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Identifying the key purchase factors for organic food among Chinese consumers

Shimiao Li*  and Nor Siah Jaharuddin

* Correspondence: lishimiao@yahoo.com

Department of Management and Marketing, School of Business and Economics, Putra University, UPM, Serdang, 43400 Seri Kembangan, Selangor Darul Ehsan, Malaysia

Abstract

The current study primarily aims to identify the critical purchase factors that affect Chinese consumer purchase intention and purchase decision with regard to organic food consumption, in accordance with a modified theory of planned behavior and the alphabet theory. Specifically, this study builds a conceptual research framework by which to delve into the relationships between purchase factors and purchase intention, and elucidate the mediating roles of purchase factors in the relationships between purchase intention and purchase decision. Moreover, by leveraging a modified theory of planned behavior and the alphabet theory, the current study also determines the critical roles of subjective norms and reveals the information and knowledge that impact consumer attitude toward the purchase of organic food. The current study leverages the purposive sampling method and captures 310 records within Beijing, China. The results indicate that purchase attitude correlates positively with subjective norms and knowledge, while purchase intention correlates positively with purchase attitude, perceived behavior control, and food therapy culture. Furthermore, purchase intention can significantly mediate relationships between each of purchase attitude, perceived behavior control, food therapy culture, and purchase decision. Finally, we discuss the theoretical and practical significance of the framework, and propose subsequent research directions regarding organic food purchase behavior.

Keywords: Purchase behavior, Subjective norms, Knowledge, Purchase attitude, Perceived behavioral control, Food therapy culture, Organic food, China

Introduction

Within the global food market, sales of organic food have seen dramatic overall growth: In 2016, for example, worldwide sales of organic food grew by approximately 10%, to USD89.7 billion. North America and Europe, two representative organic food markets, have continuously contributed to worldwide sales in organic food, as these two continents account for approximately 90% of worldwide sales (Sahota 2018). Data suggest that the organic food sector has also expanded rapidly in Asian countries (e.g., Bangladesh, China, India, Iran, Japan, South Korea, and Philippines) (FiBL and IFOAM—Organics International 2019).

In recent years, the organic food market has enjoyed a tremendous and noteworthy boost in Chinese mainland: In 2017, China's overall organic packaged food and

beverages market brought in nearly USD2.84 billion in sales, and organic standard milk dominated overall value of sales, accounting for over 71% of all market value (FiBL and IFOAM—Organics International 2019). Additionally, in 2016, the total area exploited for organic agriculture in China was 2.3 million hectares; this represents almost one-half of the 4.9 million hectares of Asia's agricultural land (FiBL and IFOAM—Organics International 2019). Projections therefore suggest that China's level of organic food consumption in coming years will be considerable. Nonetheless, within the literature, the factors that affect Chinese consumers' organic food purchase behavior remain unclear.

Literature review

Numerous studies explore consumer purchase intention and purchase decision within the context of “green” or organic food; these take place within a range of study backgrounds and exploit various theory of planned behavior (TPB) elements (e.g., attitude, subjective norms, and perceived behavior control [PBC]) (Hasan and Suciarto 2020; Kumar and Smith 2018; Sultan et al. 2020; Yadav and Pathak 2016). However, the results of some meta-analyses reveal that in terms of the original TPB, subjective norms are thought to have the poorest effect when assessing intention (Armitage and Conner 2001; Krueger Jr. et al. 2000; Sheppard et al. 1988). Rather than adopt the original TPB, one can more effectively assess consumer intention to purchase organic food by using a modified TPB and the factors therein, via the most robust predictive power of attitude (Han and Stoel 2016; Kim et al. 2013; Ünal et al. 2019). Inspired by this suggestion, researchers now extensively leverage modified forms of the TPB to study organic/green/local food purchase behavior, in an attempt to delve into interrelation among variables regarding attitude, subjective norms, and PBC (Lin et al. 2012; Paul et al. 2016; Ritter et al. 2015; Ünal et al. 2019). While the power of subjective norms to predict consumer purchase attitude is identified in a variety of study contexts (e.g., India, Finland, and the United States) (Han and Stoel 2016; Singh and Verma 2017; Tarkiainen and Sundqvist 2005), the predictive power of subjective norms with respect to Chinese consumer attitude toward the purchase of organic food has been rarely studied. Thus, an in-depth exploration of whether consumer purchase attitude can be significantly predicted by subjective norms is indeed worthwhile.

Besides employing a modified TPB to study consumer purchase intention and purchase decision, more scholars have started to determine the roles of revealed information and knowledge in shaping consumer purchase attitude, in accordance with the alphabet theory (Zepeda and Deal 2009). It is suggested that revealed information and knowledge relating to organic food effectively impact consumer purchase attitude with respect to specific products and then stimulate consumer purchase intention (Kim and Bonn 2015; McClure and Seock 2020; Teng and Wang 2015; Xie et al. 2015). To be specific, sufficient information exposure can help build up trust and a positive attitude toward the purchase of organic food products (Gracia and de Magistris 2008; Żakowska-Biemans 2011). Likewise, the literature suggests that consumers are inclined to hold a more positive attitude toward products after acquiring relevant attitude-related knowledge (Chen and Tung 2014; Ellis and Thompson 2018; Nguyen et al. 2019); however, as certain studies reveal, Chinese consumers often fail to differentiate green food from organic food. Additionally, very few of these studies derive insights

into the significance of organic food in China. Nevertheless, Chinese consumers do ultimately purchase organic food (Bekele et al. 2017; McCarthy 2015; Xie et al. 2015). It is therefore suggested that revealed information and knowledge—two critical factors that relate to subjective norms—should be fully and jointly explored in terms of their effect on Chinese consumer attitude vis-à-vis the purchase of organic food. This objective currently stands as a critical gap in the research into organic food purchase behavior.

