Introduction

Diet is a cornerstone of human health, yet modern fast-paced lifestyles have increased the risk of diet-related chronic diseases due to unbalanced and inadequate nutrition intake (Sun-Waterhouse, 2011; Topolska et al., 2021). Consumers are becoming more aware of the importance of having a balanced diet with adequate nutrition to prevent or slow diet-related chronic diseases (Nazzaro et al., 2025; Szakály, et al., 2019). Functional foods are defined as foods formulated with specific ingredients that provide health benefits beyond basic nutrition (Bimbo et al., 2017; Diplock et al., 1999; Urala & Lähteenmäki, 2004). Examples include fruit juices fortified with vitamin C, milk fortified with vitamin D, and eggs enriched with omega-3 fatty acids, which are developed to promote health and reduce the risk of chronic diseases. The global functional food market has experienced substantial growth over the past decade, driven by increasing health awareness, aging populations, and growing demands for food products that offer benefits beyond basic nutrition. According to recent market reports, the global functional food market was valued at approximately $280–$300 billion in 2021 and is projected to grow at a compound annual growth rate (CAGR) of 8–9% through 2030, potentially reaching over $400 billion (Granato et al., 2020; Halder et al., 2021; Rashidinejad et al., 2024). This rapid expansion reflects the importance of understanding how consumers perceive functional foods as part of broader efforts to promote healthy and sustainable food systems.

The enriched or fortified functional ingredients in functional foods are developed by a range of traditional and emerging innovative technologies, including conventional processing, advanced extraction, encapsulation, non-thermal methods, and digital innovations. These technologies are designed to improve health benefits and meet consumer demands for quality and sustainability (Betoret et al., 2011; Galanakis, 2021; Mark-Herbert, 2004). To improve health outcomes, functional foods are formulated to enhance nutritional value and preserve bioactive compounds. Beyond their nutritional benefits, these technologies also contribute to sustainability by utilizing upcycled agricultural by-products such as fruit peels, spent grains, and dairy by-products (i.e., whey) to reduce food waste and maximize resource efficiency (D'Souza et al., 2025). Furthermore, as consumer demand grows for environmentally friendly food products, the development of plant-based functional foods, such as fortified soy or oat beverages, contributes to sustainable consumption patterns and environmentally friendly diets (Helstad, 2025).

However, consumers are often skeptical about these unfamiliar technologies and uncertain about their perceived health effects (Karelakis et al., 2020; Sgroi et al., 2024). Acceptance of functional foods reflects a complex interplay of personal beliefs, knowledge, and social influence (Baker et al, 2022a). Results from previous studies also indicated that consumer acceptance of food health innovations is a slow and complex process (Frewer et al., 2003; Szakály, et al., 2019). Many studies have investigated the factors that influence consumer acceptance of functional foods. For instance, consumers' nutritional knowledge is a key predictor of acceptance; those with greater awareness of the health benefits are more likely to purchase and consume functional foods (Baker et al, 2022b). Moreover, health consciousness and a healthy lifestyle are positively associated with acceptance. Consumers also show higher acceptance when functional foods are endorsed by trusted sources or align with their cultural eating practices (Osunsanmi et al., 2024). Despite these insights, existing studies often focus on isolated determinants such as attitudes, perceived risks and benefits, or trust without integrating these variables into a unified conceptual model. This fragmentation makes it difficult to identify

the most influential factors and the relationships among them, which are critical for developing and communicating about emerging functional food products that align with consumer expectations, address health concerns, and improve public trust in food technologies.

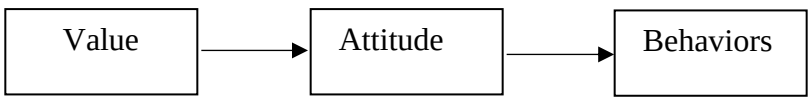
Several systematic and scoping reviews have summarized key determinants influencing consumer acceptance of functional foods. These reviews have identified a broad range of psychological, cultural, and contextual factors (Baker et al, 2022a; Mosikyan et al., 2024; Ponte et al., 2025), which have significantly advanced understanding of the diverse factors. However, a comprehensive framework that connects these determinants and explains their interrelationships has yet to be established. Building on these insights, the present study develops a unified comprehensive framework to connect these determinants and better explain how they are associated with. Developing a unified conceptual framework is, therefore, essential not only for consolidating theoretical insights but also for informing research, policy, and marketing practices that encourage the acceptance of nutritious and innovative food products. Because improving public health through the promotion of nutritious foods is an agricultural development priority, our study extends prior work and synthesizes insights from existing systematic and scoping reviews to identify common factors, and develops a unified conceptual framework grounded in the value–attitude–behavior (VAB) and theory of planned behavior (TPB).

