analysis. *Br. Food J.* **2021**, *123*, 2152–2169. [[CrossRef](#)]
95. Anderson, J.C.; Kellogg, J.L.; Gerbing, D.W. Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychol. Bull.* **1988**, *103*, 411. [[CrossRef](#)]
96. Klein, R.B. *Principles and Practice of Structural Equation Modeling*, 4th ed.; The Guilford Press: New York, NY, USA, 2016; p. 8.
97. Hu, L.-T.; Bentler, P.M. Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. *Structural Equation Modeling. Struct. Equ. Model. A Multidiscip. J.* **1999**, *6*, 1–55. [[CrossRef](#)]
98. Bollen, K.A. Sample size and bentler and Bonett's nonnormed fit index. *Psychometrika* **1986**, *51*, 375–377. [[CrossRef](#)]
99. Fornell, C.; Larcker, D.F. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *J. Mark. Res.* **1981**, *18*, 39–50. [[CrossRef](#)]
100. Abraham, J.; Barker, K. Exploring Gender Difference in Motivation, Engagement and Enrolment Behaviour of Senior Secondary Physics Students in New South Wales. *Res. Sci. Educ.* **2014**, *45*, 59–73. [[CrossRef](#)]
101. Fornell, C.; Larcker, D.F. Structural equation models with unobservable variables and measurement error: Algebra and statistics. *J. Mark. Res.* **1981**, *18*, 382–388. [[CrossRef](#)]
102. Henseler, J.; Ringle, C.M.; Sarstedt, M. A new criterion for assessing discriminant validity in variance-based structural equation modeling. *J. Acad. Mark. Sci.* **2015**, *43*, 115–135. [[CrossRef](#)]
103. Phonthanukitithaworn, C.; Naruetharadhol, P.; Gebombut, N.; Chanavirut, R.; Onsa-Ard, W.; Joomwanta, P.; Chanyuan, Z.; Ketkaew, C. An Investigation of the Relationship Among Medical Center's Image, Service Quality, and Patient Loyalty. *SAGE Open* **2020**, *10*, 2158244020982304. [[CrossRef](#)]
104. Roitner-Schobesberger, B.; Darnhofer, I.; Somsook, S.; Vogl, C.R. Consumer perceptions of organic foods in Bangkok, Thailand. *Food Policy* **2008**, *33*, 112–121. [[CrossRef](#)]
105. My, N.H.; Rutsaert, P.; Van Loo, E.J.; Verbeke, W. Consumers' familiarity with and attitudes towards food quality certifications for rice and vegetables in Vietnam. *Food Control* **2017**, *82*, 74–82. [[CrossRef](#)]
106. Fenko, A.; Backhaus, B.W.; Van Hoof, J. The influence of product- and person-related factors on consumer hedonic responses to soy products. *Food Qual. Preference* **2015**, *41*, 30–40. [[CrossRef](#)]
107. Ricci, E.C.; Banterle, A.; Stranieri, S. Trust to Go Green: An Exploration of Consumer Intentions for Eco-friendly Convenience Food. *Ecol. Econ.* **2018**, *148*, 54–65. [[CrossRef](#)]
108. Khare, A.; Pandey, S. Role of green self-identity and peer influence in fostering trust towards organic food retailers. *Int. J. Retail Distrib. Manag.* **2017**, *45*, 969–990. [[CrossRef](#)]
109. Menozzi, D.; Sogari, G.; Mora, C. Understanding and modelling vegetables consumption among young adults. *LWT* **2017**, *85*, 327–333. [[CrossRef](#)]
110. Nuttavuthisit, K.; Thøgersen, J. The Importance of Consumer Trust for the Emergence of a Market for Green Products: The Case of Organic Food. *J. Bus. Ethics* **2017**, *140*, 323–337. [[CrossRef](#)]
111. Sultan, P.; Tarafder, T.; Pearson, D.; Henryks, J. Intention-behaviour gap and perceived behavioural control-behaviour gap in theory of planned behaviour: Moderating roles of communication, satisfaction and trust in organic food consumption. *Food Qual. Preference* **2019**, *81*, 103838. [[CrossRef](#)]
112. Saleki, R.; Quoquab, F.; Mohammad, J. What drives Malaysian consumers' organic food purchase intention? The role of moral norm, self-identity, environmental concern and price consciousness. *J. Agribus. Dev. Emerg. Econ.* **2019**, *9*, 584–603. [[CrossRef](#)]
113. Shin, Y.H.; Im, J.; Jung, S.E.; Severt, K. Motivations behind Consumers' Organic Menu Choices: The Role of Environmental Concern, Social Value, and Health Consciousness. *J. Qual. Assur. Hosp. Tour.* **2018**, *20*, 107–122. [[CrossRef](#)]
114. Functional Food Market Size, Share & Growth Forecast to 2027. Available online: <https://www.kbvresearch.com/functional-food-market/> (accessed on 15 March 2022).
115. To, E.K. *Sensory Evaluation Ratings of Non-Dairy Milk Substitutes in a Cold Chocolate Dessert*; ProQuest: Ann Arbor, MI, USA, 2012.
116. Rego, C. Application of the Theory of Planned Behavior: Examining the Factors That Influence the Consumption of Dairy Milk among Canadian University Students. Ph.D. Thesis, University of Waterloo, Waterloo, ON, Canada, 2020.