As mentioned, a growing number of scholars have started to use a modified TPB to extend the original TPB into novel areas and, in the process, contribute to the literature. For organic/green/local/eco-friendly products purchase behavior, studies indicate that health consciousness, environmental/safety concerns, social norms, healthy lifestyle, and animal welfare are the most common factors that significantly affect consumer purchase intention (Arvola et al. 2008; Liu et al. 2012; Maichum et al. 2016; Paul et al. 2016; Rohman et al. 2020). In the current study, to delve into Chinese consumer intention to purchase organic food (and hence extend the TPB within the Chinese context), we critically introduce the concept of food therapy culture, which is deeply rooted in Chinese culture. Food therapy culture refers to a conventional daily healthcare regimen that involves the consumption of natural and healthier food; compare this lifestyle, for example, to one where modern pharmaceuticals are taken to address daily healthcare needs (Deng et al. 2012). Studies suggest that among Chinese consumers, food therapy culture correlates strongly with Chinese herbal medicine purchase (Cai, S.F. (2009). The development and research on nutritional therapy soup and diet of Hong kong [Unpublished master's thesis], Guangzhou University of Chinese Medicine; Jiao, T.Y. (2015). Visualization design of diet and health information based on sub-healthy people [Unpublished master's thesis], Kunming University of Science and Technology; Wei, X.B. (2016). Investigating the influencing factors of purchase organic agriculture food: An example of Huzhou [Unpublished master's thesis], South China Agriculture University; Liu et al. 2015). Since Chinese herbal medicine bears attributes that very much align with the definition of organic food (e.g., more natural, healthier, and without side effects of chemical components) (Wu and Chen 2017; Yao et al. 2012), it is assumed that consumers willing to purchase Chinese herbal medicines might also intend to purchase organic food. Besides, in the literature, studies that delve into Chinese consumer intention to purchase organic food have been rarely conducted from the perspective of local culture. Given this dearth of research, the current study looks to provide insights into the impact of food therapy culture on Chinese consumer intention to purchase organic food.

Moreover, extensive studies explore, on the basis of the TPB, a range of variables that affect consumer intention to purchase organic/green/local/eco-friendly products (Gad Mohsen and Dacko 2013; Kumar and Smith 2018; Xu et al. 2020a; Yadav and Pathak 2016). In marketing studies, for instance, purchase intention is extensively researched as a mediator of relationships between a variety of purchase factors (e.g., environmental concern, perceived knowledge, social norms, and perceived usefulness) and purchase behavior/decision with regard to eco-friendly products (Jaiswal and Kant 2018; Lim et al. 2016; Liu et al. 2012; Zarei et al. 2019). However, the mediating role of purchase intention when applying the TPB is far from being exhaustively studied, especially in terms of organic food purchase behavior among Chinese consumers. The literature

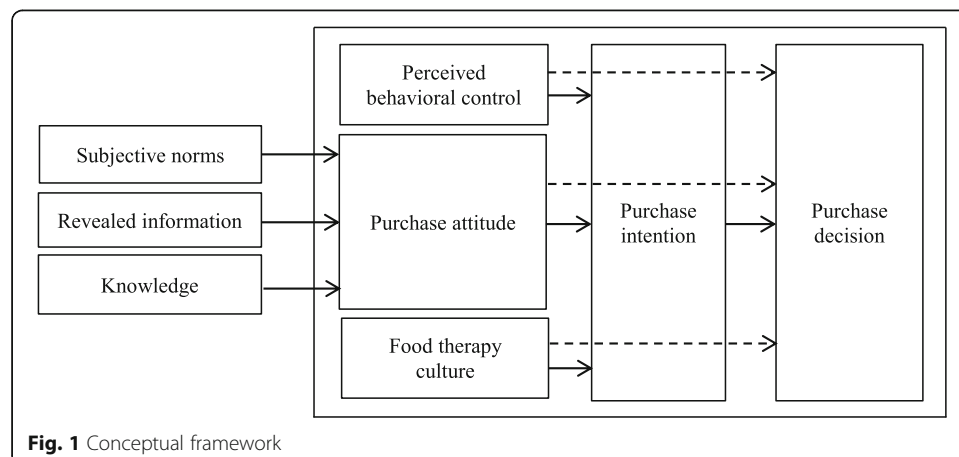
does not fully explore the mediating role of purchase intention in the relationships between purchase factors (e.g., purchase attitude, PBC, and food therapy culture) and organic food purchase decision. It is this research problem that we identify herein and explore. In brief, Fig. 1 details the current study's proposed conceptual framework.

The current study makes several contributions to the literature. First, this study leverages two theories—namely, a modified TPB and the alphabet theory—and it further explores the role of subjective norms in influencing Chinese consumer attitude toward the purchase of organic food in China; this is something that researchers have scarcely addressed. Second, we also look to examine the effects of revealed information and knowledge on Chinese consumer attitude toward the purchase of organic food, on which there is also a dearth of research. More specifically, concerned with the important role of purchase attitude in shaping consumer purchase intention, we explore the critical roles of subjective norms, revealed information, and knowledge in the formation of Chinese consumer attitude toward the purchase of organic food; we also identify the most significant predictors of purchase attitude among the three aforementioned critical elements. Third, we examine food therapy culture as an essential purchase factor, from the perspective of local culture; we do so to more effectively deepen our understanding of the Chinese consumer intention to purchase organic food and also extend the TPB into novel areas. Finally, we extensively determine the mediating effect of purchase intention on the relationships between purchase factors (i.e., purchase attitude, PBC, and food therapy culture) and purchase decision.

Theoretical background and hypothesis development

Modified theory of planned behavior and purchase attitude

Icek Ajzen originally proposed the TPB in 1985, as an extension of the theory of reasoned action (Ajzen 1991; Fishbein and Ajzen 1975). The TPB refers to a theoretically structured framework that assesses and explains human behavior in terms of beliefs and attitudes (Ajzen 1991). Based on the TPB, Fishbein and Ajzen (2011) propose the reasoned action model (Fig. 2). Compared to the original TPB, this



model introduces background factors that impose upon human beliefs; moreover, actual control is implemented in the relationships between perceived behavioral control and behavior.

In the TPB, subjective norms (i.e., perceived norms) represent perceived social influences or pressures; these refer to opinions and, to some extent, the approval of family, friends, co-workers, and any other person whom one trusts (Ajzen 1985). In marketing studies, more and more scholars have started to explore inter-correlations among subjective norms, PBC, and attitude, across a range of study contexts; each of these studies leverages a modified TPB (Lin et al. 2012; Paul et al. 2016; Ritter et al. 2015; Ünal et al. 2019). By applying a modified TPB, these researchers find that subjective norms have an impact on consumer attitude that greatly exceed that on consumer purchase intention (e.g., customers' acceptance of airline B2C, battery-electric vehicle purchase intention, and local/street food purchase behavior) (Kim and Lennon 2008; Schmalfuß et al. 2017; Shin and Hancer 2016). Table 1 lists other studies that discuss the predictive power of subjective norms on consumer attitude.

As the studies listed in Table 1 suggest, consumer purchase attitude is significantly predicted by subjective norms, across a variety of study contexts (e.g., India, the United States, and European countries). Meanwhile, in terms of the current study context, the predictive power of subjective norms with respect to consumer purchase attitude (in terms of studying organic food purchases) remains unknown. Accordingly, with the support of the literature, we propose the following hypothesis.

Hypothesis 1: Subjective norms significantly influence consumer attitude toward the purchase of organic food.