Theoretical Framework

VAB model (see Figure 1) and the TPB (see Figure 2) were used to guide the development of a conceptual framework. Homer and Kahle developed the VAB model in 1988 by testing the relationships between consumers' value, attitude, and behavior. The VAB model emphasizes that value influences behavior and the relationship between value and behavior is mediated by attitude (Homer & Kahle, 1988). Specifically, attitude is reflected by value and leads to specific subsequent behavior (Homer & Kahle, 1988). The VAB model has been extensively implemented in previous studies to better understand consumers' behavior toward food attributes. For example, Chang et al. (2020) found Taiwanese consumers' health value plays an important role in cultivating their positive attitude and, ultimately, increasing their purchase intention of functional beverages. Jung et al. (2020) used the VAB model to identify determinants of American college students' purchase intention of antioxidant-infused functional foods and found perceived taste, health consciousness, and attitude could predict students' functional food purchase intention.

Figure 1

Homer and Kahle's (1988) Value-Attitude-Behavior (VAB) Model



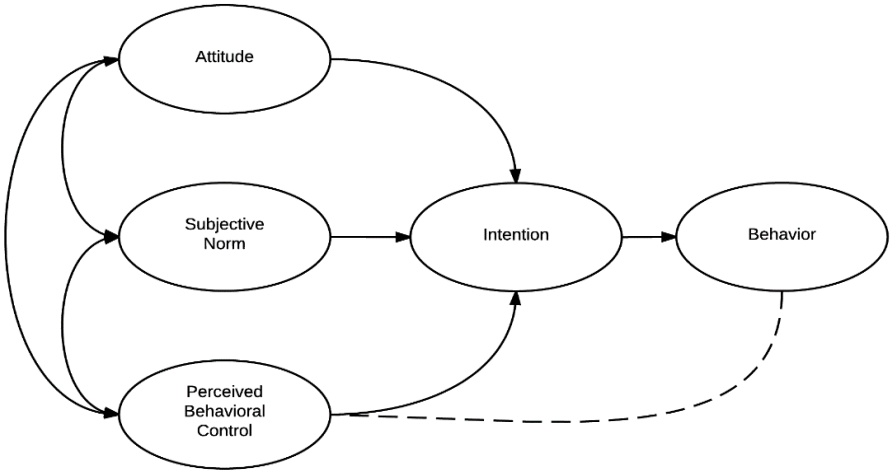
The TPB, proposed by Ajzen and Madden in 1986, describes consumer behavior. According to the TPB, consumers' purchase behavior is determined by their attitude, subjective norm, and perceived behavioral control (Ajzen & Madden, 1986). Previous studies have adopted the TPB as a theoretical framework to investigate consumers' purchase intentions of functional

foods. For example, Salmani et al. (2020) applied the TPB and found attitude and subjective norm are significant predictors of Iranian consumers' consumption of vitamin-enriched foods. Bakti et al. (2020) also found attitude and subjective norm significantly affect young Indonesian consumers' purchase intention of functional foods. In addition, Nystrand and Olsen (2020) explored Norwegian consumers' functional foods purchase intentions by using an extended version of the TPB in which self-efficacy, descriptive norm, and eating values were added as additional predictors. They found attitude, subjective norm, descriptive norm, and self-efficacy were significant predictors of consumers' functional foods purchase intentions.

Integrating the VAB and TPB models allows for a more comprehensive explanation of consumer acceptance by linking underlying values and attitudes (VAB) with social and control-related determinants of behavior (TPB). Therefore, these two theories provide a multidimensional understanding of essential drivers of functional food acceptance.

Figure 2

Ajzen and Madden's (1986) Theory of Planned Behavior (TPB)



Purpose and Objectives

The purpose of our literature review was to conceptually synthesize insights from interdisciplinary research to identify the primary determinants of consumer acceptance of functional foods. In response to the fragmented literature, our review was based on three research objectives:

1. Integrate the VAB model and TPB into a map of key constructs;
2. Examine the interrelationships of the primary determinants of consumer acceptance of functional foods; and
3. Propose a unified conceptual framework to guide future research on functional foods and other health-related food innovations.

Methods

Our study builds upon the authors' previous scoping review on consumer acceptance of functional foods (Baker et al, 2022a), which synthesized 75 quantitative studies published

between 2000 and 2020. To extend this foundation and capture recent updated literature, the present study incorporates newly published systematic and scoping reviews through 2025. A systematic search was conducted in Google Scholar to identify review articles using combinations of the keywords *"functional food," "consumer acceptance," "perception," "systematic review,"* and *"scoping review."* Additional records were identified through citation tracking and manual reference searches. Specifically, two reviews (Mosikyan et al., 2024; Ponte et al., 2025) were identified and included. The first systematically reviewed 99 studies on consumer acceptance of novel foods and beverages; only findings relevant to functional foods were extracted for this study (Mosikyan et al., 2024). The second conducted a scoping review including 26 studies focused on consumer perceptions of functional foods, particularly fresh and minimally processed products (Ponte et al., 2025). From each review, relevant categories and key factors were extracted to inform the synthesis (see Table 1). This review-of-reviews approach broadens the evidence base and integrates emerging research themes to develop a more comprehensive and theoretically grounded framework of consumer acceptance (Fernqvist et al., 2024).

Table 1

Key Determinants of Consumer Acceptance Identified in Systematic and Scoping Reviews on Functional Foods

Study	Category	Key Factors
Baker et al, 2022a (*n* = 75)	Product Characteristics	Carrier–Ingredient combination, Price, Taste, Brand, Health information
	Socio-Demographic Characteristics	Age, Gender, Education, Income, Household characteristics, Nationality and geographic location; Marital status
	Psychological Characteristics	Health consciousness, Motivations, Perceptions, Beliefs, Attitudes, Trust/Food neophobia, Knowledge
	Behavioral Characteristics	Lifestyle, Health-related behaviors, Innovative-seeking behavior
	Physical Characteristics	Presence of diet-related problem; Subjective health complaints; Body mass index; Poor subjective health
Mosikyan et al., 2024 (*n* = 99)	Consumer-Related Factors	Trust in the food industry; Trust in governmental authorities; Trust in nutrition science; Trust in information sources; Cultural values; Personal relevance (The need to improve health); Attitudes, Knowledge, Beliefs, Health benefit perceptions; Risk perceptions; Familiarity;
	Product-Related Factors	Appearance of food; Carrier product;
Ponte et al., 2025 (*n* = 26)	Demographic & Socioeconomic Factors	Age; Gender; Education; Income; Family composition
	Health & Safety Factors	Health awareness; Risk perception; Trust in functional foods, certifications and advice,

	manufacturers and retailers, science
Cognitive & Emotional Factors	Objective knowledge; Subjective knowledge; Beliefs; Attitude; Food neophobia
Behavioral & Social Factors	Habits and consumption frequency; Social influence
Food Characteristics	Sensory characteristics; Convenience and availability; Price; Quality and nutritional value; General food information
Ethical & Sustainable Factors	Sustainability and food ethics; Origin and traceability

An inductive thematic synthesis approach was employed to integrate common factors and generate higher-order conceptual domains across the three included reviews (Fernqvist et al., 2024). Relevant determinant categories and key factors were first extracted from each review and then cross-compared to identify theoretical linkages forming the foundation for the proposed framework. Two independent authors conducted the extraction and synthesis process to enhance reliability and reduce potential bias. To obtain more detailed empirical evidence supporting each factor, individual primary studies cited within the reviewed articles were synthesized and summarized. This secondary-level synthesis allowed for a deeper examination of how each factor has influenced consumer acceptance and how these relationships have been empirically supported across diverse study contexts.

Findings

Seven theoretically grounded factors of consumer acceptance of functional foods emerged: knowledge, value, health consciousness, subjective norm, self-efficacy, attitude, and purchase intention. The following subsections elaborate each factor, summarizing how it has been conceptualized, the direction and strength of its relationship with acceptance, and its placement within the VAB and TPB based framework.

Knowledge

Nutrition knowledge is "a scientific construct that nutrition educators have created to represent individuals' cognitive process related to information about food and nutrition" (Axelson & Brinberg, 1992, p. 239). Adequate nutrition knowledge can change dietary attitudes and habits, and ultimately influence consumer acceptance (Bhaskaran & Hardley, 2002; Labrecque et al., 2006). Nutrition knowledge has been identified as the most important factor influencing consumer acceptance of functional foods (Topolska et al., 2021). Fifteen studies (n = 15) investigated the influence of knowledge on consumers' functional foods acceptance. For example, Stojanovic et al. (2013) found consumers who had a higher level of knowledge about health information more frequently consumed functional foods. In addition, studies found consumers who had a higher level of knowledge about functional foods tended to pay higher premium prices for them (La Barbera et al., 2016) and consume functional foods regularly (Sgroi et al., 2024). Some other studies also confirmed the positive effect of knowledge on consumers' functional foods acceptance (Brečić et al., 2014; Corso et al., 2018; Schnettler et al., 2015; Xin & Seo, 2019).

Importantly, Verneau et al. (2019) identified knowledge as a moderator between

information shock and willingness to purchase functional foods. Specifically, after consumers who had less knowledge about functional foods received information about the health benefits of functional foods, their likelihood of purchasing functional foods increased. Similarly, Lu (2015) found consumers' level of knowledge moderated their perceived 'naturalness' of the carrier-ingredient fit (i.e., the pairing of a base food product, such as milk, with an added functional ingredient, such as vitamin D), and purchase intentions. Therefore, further research is warranted to examine this moderating relationship in different contexts.