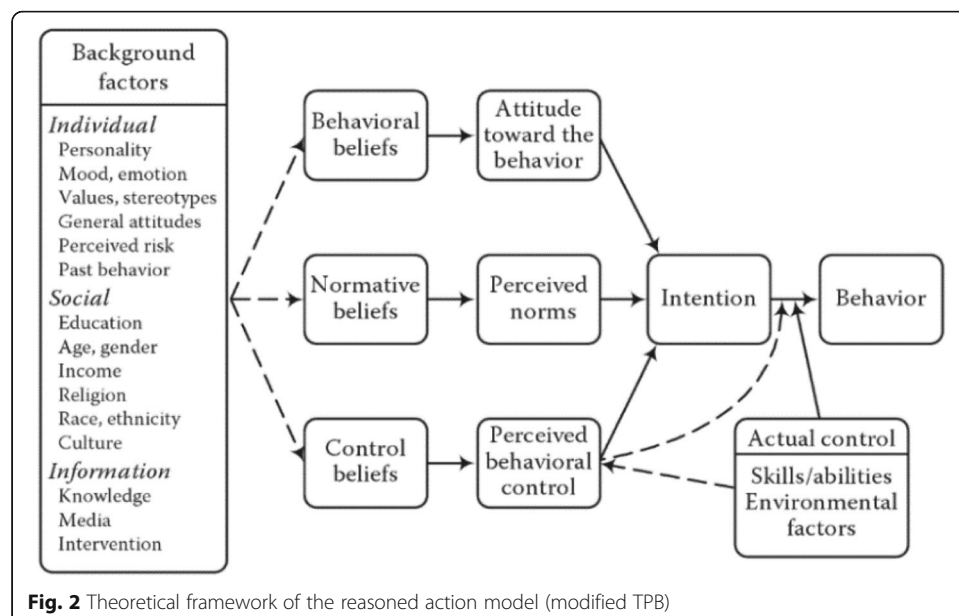


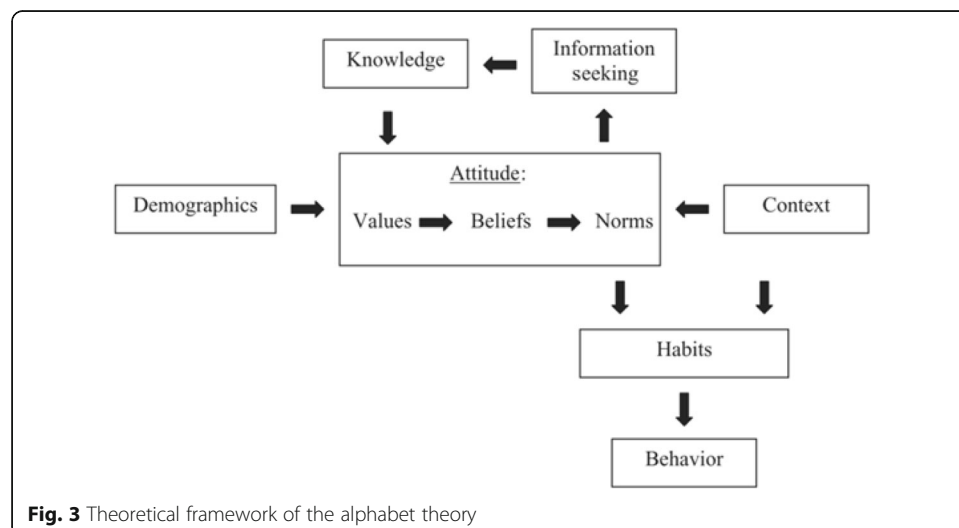
Table 1 Notable research on subjective norms affecting purchase attitude

Research topic	Citation	Country context
Consumers' attitude and intention toward organic food purchase	Irianto (2015)	Indonesia
Consumers' actual buying behavior toward organic food products	Singh and Verma (2017)	India
The effect of social norms and product knowledge on purchase of organic cotton	Han and Stoel (2016)	The United States
Impact of culture, behavior, and gender on green purchase intention	Sreen et al. (2018)	India
Application of the TPB to green hotel choice	Han et al. (2010)	The United States
Predicting organic food consumption, based on the TPB	Scalco et al. (2017)	European Union
Subjective norms, attitudes, and intentions of Finnish consumers in buying organic food	Tarkiainen and Sundqvist (2005)	Finland
The role of subjective norms in the TPB, in the context of organic food consumption	Al-Swidi et al. (2014)	Pakistan

The alphabet theory and purchase attitude

Zepeda and Deal first proposed the alphabet theory, in 2009; it is a revised theory based on value–belief–norm theory (Stern et al. 1999) and attitude–behavior–context theory (Guagnano et al. 1995). The alphabet theory stresses that knowledge, information seeking, and habit are critical to clarifying consumer preference—in this case, toward organic and local food. On the whole, the alphabet theory can elucidate correlations among variables (e.g., attitude, information seeking, and knowledge). Figure 3 shows the full conceptual framework of the alphabet theory.

Numerous studies emphasize the critical roles of revealed information and knowledge in influencing consumer attitude about specific products (Fiore et al. 2005; Mitchell and Boustani 1994; Nitse et al. 2004). In the current study, revealed information refers to any product or service that is considered a valuable indicator that shapes, guides, and builds a specific purchase attitude toward market products and services (Kim and Lennon 2000). While product knowledge within consumer perception primarily refers to product-related information stored in one's memory, such information could also include brand, product, attribute, evaluation, usage situation, and price (Vanhuele and



Drèze 2002). It is noteworthy that consumers' product knowledge accumulates via information searching and from their post-purchase experiences, as well as from advertisements, interactions with salespersons, and a range of usage situations (Alba and Hutchinson 2000). Given the interrelationships between revealed information and knowledge, researchers tend to discuss these two elements together in various study contexts.

With respect to food purchase behavior, Silayoi and Speece (2004) state that the informational element is an important factor that influences consumers' food purchase choices. Similarly, Cranage et al. (2005) suggest that delivering appropriate nutritional information both visually and verbally (i.e., on food packaging) impacts consumers' purchase attitude and their decision-making process significantly. Moreover, Chen and Tung (2014) also propose that brand information acquired from electronic word of mouth (eWOM) sources positively impacts consumer purchase attitude with respect to a specific brand.

Aside from discussions of the critical role of revealed information, there are various elucidations of the importance of knowledge in shaping consumer purchase attitude. According to Basha et al. (2015), regardless of whether product knowledge affects consumer perception positively or adversely, the more valuable the knowledge is that consumers receive, the more likely they will develop either favorable or unfavorable attitudes toward the products involved. Specifically, research findings related to eco-friendly purchase behavior in India indicate that subjective environmental knowledge significantly influences consumer purchase attitude toward green products (Yadav and Pathak 2016). In line with the current study, Ritter et al. (2015) suggest that subjective knowledge acquisition—as a critical motivating factor—effectively impacts consumer attitude toward green products in northern Brazil. Regarding food purchase behavior, Brugarolas et al. (2010) reveal that Spanish consumers' level of perceived knowledge with respect to organic food strictly relates to their attitude of acceptance for organic wine. Likewise, Ellis and Thompson (2018) also state that wine knowledge types are vital predictors of variety-seeking behavior with respect to wines: Consumers confident in their wine knowledge are more inclined to exhibit a positive attitude in such variety-seeking behavior.

Overall, given the critical roles within the alphabet theory of information and knowledge in shaping consumer attitude toward organic/local food, the alphabet theory is better able to provide a solid theoretical support by which to delve into the interrelations among purchase attitude, revealed information, and knowledge in research into Chinese consumer attitude toward the purchase of organic food. Accordingly, we propose the following hypotheses.

Hypothesis 2: Revealed information significantly influences consumer attitude toward the purchase of organic food.

Hypothesis 3: Knowledge significantly influences consumer attitude toward the purchase of organic food.

Perceived behavioral control and purchase intention

PBC is a critical TPB variable. It can be defined as the ability to control specific behavior—in other words, the perceived “difficulty of declining the invitation” (Ajzen 1985: p.

26). Since PBC is very much considered an effective variable in affecting individuals' ability to perform a behavior, it is not surprising that numerous marketing studies that investigate PBC's predictive power link PBC to behavioral intention (Delafruez et al. 2011; Hsu et al. 2017; Kim et al. 2013). According to Ajzen (1991), PBC categorizes internal control factors (e.g., skills, abilities, power of will, and compulsion) and external control factors (e.g., time, opportunities, and willingness from others). On that basis, numerous studies touch upon relationships between PBC and consumer purchase intention. Delafruez et al. (2011) show that self-efficacy, cost, and trust are critical internal control factors that closely relate to consumers' online purchase intention. In contrast, some study results suggest that external control factors are more likely to influence consumer purchase intention. Jin and Hye Kang (2011), for example, prove that among the Chinese, individual-level controllability toward purchase behavior effectively impacts purchase intention toward U.S. apparel brands. Numerous scholars support the role of external PBC in impacting consumer shopping behavior (e.g., Fowler et al. 2012; Hsu et al. 2017; Son et al. 2013).

Furthermore, the predictive power of PBC very much relates to healthy/green purchase intention/behavior (Brouwer and Mosack 2015; Dean et al. 2008; Xu et al. 2020b). Thus, PBC should be further explored in tandem with consumer purchase intention, specifically in terms of organic food purchase behavior. We put forward the following hypothesis.

Hypothesis 4: PBC significantly influences consumer purchase intention regarding organic food.

Purchase attitude and purchase intention

Within the context of the TPB, attitude refers to an individual's attitude or opinion—that is to say, whether a specific behavior is good or bad, positive or negative, or favorable or unfavorable (Ajzen 1991). According to Cheng et al. (2006), individuals are inclined to hold a positive attitude when a positive outcome is expected; thus, consumers are more likely to act on the basis of such a positive attitude. In marketing studies, attitude within the TPB closely relates to purchase intention, and numerous studies prove that in various shopping situations, consumer purchase attitude either positively or adversely affects purchase intention vis-à-vis specific products (Hartmann and Apaolaza-Ibáñez 2012; Lee et al. 2015; Phua and Kim 2018; Pisitsankhakharn and Vassanadumrongdee 2020).

Specifically, various studies show that purchase attitude imposes a significant mediating effect on relationships between other purchase factors and purchase intention. For example, Han et al. (2010) argue that consumer attitude effectively mediates the relationship between subjective norms and green hotel visit intention. In line with that study, Chen and Tung (2014) illustrate that consumer attitude toward green hotels plays a mediating role in the relationship between environmental concern and intention to visit green hotels. Moreover, consumer attitude also directly impacts green product purchase intention (Cerri et al. 2018). Concerning the important ways in which consumer attitude influences consumer purchase intention, still other studies relate to green/organic food purchase intention. Lin and Huang (2012) claim that achieving a

full understanding of consumer purchase attitude can help policy makers, producers, and marketers promote green purchase habits and induce further consumption of green/organic products.

Recent studies examine the role of attitude in the TPB to deeply understand its predictive power toward organic food purchase intention. Various studies prove that consumer attitude can influence consumer purchase intention, either directly, or indirectly through alternative variables (e.g., health consciousness, environmental concern, food safety, and taste) (Hsu et al. 2017; Lee et al. 2015; Nguyen et al. 2019; Pham et al. 2018). Thus, we expect that purchase attitude can predict Chinese consumers' intention to purchase organic food. Thus, we set forth the following hypothesis.

Hypothesis 5: Purchase attitude significantly influences consumer purchase intention toward organic food.

Food therapy culture and purchase intention

Numerous scholars suggest a variety of TPB-based variables to better examine consumer purchase intention and purchase behavior; in the process, they extend the TPB into novel areas, in a variety of academic disciplines and contexts (Liang 2016; Liu et al. 2012; Paul et al. 2016). We put forward that in China, food therapy culture is an alternative purchase factor that influences consumer purchase intention. According to Xu (2003), in China, food therapy culture refers to a conventional lifestyle in which human health is improved and maintained by consuming natural and edible goods (e.g., natural herbs), rather than by taking modern pharmaceuticals. Food therapy, as a part of traditional Chinese medicine, can help an individual achieve physiological equilibrium, optimize organ function, prevent potential diseases, and improve sub-health status, all without the side effects associated with modern pharmaceuticals (Deng et al. 2012; Wu and Chen 2017; Yao and Wu 2019). In China, food therapy culture is, in essence, one of the most readily embraced means of enhancing one's lifestyle.

Relatedly, Xu (2003) claims that many elderly individuals in China look to meet their food therapy needs by consuming traditional Chinese herbal medicine; they often make this decision in consideration of the potential side effects of modern pharmaceuticals—a point on which herbal medicine and traditional Chinese medical treatments diverge from modern medicine. Furthermore, Liu et al. (2015) propose that middle-class families in China are more passionate about purchasing organic and vegetarian food as part of their daily healthcare regimen. Moreover, according to (Chen, Y.X. (2012). Studies on impacts factors of Chinese herbal medicine consumers' behavior [Unpublished doctoral dissertation], Fujian Agriculture and Forestry University), most Chinese believe that such a healthy eating lifestyle is significantly superior to taking medicine, whether to cure disease or achieve sound day-to-day health. Based on its characteristics, organic food in China has many of the same attributes as Chinese herbal medicine (e.g., has a natural, nonchemical effect, and is not contaminated). The current study assumes that consumers who prefer to purchase Chinese herbal medicine as part of their daily food therapy regimen may also intend to purchase organic food in the future.