Value

According to the VAB model, value influences consumer behavior indirectly through their attitudes (Homer & Kahle, 1988). Kang et al. (2015) found that health value was the most important factor motivating consumers' interest in healthy eating and purchasing healthy food. In addition, Tudoran et al. (2009) included consumers' expectations of healthiness as a part of *value* in the VAB model. Specifically, expectations regarding how valuable foods are healthy to consumers influence their purchasing behavior (Kang et al., 2015). Consumers' expectations of functional foods also include their beliefs about specific functional foods attributes (e.g., health benefits, health risks, taste, price) (Blasi et al., 2024; Kim et al., 2013; Nazzaro et al., 2024; Roininen et al., 1999). Value provides the foundation for consumers to make healthy food choices (Kang et al., 2015). Thirty studies (n = 30) investigated the influence of value on consumers' acceptance of functional foods. Among the 30 studies, results from 10 studies (n = 10) indicated that consumer value plays a critical role in motivating them to choose functional foods. For example, Kraus (2015) found that consumers who were more motivated to improve their health were more inclined to consume functional foods. Results from four additional studies indicated that consumers' perceived price of functional foods significantly influences their acceptance. Within the VAB framework, price represents an economic aspect of value and is often measured as perceived value for money. When consumers perceive prices as offering good value, they tend to develop more favorable attitudes toward the product (Islam et al., 2024; Kim & Moon, 2025). In the context of functional foods, perceived price reflects the trade-off consumers make between the health benefits and the associated cost. Thus, although higher prices may reduce purchase intention, perceived price remains an important cognitive dimension influencing consumers' overall evaluation of functional food value. For example, Pappalardo and Lusk (2016) found consumers who believed functional foods benefited their personal health were more likely to accept such products. Similarly, Blasi et al. (2024) reported that consumer acceptance of functional biscuits increased after they were informed about the health benefits of high-amylose content. However, Nguyen et al. (2020) found consumers' perceived price of functional yogurts negatively influenced their purchase intentions.

Health Consciousness

In the context of functional foods, consumers' health consciousness and their perceived health value are distinct but interrelated concepts that influence their attitudes. Health consciousness has been described as the degree to which individuals are aware of their health and tend to pursue health behaviors to maintain or improve their health status (Mai & Hoffmann, 2015), whereas health value refers to the extent to which individuals care about their health status and reflects the importance individuals assign to health as a core life principle (Tudoran et al., 2009). For example, a person who believes that health is one of the most important aspects of life (high health value) may not necessarily seek functional foods, whereas someone with high

health consciousness could actively monitor food ingredients and chooses products enriched with vitamins or probiotics to maintain good health. Fifteen studies (n = 15) identified a positive relationship between consumers' health consciousness and functional food purchase intention. Specifically, the higher consumers' level of health consciousness or health concern, the stronger their intentions are to consume functional foods (Huang et al., 2019; Jung et al., 2020; Krutulyte et al., 2011; Moons et al., 2018; Sandmann et al., 2015). For example, consumers who cared more about their health status and diet tended to consume functional foods (Chen, 2011a; Barreiro-Hurlé et al., 2008). Similarly, consumers who expressed fear of cancer were more likely to purchase selenium-enriched functional foods when compared to those who were not fearful of cancer (Cox & Bastiaans, 2007). Kavoosi-Kalashami et al. (2017) also found consumers who had family members diagnosed with diabetes were inclined to pay higher prices for functional foods, including dietary sugar. Furthermore, Devcich et al. (2007) found that consumers who had more modern health worries (e.g., worrying about health risks from food additives, worrying about antibiotics in food) were willing to buy functional foods. Results from other studies suggest that consumers who were concerned about their family members' health status were interested in consuming functional foods. For example, Bui (2015) and Verbeke (2005) found that having ill family member(s) or sick relative(s) may increase consumers' functional food consumption.

Subjective Norms

Subjective norms are defined as "a person's belief about whether others feel that he or she should perform the target behavior" (Hale et al., 2002, p. 260). They refer to perceptions resulting from social pressures or influences (Hale et al., 2002). Previous research found that subjective norms significantly influence consumers' attitudes about food consumption (Nguyen et al., 2019; Tarkiainen & Sundqvist, 2005). Six studies (n = 6) investigated the influence of subjective norms on consumer acceptance of functional foods. For example, Nguyen et al. (2020) found that subjective norms positively influenced Vietnamese consumers' attitudes toward purchasing functional yogurts, and Rezai et al. (2014) found that subjective norms positively influenced consumers' acceptance of synthetic functional foods.