For this reason, we study food therapy culture as a critical driving factor, from the perspective of local culture; we do so to delve into Chinese consumer intention to

purchase organic food in China and, by adding an alternative purchase factor, extend the TPB into novel areas. On that basis, we propose the following hypothesis.

Hypothesis 6: Food therapy culture significantly influences consumer purchase intention toward organic food.

Mediating role of purchase intention

Purchase intention has been extensively studied as a mediator of the relationships between a variety of purchase factors (e.g., environmental concerns, perceived knowledge, social norms, and perceived usefulness) and purchase behavior/decision with regard to eco-friendly products (e.g., Jaiswal and Kant 2018; Lim et al. 2016; Liu et al. 2012; Zarei et al. 2019). Concerned with the essential mediating role of purchase intention when studying both the consumer purchase decision and the decision-making process, numerous studies attempt to identify more effective variables that positively impact the consumer purchase decision, chiefly by mediating the purchase intention with regard to organic food products.

According to Chen (2007), consumer intention to purchase organic food is significantly driven by a series of food motives (e.g., health, mood, convenience, personal need, and environmental protection) that indirectly influence the consumer purchase decision. Zhou et al. (2013) also indicate that the consumer intention to purchase organic food significantly mediates the relationships between purchase factors (e.g., attitude, injunctive norms, PBC, and personal values) and purchase decision. Additionally, several studies conclude that a lack of trust, labeling issues, lower availability, and premium prices are considered critical variables that adversely and indirectly affect consumer purchase decision with respect to organic food, through the mediating role of purchase intention (Aslihan Nasir and Karakaya 2014; Tung et al. 2012; Xie et al. 2015). Based on a rational discussion concerning the mediating role of purchase intention, we expect to find that, in China, consumer purchase intention can significantly mediate the relationship between purchase factors (i.e., purchase attitude, PBC, and food therapy culture) and purchase decision with regard to organic food. Thus, we propose the following hypotheses.

Hypothesis 7(a): Purchase intention significantly mediates the relationship between PBC and purchase decision regarding organic food.

Hypothesis 7(b): Purchase intention significantly mediates the relationship between purchase attitude and purchase decision regarding organic food.

Hypothesis 7(c): Purchase intention significantly mediates the relationship between food therapy culture and purchase decision regarding organic food.

Method

Study sample and procedures

Our study sample was selected through purposive sampling, while bearing in mind the homogeneous attribute of the target participants: Specifically, the target population of the current study comprises organic food consumers in Beijing, China. For this reason, all participants were selected on the basis of having previously purchased organic food

and, to some extent, having a basic understanding of organic food. Thus, for our purpose, we consider purposive sampling the best sampling method. Paper-based survey questionnaires were distributed to organic food consumers in supermarkets that have organic food sections (e.g., BHG Market Place, 7 Fresh supermarket, Hema Supermarket, and Jenny Lou's supermarket).

We determined that a sample size of $n = 384$ would suffice; this number is based on geographical distribution and city population and calculated at the 95% confidence level with a 5% margin of error (Krejcie and Morgan 1970). Data were collected in two stages. In the first stage, 384 paper questionnaires were distributed, and 382 were returned (return rate: 99.5%). Among these 382 records, we deemed 296 valid, after deleting outliers and those with missing values (effective response rate: 77.5%; nonresponse rate: 22.5%). To preclude data bias and elevate the effective response rate, in the second stage, 86 paper questionnaires were distributed, and we achieved a 100% return rate; of these, 14 were valid (effective response rate: 16.3%). As such, we elevated the survey response rate to 81.15%, with 310 valid records. Moreover, a sample comprising 310 records is considered sufficient to conduct structural equation modeling (Westland 2010). Table 2 lists the descriptive statistics of our study participants.

Among the 310 participants, 224 are female (72.3%), and 86 male (27.7%), indicating that most organic food purchasers are female. The average age was 34.5 years (standard deviation = 9.42; range: 45–54 years). Furthermore, 54.2% of the participants are undergraduate degree holders, and 27.7% of them are postgraduate degree holders; these findings suggest that most organic food purchasers are considerably educated.

Although we significantly increased our valid response rate by undertaking a second stage of data collection, we remained concerned about the 18.85% nonresponse rate (i.e., 72 invalid records). Table 3 presents the basic nonresponse information from invalid records.

From the statistical results in Table 3, we can draw some useful findings and conclusions as follows.

Table 2 Descriptive statistics of the study participants ($n = 310$)

Item	Number	Proportion
Gender		
Female	224	72.3%
Male	86	27.7%
Age		
18–24	35	11.3%
25–34	62	20.0%
35–44	81	26.1%
45–54	103	33.2%
≥55	29	9.4%
Education		
Secondary school and below	56	18.1%
Undergraduate	168	54.2%
Postgraduate	86	27.7%

Table 3 Basic information on categories of nonresponses ($n = 72$)

Questionnaire section	Item	Nonresponse number	Nonresponse proportion
Demographic section	Gender	4	5.6%
	Age	13	18.1%
	Education	21	29.2%
SN	Q1	6	8.3%
	Q2	13	18.1%
	Q4	7	9.7%
RI	Q3	11	15.3%
	Q4	8	11.1%
KNWGE	Q2	3	4.2%
	Q3	2	2.8%
PBC	Q1	6	8.3%
	Q3	14	19.4%
	Q5	3	4.2%
PA	Q3	4	5.6%
FTC	Q3	2	2.8%
	Q4	3	4.2%

Notes. SN = subjective norms, RI = revealed information, KNWGE = knowledge, PBC= perceived behavioral control, PA = purchase attitude, FTC= food therapy culture

- (1) Most of the participants left “education background” in the demographic information section blank (29.2%); this suggests that some of them were reluctant to disclose their education information. Hence, in subsequent studies, confidentiality should be stressed more clearly in the cover letter of the questionnaire.
- (2) Question 2 in the item “subjective norms” and question 3 in the item “revealed information” were often left unanswered (18.1% and 15.3% of all questionnaires, respectively). These two questions were relatively long and likely caused fatigue among some participants. Thus, future research should use questionnaires that feature shorter questions.
- (3) In all 19.4% of participants incompletely answered question 3 in the item “perceived behavioral control”; they may not have understood the full meaning of “resources” in this question. Thus, future research should be careful to explain what the term “resources” means, so as to eliminate potential misunderstandings among participants.

Measures

The questionnaire was originally designed in English. Since the target participants are Chinese, the questionnaire was translated into Mandarin by an expert. All information were captured through a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Subjective norms

We captured information on subjective norms via the four-item scale following Yadav and Pathak (2016). One sample item is “My attitude toward purchasing organic food is impacted by my family.” The composite Cronbach’s α for this scale reaches 0.913.

Revealed information

We captured data on revealed information via the four-item scale developed by Ritter et al. (2015). A sample item is that “Organic food-related information is critical to my attitude toward purchasing organic food.” The composite Cronbach’s α for this scale is 0.890.

Knowledge

We captured knowledge via the four-item scale from Ellis and Thompson (2018), a sample item of which is “My attitude toward purchasing organic food is significantly impacted by my relevant knowledge.” The composite Cronbach’s α for this scale is 0.768.

Perceived behavioral control

We determined PBC through the six-item scale developed by Paul et al. (2016). One sample item is “If I can make decision by my own, I am confident that I will purchase organic food.” The composite Cronbach’s α for this scale is 0.809.

Purchase attitude

We captured purchase attitude data via the five-item scale developed by Chen (2007), one sample item of which is “Organic food has superior quality.” The composite Cronbach’s α for this scale is 0.750.

Food therapy culture

We measured food therapy culture through the use of the five-item scale developed by (Chen, Y.X. (2012). Studies on impacts factors of Chinese herbal medicine consumers' behavior [Unpublished doctoral dissertation], Fujian Agriculture and Forestry University). A sample item of this scale is “I prefer selecting more natural and non-synthetic fertilizers food to fulfill my daily healthcare purposes.” The composite Cronbach’s α for this scale is 0.860.

Purchase intention

We determined purchase intention via the four-item scale from Liang (2016). One sample item is “I am strongly willing to purchase organic food for my daily diet needs.” The composite Cronbach’s α for this scale is 0.835.

Purchase decision

We measured purchase decision by using the four-item scale of Tariq et al. (2019). One sample item is “I used to purchase some organic food when shopping for food.” The composite Cronbach’s α for this scale is 0.860.

Results**Discriminate validity analysis**

To ensure the discriminate validity of the two proposed models, we undertake confirmatory factor analysis with Amos 24.0 to examine their fit indices. As Table 4 shows, both models 1 and 2 show good model fit. Accordingly, the discriminate validity of the two proposed models is supported.

Table 4 Discriminate validity analysis results

Model	χ^2/df	RMSEA	CFI	NFI	AGFI	GFI
Model 1 (SN, RI, KNWGE, PA)	1.758	0.050	0.974	0.941	0.908	0.930
Model 2 (PA, PBC, FTC, PI, PD)	2.574	0.071	0.926	0.886	0.831	0.862
Benchmark	< 5.0	< 0.05	> 0.9	> 0.9	> 0.8	> 0.8

Notes. $n = 310$. SN = subjective norms; RI = revealed information; KNWGE = knowledge; PA = purchase attitude; PBC = perceived behavioral control; FTC = food therapy culture; PI = purchase intention; PD = purchase decision
 RMSEA = root mean square error of approximation, CFI = comparative fit index, NFI = normed fit index, AGFI = adjusted goodness of fit index, GFI = goodness of fit index

Convergent validity analysis

We determine the convergent validity of the constructs through composite reliability (CR) and average variance extracted (AVE). The results (see Table 5) suggest that all CR and AVE constructs reach the benchmark, and the CR and AVE should exceed 0.7 and 0.5, respectively (Fornell and Larcker 1981). Thus, the convergent validity of all the constructs is supported.

Descriptive statistics and correlations

Table 6 details the means, standard deviations, correlations, and composite reliability (α) of each variable. Consumer purchase attitude positively correlates with subjective norms ($r = 0.20$, $p < 0.01$) and knowledge ($r = 0.23$, $p < 0.01$), while purchase attitude does not significantly correlate with revealed information ($r = -0.06$, $p > 0.05$). Moreover, purchase intention correlates positively with PBC ($r = 0.70$, $p < 0.01$), purchase attitude ($r = 0.51$, $p < 0.01$), and food therapy culture ($r = 0.41$, $p < 0.01$). Finally, purchase intention correlates positively with purchase decision ($r = 0.34$, $p < 0.01$).

Hypothesis testing

We examine hypotheses 1–6 through regression analysis in Amos 24.0; Table 7 shows the results. The findings with model 1 suggest that purchase attitude correlates significantly with each of subjective norms ($\beta = 0.20$, $p < 0.001$) and knowledge ($\beta = 0.25$, $p < 0.001$), but has no such significant correlation with revealed information ($\beta = -0.06$, $p > 0.05$). The findings with model 2, on the other hand, indicate that purchase intention correlates significantly with each of PBC ($\beta = 0.70$, $p < 0.001$), purchase attitude ($\beta = 0.18$, $p < 0.01$), and food therapy culture ($\beta = 0.19$, $p < 0.001$). Accordingly, these results support hypotheses 1, 3, 4, 5, and 6; hypothesis 2, on the other hand, is not supported.

In the current study, we use Amos 24.0 to explore the direct, indirect, and total effects and determine the mediating role of purchase intention in the relationships between purchase decision and each of PBC, purchase attitude, and food therapy culture. Table 8 shows that the indirect effects of PBC on purchase decision, as stimulated by purchase intention, are significant ($\beta = 0.201$, $p < 0.01$); meanwhile, the direct effects of PBC on purchase decision, as stimulated by purchase intention, are insignificant ($\beta = 0.024$, $p > 0.05$). These findings demonstrate that purchase intention fully mediates the relationship between PBC and purchase decision. Thus, hypothesis 7(a) is supported. The indirect effects of purchase attitude on purchase decision, as stimulated by purchase intention, are significant ($\beta = 0.053$, $p < 0.01$), while the direct effects of the same are insignificant ($\beta = -0.025$, $p > 0.05$). The

Table 5 Convergent validity analysis results

Construct	Item	Standardized factor loading	CR	AVE
SN	SN1	0.757	0.923	0.752
	SN2	0.880		
	SN3	0.855		
	SN4	0.965		
RI	RI1	0.836	0.870	0.627
	RI2	0.753		
	RI3	0.685		
	RI4	0.880		
KNWGE	KNWGE1	0.734	0.824	0.539
	KNWGE2	0.726		
	KNWGE3	0.757		
	KNWGE4	0.720		
PA	PA1	0.711	0.923	0.709
	PA2	0.959		
	PA3	0.884		
	PA4	0.789		
	PA5	0.845		
PBC	PBC1	0.783	0.896	0.590
	PBC2	0.737		
	PBC3	0.694		
	PBC4	0.734		
	PBC5	0.788		
	PBC6	0.862		
FTC	FTC1	0.817	0.901	0.646
	FTC2	0.799		
	FTC3	0.807		
	FTC4	0.847		
	FTC5	0.744		
PI	PI1	0.738	0.858	0.601
	PI2	0.793		
	PI3	0.756		
	PI4	0.812		
PD	PD1	0.904	0.917	0.736
	PD2	0.850		
	PD3	0.763		
	PD4	0.906		