Self-Efficacy

Self-efficacy "centers on people's sense of personal efficacy to produce and to regulate events in their lives" (Bandura, 1982, p. 122). It refers to individuals' internal control to perform specific behaviors (Terry & O'Leary, 1995), such as dietary behavior (McEachan et al., 2011). Nystrand and Olsen (2020) measured individuals' self-efficacy as their ability or confidence to eat functional foods regularly. Specifically, consumers could be motivated to eat functional foods if they feel confident in their ability to do so (Cox & Bastiaans, 2007). Four studies (n = 4) identified self-efficacy as an important factor influencing consumers' functional food acceptance. For example, Nystrand and Olsen (2020) found that consumers' self-efficacy is the most important explanatory factor influencing their functional foods purchase intention, and Cox and Bastiaans (2007) found that self-efficacy is a significant predictor of consumers' likelihood to consume Se-enriched functional foods.

Attitude

Attitude is also a key predictor of consumers' food choice behavior (Tuorila, 1997). Eagly and Chaiken (1993) defined attitude as "a psychological tendency that is expressed by

evaluating a particular entity with some degree of favor or disfavor" (p. 1). Understanding the factors that influence consumer attitude can help researchers explain the decision-making behind their food choices (Voss et al., 2003). Twenty-two studies (n = 22) investigated the influence of attitude on consumers' functional food acceptance. Among these, results from seven studies (n = 7) indicated that consumers who had a positive attitude toward functional foods were willing to buy them (Chen, 2011b; Jezewska-Zychowicz, 2009; 2015; Krutulyte et al., 2011; Phuong & Dat, 2017; Sekinat et al., 2024; Szakály et al., 2019; Xin & Seo, 2019). In addition, Bekoglu et al. (2016) found that consumers' attitudes toward the necessity of functional foods positively influenced their functional food consumption. Results from five studies (n = 5) indicated that consumers who perceived more reward from consuming functional foods believed functional foods were necessary, were confident in functional foods, had a positive attitude toward functional foods, and perceived higher safety of functional foods (Bekoglu et al., 2016; Carrillo et al., 2013; Chen, 2011a; Jezewska-Zychowicz, 2009; Urala & Lähteenmäki, 2004). Furthermore, Chen (2011b) found that Taiwanese consumers' attitudes were influenced by their health consciousness, and Markovina et al. (2011) found that young Croatia consumers' attitudes toward functional foods were influenced by health awareness, trust, and perceived price. Additionally, Londoño-Giraldo et al. (2024) found that attitude mediates the effects of social norms on intention to buy functional chocolate beverages, and Mohammad et al. (2024) found that attitude is a mediator between consumers health motivations and willingness to consume dairy functional foods.

Purchase Intention

Purchase intention has been identified as an important factor or an outcome variable to understand consumers' food decisions (Chang et al., 2020; Huang et al., 2019; Jahn et al., 2019). Purchase intention is an operational measurement for consumers' extent of food purchase behavior (i.e., low, moderate, high; Huang et al., 2019; Jahn et al., 2019). Twelve studies (n = 12) examined consumers' functional foods purchase intention. For example, Huang et al. (2019) found that Chinese consumers have moderate level of functional foods purchase intention. In addition, results from six (n = 6) of the 12 studies indicated that consumers' attitude is an important factor influencing their functional foods purchase intention. For example, Jahn et al. (2019) found consumers' attitude toward functional Vitamin D fortified foods directly influenced their purchase intention, and Huang et al. (2019) found consumers' attitude is a mediator between their health consciousness and purchase intention. In addition, Chang et al. (2020) explored critical factors influencing Taiwanese college students' functional foods purchase intention and identified interest in healthy food and health orientation as influential factors. The empirical studies are summarized and presented in Table 2.

Table 2

Seven Key Factors Influencing Consumer Acceptance of Functional Foods

Factors	Key Findings
Knowledge (n = 15)	Higher nutrition knowledge predicts greater acceptance of functional foods and moderates the effects of health information and carrier–ingredient fit on purchase intentions.
Value (n = 30)	Values related to health motivate acceptance of functional foods and expectations of attributes (e.g., health benefits, taste, price) shape attitudes