Notes. $n = 310$

SN= subjective norms, RI = revealed information, KNWGE = knowledge, PBC = perceived behavioral control, PA = purchase attitude, FTC = food therapy culture, PI = purchase intention, PD = purchase decision

implication here is that purchase intention fully mediates the relationship between purchase attitude and purchase decision. Thus, hypothesis 7(b) is supported. Finally, food therapy culture is found to have significant indirect effects on purchase decision as stimulated by purchase intention ($\beta = 0.057$, $p < 0.01$), while the direct effects of the same are insignificant ($\beta = 0.105$, $p > 0.05$); this suggests that purchase intention fully mediates the relationship between food therapy culture and purchase decision. Hence, hypothesis 7(c) is supported.

Table 6 Means, standard deviations, and correlations among study variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Gender	1.72	0.45	–									
2. Age	34.50	9.42	0.04	–								
3. Edu	1.49	0.50	–0.04	–0.20**	–							
4. SN	4.18	0.68	0.01	–0.09	–0.02	–						
5. RI	3.38	0.90	0.06	–0.02	0.02	0.02	–					
6. KNWGE	3.95	0.87	–0.04	–0.05	0.02	0.05	0.15*	–				
7. PBC	3.53	0.89	0.01	–0.10	–0.01	0.18**	–0.06	0.13*	–			
8. PA	4.17	0.63	–0.01	–0.05	0.01	0.20**	–0.06	0.23**	0.57**	–		
9. FTC	3.48	0.62	0.04	–0.07	0.09	0.14*	0.08	–0.01	0.38**	0.31**	–	
10. PI	3.88	0.80	–0.08	–0.03	0.02*	0.15**	0.01	0.02	0.70**	0.51**	0.41**	–
11. PD	3.81	0.78	–0.08	0.00	0.03	0.13*	0.04	–0.00	0.28**	0.16**	0.25**	0.34**

Notes. $n = 310$. Gender was coded as follows: 1 = male, 2 = female; Education level was coded as follows: 1 = undergraduate and below, 2 = master degree and above

SN = subjective norms, RI = revealed information, KNWGE = knowledge, PBC = perceived behavioral control, PA = purchase attitude, FTC = food therapy culture, PI = purchase intention, PD = purchase decision

* $p < 0.05$, ** $p < 0.01$. Two-tailed test

Discussion

Theoretical implications

The current study innovatively applies both a modified TPB and the alphabet theory to comprehensively study consumer purchase intention and purchase behavior toward organic food, within the context of Chinese consumers in China. Our study results clearly demonstrate that consumer attitude toward the purchase of organic food tends to be highly motivated by subjective norms and knowledge; they also emphasize that knowledge critically impacts consumer purchase attitude. In terms of the magnitude of impact, consumer attitude is followed by subjective norms, and revealed information is not found to correlate with consumer purchase attitude.

Moreover, consumer intention to purchase organic food closely relates to PBC, purchase attitude, and food therapy culture; among these, PBC critically impacts purchase intention, and in terms of the magnitude of impact, PBC is followed by food therapy culture and purchase attitude. Furthermore, the results of our mediating test indicate that purchase intention plays an effective mediating role in the relationships between purchase decision and each of purchase attitude, PBC, and food therapy culture. Given our results, the current study makes several contributions to the marketing literature, especially that on consumer purchase behavior.

Table 7 Regression analysis results (Hypotheses 1–6)

Model 1	Purchase attitude			Model 2	Purchase intention		
	Estimate	SE	t-value		Estimate	SE	t-value
SN	0.20***	0.05	3.34	PBC	0.70***	0.09	9.03
RI	–0.06	0.04	–1.34	PA	0.18**	0.04	3.18
KNWGE	0.25***	0.07	3.84	FTC	0.19***	0.03	3.68

Notes. $n = 310$

SN = subjective norms, RI = revealed information, KNWGE = knowledge, PBC = perceived behavioral control, PA = purchase attitude, FTC = food therapy culture, SE = standard error

** $p < 0.01$, *** $p < 0.001$

Table 8 Direct, indirect, and total effects analysis results (Hypotheses 7(a)–7(c))

Path	Direct effects	Indirect effects	Total effects	Mediation
PBC → PI → PD	0.024	0.201**	0.225**	Supported (full mediation)
PA → PI → PD	−0.025	0.053**	0.028**	Supported (full mediation)
FTC → PI → PD	0.105	0.057**	0.162**	Supported (full mediation)

n = 310

Notes: PBC = perceived behavioral control, PA = purchase attitude, FTC = food therapy culture, PI = purchase intention,

PD = purchase decision

***p* < 0.01

First, this study applies both a modified TPB and the alphabet theory to delve into the critical variables that impact consumer attitude toward the purchase of organic food, and to accurately identify those variables that critically impact consumer purchase attitude. Previous studies that leverage a modified TPB or the alphabet theory separately examine consumer purchase attitude through the lens of subjective norms, revealed information, and knowledge, in a range of study contexts (e.g., Chen and Tung 2014; Ellis and Thompson 2018; Irianto 2015). However, the current study makes mixed use of a modified TPB and the alphabet theory to fully and simultaneously explore consumer attitude toward the purchase of organic food, from the perspectives of subjective norms, revealed information, and knowledge. Additionally, this study draws comparisons of the three aforementioned critical variables—something scarcely done before.

Second, this study is the first to consider food therapy culture an essential purchase factor from the perspective of local culture. It looks to achieve a deeper understanding of the Chinese consumer intention to purchase organic food in China, and extends the TPB to study consumer organic food purchase behavior. The literature focuses primarily on the impact of food therapy culture on the purchase of traditional Chinese herbal medicine, rather than on potential relationships between food therapy culture and purchase decision on organic food purchase among Chinese consumers (Xu 2003). Our study results indicate that food therapy culture significantly predicts Chinese consumer purchase intention toward organic food, and for this reason can be considered a contributor to the literature.