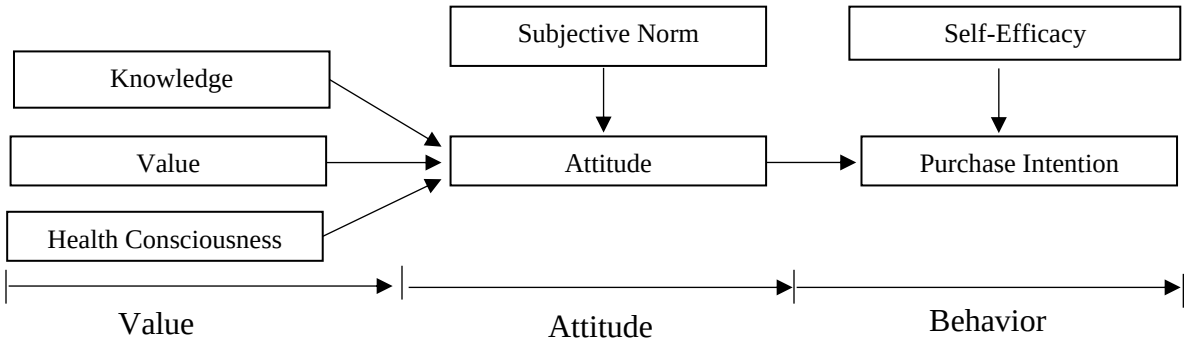
	and behaviors. Perceived price often acts as a barrier, whereas perceived health value enhances acceptance.
Health Consciousness (n = 15)	Higher health consciousness is associated with functional food acceptance. Consumers with personal or family health concerns, fear of illness, or modern health worries are more likely to accept functional foods.
Subjective Norm (n = 6)	Subjective norms positively shape consumer attitudes and acceptance of functional foods.
Self-efficacy (n = 4)	Confidence in one's ability to consume functional foods regularly is a strong predictor of purchase intentions and actual consumption.
Attitude (n = 22)	Positive attitudes strongly predict willingness to buy functional foods. Attitudes are shaped by health awareness, trust, safety perceptions, and price, and they also mediate the influence of social norms and health motivations on purchase intentions.
Purchase Intention (n = 12)	Purchase intention serves as an outcome in functional food research. Attitudes consistently drive purchase intention.

Note. Studies investigating these key factors are listed in Appendix Table A.

Based on these synthesized findings, a conceptual framework was proposed to illustrate the interrelationships among the identified factors (Figure 3). In this model, knowledge, value, and health consciousness function as independent variables influencing attitude. Subjective norms and self-efficacy directly affect attitude and purchase intention, respectively. Attitude serves as a mediating variable leading to purchase intention, operationalized as consumers' acceptance of functional foods. This framework integrates psychological and social determinants to explain functional food acceptance and provides a theoretically grounded structure for future empirical testing.

Figure 3

The Conceptual Model of Consumers' Purchase Intentions of Functional Food



Conclusions, Discussion, and Recommendations

Given the complex process of consumers' accepting novel healthy foods, an understanding of the key factors that influence their acceptance and the relationships between these factors is important (Frewer et al., 2003; Szakály, et al., 2019). By using a review-of-

reviews approach, we synthesized seven key factors that may predict consumers' acceptance of functional foods. Using Homer and Kahle's (1988) VAB model and Ajzen and Madden's (1986) TPB as a guide, we proposed a conceptual framework that integrates the seven factors. This conceptual framework identified knowledge, value, and health consciousness as foundational cognitive factors shaping consumer attitude toward functional foods.

First, consumer knowledge emerged as one of the most frequently examined factors, with higher levels of knowledge associated with more positive attitudes. Value, particularly related to health benefits and perceived price, was also a key factor, influencing their attitudes. In addition, health consciousness was a factor influencing attitudes, which reflects a growing trend toward health-oriented consumption behavior through consuming functional foods.

Second, beyond these three cognitive factors, subjective norms also played an important role in shaping consumer attitudes toward functional foods. The effect of social influence or pressure from others contributes to consumers' positive attitudes. Meanwhile, self-efficacy, consumers' confidence in making healthy food choices, was a driver of functional food purchase intention. Therefore, these findings emphasize that consumer purchase intention is not only an outcome of cognitive factors, such as values and knowledge, but is also influenced by social context and personal confidence.

Third, attitude emerged as a key mediator linking cognitive factors (i.e., knowledge, value, and health consciousness) to purchase behavior. Consumers who have positive attitudes were more likely to express strong purchase intentions. Attitudes also mediated the effects of subjective norms on purchase intentions, indicating that social pressure influences purchase intention primarily through its effect on consumers' attitude toward functional foods. Lastly, self-efficacy directly influences consumer purchase intention. Consumers who feel capable of incorporating functional foods into their diet are more likely to purchase such foods. Purchase intention is the most proximal driver for actual behavior. The TPB posits that intention is the strongest factor determining actual behavior, especially when consumers feel they have high self-efficacy or high perceived behavior control. The conceptual framework proposed herein should serve as a blueprint for researchers, practitioners, and policymakers who want to understand, or further investigate, the complex process that is consumer acceptance.

Theoretical Implications of the Conceptual Framework

Building on the proposed conceptual framework, future research should explore how different communication strategies interact with key factors to influence consumer acceptance of functional foods. Agricultural communications scholars who study persuasive messaging and strategic framing should investigate how various message frames influence consumer responses to functional foods health information. For example, comparing consumer responses to health information using a logical-scientific frame (e.g., scientific, passive voice, impersonal language) and health information using a narrative frame (e.g., lively, active voice, personal language) would be helpful. Similarly, comparing consumer responses to health information using a gain frame (e.g., focus on acquiring health rewards) and health information using a loss frame (e.g., focus on reducing the risk of diet-related chronic diseases) would also provide insight into most effective health or nutrition-related communications to include on product labels.

Practical Implications for Stakeholders

A precise understanding of the key factors influencing consumer acceptance of functional foods can inform the delivery of effective educational interventions and communication

strategies designed to increase consumer acceptance. Therefore, our conceptual framework would be valuable for functional foods marketing and communication specialists as they develop promotional materials. For example, functional foods marketing and communications specialists should carefully consider the design of product labels, as this is a prime opportunity to increase consumers' nutritional knowledge, thereby improving their attitudes and increasing their purchase intentions. Specifically, health information provided on product labels should emphasize health benefits and decrease perceived health risks.

In addition to label design, visual aids used in marketing materials should highlight family health and social environments to reinforce both individual and social motivations. This strategy may help consumers link their personal health to that of family members and possibly increase their health consciousness, thereby improving their attitudes toward functional foods and increasing their purchase intention (Bui, 2015; Kavoosi-Kalashami et al., 2017; Verbeke, 2005). Furthermore, displaying relatable social environments in visual aids may improve consumers' subjective norms by helping them envision other people (e.g., friends, coworkers) consuming functional foods and be accepting of them consuming functional foods (Nguyen et al., 2019; Rezai et al., 2014; Tarkiainen & Sundqvist, 2005). Together, these strategies can support behavior change by targeting both internal cognitive factors and external social influences identified in the framework.

Moreover, although these marketing and communication strategies, informed by our conceptual framework, can be implemented broadly (e.g., product labeling and advertising), the conceptual model also offers practical value for community-based public health interventions and can be customized for specific audiences. Functional food consumption is highly relevant to public health goals such as mitigating obesity, improving nutritional intake, and reducing the risk of diet-related chronic diseases. When incorporated into a balanced diet, functional foods can provide health benefits for the general population even if they may not be necessary for everyone (Birch & Bonwick, 2019; Vignesh et al., 2024). Individual responses and health outcomes of consuming functional foods can vary depending on factors such as genetics, age, dietary patterns, and pre-existing health conditions (Birch & Bonwick, 2019; Vignesh et al., 2024). Therefore, functional foods should be viewed as a complement to an overall healthy lifestyle rather than a substitute for a balanced diet. Moreover, although most functional foods are considered safe and beneficial, overconsumption or inappropriate use, such as excessive fortification, can result in nutrient imbalances or adverse effects (Hasler, 2002).

By understanding the demographic and psychographic characteristics of specific populations, the framework can guide the development of audience-specific educational objectives. For instance, if a community exhibits low control over dietary decisions, increasing self-efficacy should be a core program objective (Cox & Bastiaans, 2007; Nystrand & Olsen, 2020). In this way, the framework can support the design of communication efforts customized to community needs, ultimately contributing to more effective functional food interventions in different health sectors.

Limitations and Recommendations

It should be noted that the seven key factors identified in this study may interact with other influential determinants reported in the broader literature. The prior systematic and scoping reviews included in our synthesis identified additional categories of factors that also influence consumer acceptance of functional foods. These include product characteristics (e.g., carrier–ingredient combinations, price, taste, brand, and health information), socio-demographic

characteristics (e.g., age, gender, education, income, household composition, and geographic location), behavioral and physical characteristics (e.g., lifestyle, innovative-seeking behavior, body mass index, and health status), and contextual or cultural influences (e.g., trust in food industry and science, cultural values, perceived risk, and familiarity) (Mosikyan et al., 2024; Ponte et al., 2025). These additional factors were not incorporated into our conceptual framework, but they represent important contextual and moderating variables that may shape or interact with the seven key factors identified here. Therefore, future research should examine how these additional determinants influence or moderate the relationships among the seven key factors in predicting consumer acceptance of functional foods and other health-related food innovations. Specifically, food and agricultural communications scholars should test this framework using experimental research designs. As part of these experiments, scholars should prioritize determining if consumers' socio-demographic characteristics affect the accuracy of these factors and their ability to predict consumer acceptance, as well as the accuracy of the relationships between them. Perhaps, this framework describes certain sub-populations of consumers better than others. Thus, the framework we developed should be continuously modified and refined based on empirical results.

We further recommend that scholars conduct similar reviews that identify and synthesize evidence pertaining to consumer acceptance of other health innovations (e.g., personalized and smart nutrition products). Using our framework as a baseline, they can adapt it, if necessary, to describe consumer behavior in response to other food health innovations. More research in this area would help scientists and practitioners determine if outreach about food health innovations can be designed using a one-size-fits-all approach, or if different food health innovations require customized, targeted educational interventions and communications to increase consumer acceptance. Until then, the conceptual framework we developed can enable scientists and practitioners to better predict consumer acceptance toward functional foods and, as a result, provide insight into the development of effective promotional materials that, ultimately, can increase consumer acceptance and improve public health.

Appendix Table A

Factors	**Relevant studies (*N* =56)**
Knowledge (*n* = 15)	Barreiro-Hurlé et al. (2008)*; Bimbo et al. (2017); Brečić et al. (2014); Corso et al. (2018); Dean et al. (2012); La Barbera et al. (2016); Labrecque et al. (2006)*; Lu (2015)*; Sandmann et al. (2015)*; Schnettler et al (2015); Sgroi et al. (2024); Szakály et al. (2019)*; Verbeke (2005); Verneau et al. (2019); Xin & Seo (2019)*
Value (*n* = 30)	***Motives* (*n* = 10)** Ares & Gámbaro (2007); Chang et al. (2020)*; Kraus (2015); Mirosa & Mangan-Walker (2018); Mohammad et al. (2024) *; Siegrist at al. (2015)*; Sinha & Parmar (2023)*; Szakály et al. (2019)*; Tudoran et al. (2009); Vassallo et al. (2009); Vorage et al. (2020)* ***Perceived price* (*n* = 4)** Huang et al. (2019)*; Nazzaro et al. (2024); Nguyen et al. (2020)*; Stojanovic et al. (2013) ***Perceived taste* (*n* = 2)** Marina et al. (2014)*; Urala & Lähteenmäki (2004)*

Factors	Relevant studies (*N* =56)
	Perceived risk* (*n*=3)** Moons et al. (2018)*; Siegrist et al. (2008)*; Urala & Lähteenmäki (2004)* ***Beliefs (n=10) Bashir et al. (2024); Blasi et al. (2024); Bui et al. (2015)*; Jezewska-Zychowicz (2009)*; Labrecque et al. (2006)*; Landström et al. (2007); Pappalardo & Lusk (2016)*; Urala & Lähteenmäki (2004)*; Vecchio et al. (2016)*; Wang & Chu (2021)
Health Consciousness (*n* = 15)	Barreiro-Hurlé et al. (2008)*; Bui (2015)*; Chen (2011a); Cox & Bastiaans (2007)*; Devcich et al. (2007); Huang et al. (2019)*; Jahn et al. (2019)*; Jung et al. (2020)*; Kavoosi-Kalashami et al. (2017)*; Krutulyte et al. (2011)*; Moons et al. (2018)*; Nguyen et al. (2020)*; Pappalardo & Lusk (2016)*; Sandmann et al. (2015)*; Xin & Seo (2019)*
Subjective Norm (*n* = 6)	Huang et al. (2019)*; Londoño Giraldo et al. (2024) *Nguyen et al. (2020)*; Rezai et al. (2014)*; Sekinat et al. (2024)*; Wang & Chu (2021)*
Attitude (*n* = 22)	Bechtold & Abdulai (2014); Chen (2011b); Jahn et al. (2019)*; Jeżewska-Zychowicz & Królak (2015); Jezewska-Zychowicz (2009)*; Jung et al. (2020)*; Kavoosi-Kalashami et al. (2017)*; Krutulyte et al. (2011)*; Labrecque et al. (2006)*; Londoño Giraldo et al. (2024) *; Marina et al. (2014)*; Markovina et al. (2011); Mohammad et al. (2024)*; Nystrand & Olsen (2020)*; Sekinat et al. (2024) *; Patch et al. (2005); Phuong & Dat (2017); Szakály et al. (2019)*; Urala & Lähteenmäki (2004)*; Vorage et al. (2020)*; Wang & Chu (2021)*; Xin & Seo (2019)*
Self-efficacy (*n* = 4)	Chang et al. (2020)*; Cox & Bastiaans (2007)*; Nystrand & Olsen (2020)*; Vecchio et al. (2016)*
Purchase Intention (*n* = 12)	Chang et al. (2020)*; Huang et al. (2019)*; Jahn et al. (2019)*; Krutulyte et al. (2011)*; Londoño Giraldo et al. (2024)*; Lu (2015)*; Nguyen et al. (2020)*; Nystrand & Olsen (2020)*; Sekinat et al. (2024)*; Phuong & Dat (2017); Rezai et al. (2014)*; Xin & Seo (2019)*

Note. *Indicates study investigated more than one factor.

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