Third, this study contributes to the literature in how it examines the mediating role of purchase intention. This study is the first to determine the concurrent mediating effect of purchase intention on the relationships between purchase factors (i.e., purchase attitude, PBC, and food therapy culture) and purchase decision: A dearth of studies in the literature look to determine the mediating role of purchase intention by fully involving the three aforementioned factors, especially in the context of organic food purchase behavior (e.g., Tung et al. 2012). Our study results show that purchase intention significantly mediates the relationships between each of purchase attitude, PBC, and food therapy culture, and purchase decision regarding organic food, and thus imply that the effects of these three factors on consumer purchase decision vis-à-vis organic food are more likely to rely on the mediating role of purchase intention.

Practical implications

Besides theoretical contributions, the current study also contributes to the literature with several practical implications with respect to encouraging consumer purchase

intention and purchase decision vis-à-vis organic food; as such, marketers and policy makers can reference our findings as they craft policies by which to sustainably develop the organic food market. First, our study results reveal that consumer attitude toward the purchase of organic food is obviously motivated by subjective norms and knowledge; thus, marketers and policy makers could leverage these two critical points and launch effective marketing campaigns to disseminate knowledge about (and the benefits of) organic food; such campaigns could enhance consumers' understanding of organic food and thus cultivate positive attitudes concerning its purchase. Additionally, concerning the significance of subjective norms, consumer purchase attitude tends to be impacted by family members, friends, and other people important to the consumer. Marketers could offer considerable discounts that attract consumers and encourage them to try organic food; by leveraging the positive effect of subjective norms, again, marketers could drive the sale of organic food.

Our study findings also show that consumer purchase intention closely relates to PBC, purchase attitude, and food therapy culture. Given this result, marketers should promote convenience sales and work to increase the availability of organic food, with the aim of reducing or removing resource constraints otherwise placed on consumers (e.g., Smith and Paladino 2010). Furthermore, as mentioned, marketers should cultivate consumers' positive attitudes toward the purchase of organic food by appealing to subjective norms and knowledge. More importantly, when developing marketing plans for organic food products, marketers are encouraged to consider food therapy culture as an essential motivating purchase factor, at least in the context of Chinese culture (Liu et al. 2015). By appealing to food therapy culture, marketers can emphasize among Chinese consumers the natural attributes of organic food, and hence encourage them to purchase organic food as part of a daily food therapy/healthcare regimen.

Finally, our study results demonstrate that purchase intention significantly mediates the relationships between each of purchase attitude, PBC, and food therapy culture, and purchase decision; as such, they reveal that the consumer purchase decision tends to be driven by the aforementioned purchase factors via the mediating effect of purchase intention. Understanding this, marketers can help consumers make final purchase decision with regard to organic food by motivating their purchase intention in a variety of ways (i.e., by appealing to purchase attitude, PBC, and food therapy culture).

Study limitations and future directions

While this study makes both theoretical and practical contributions to the literature, one should nonetheless consider its limitations. First, there is the matter of time constraints: We undertook data collection using the cross-sectional method, where data were collected in a specific period. This may give rise to sample bias, as no researcher can access more respondents within a significantly limited period. In the future, researchers could consider adopting a longitudinal method to ensure a representative sample and, to some extent, preclude sample bias.

Second, this study explores only those variables that affect consumer purchase attitude, from the perspectives of subjective norms, revealed information, and

knowledge. There are many alternative variables that can be further explored with respect to consumer purchase attitude, while leveraging other theories or models. Moreover, the current conceptual framework does not extensively consider demographic data (e.g., gender, age, and education level). Accordingly, future research could incorporate demographic information as control variables and further explore their impacts on consumer purchase intention and purchase decision with respect to organic food.

Screenshots of Amos outputs

Screenshot 1: Model fit indices of model 1

Model Fit Summary

CMIN

Model	NP	CMIN	DF	P	CMIN/DF
Default model	56	627.981	244	.000	2.574
Saturated model	300	.000	0		
Independence model	24	5489.332	276	.000	19.889

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.182	.862	.831	.701
Saturated model	.000	1.000		
Independence model	.373	.222	.155	.205

Baseline Comparisons

Model	NFI	RFI	IFI	TLI	CFI
Default model	.886	.871	.927	.917	.926
Saturated model	1.000	1.000	1.000	1.000	1.000
Independence model	.000	.000	.000	.000	.000

Screenshot 2: Model fit indices of model 2

Model Fit Summary

CMIN

Model	NP	CMIN	DF	P	CMIN/DF
Default model	37	203.957	116	.000	1.758
Saturated model	153	.000	0		
Independence model	17	3473.960	136	.000	25.544

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.047	.930	.908	.705
Saturated model	.000	1.000		
Independence model	.267	.379	.301	.337

Baseline Comparisons

Model	NFI	RFI	IFI	TLI	CFI
Default model	.941	.931	.974	.969	.974
Saturated model	1.000	1.000	1.000	1.000	1.000
Independence model	.000	.000	.000	.000	.000

Screenshot 3: Standardized factor loading output of model 1

Standardized Regression Weights: (Group number 1 - Default model)

	Estimate
PA <-- SN	.196
PA <-- RI	-.081
PA <-- K	.253
SN4 <-- SN	.965
SN3 <-- SN	.855
SN2 <-- SN	.880
SN1 <-- SN	.757
RI4 <-- RI	.880
RI3 <-- RI	.685
RI2 <-- RI	.753
RI1 <-- RI	.836
K4 <-- K	.720
K3 <-- K	.757
K2 <-- K	.726
K1 <-- K	.734
PA1 <-- PA	.711
PA2 <-- PA	.959
PA3 <-- PA	.884
PA4 <-- PA	.789
PA5 <-- PA	.845

Screenshot 4: Standardized factor loading output of model 2

	Estimate
PI <--- PA	.184
PI <--- PBC	.703
PI <--- FTC	.198
PD <--- PI	.287
PD <--- PA	-.025
PD <--- PBC	.024
PD <--- FTC	.105
PBC4 <--- PBC	.734
PBC3 <--- PBC	.694
PBC2 <--- PBC	.737
PBC1 <--- PBC	.783
PBC5 <--- PBC	.788
PBC6 <--- PBC	.862
FTC3 <--- FTC	.807
FTC2 <--- FTC	.799
FTC1 <--- FTC	.817
FTC4 <--- FTC	.847
FTC5 <--- FTC	.744
PA3 <--- PA	.884
PA2 <--- PA	.961
PA1 <--- PA	.709
PA4 <--- PA	.787
PA5 <--- PA	.843
PI1 <--- PI	.738
PI2 <--- PI	.793
PI3 <--- PI	.756
PI4 <--- PI	.812
PD1 <--- PD	.904
PD2 <--- PD	.850
PD3 <--- PD	.763
PD4 <--- PD	.906

Formulas for calculations

$$\text{Composite reliability (CR)} = \frac{\sum (\text{Standardized loading})^2}{\sum (\text{Standardized loading})^2 + \sum (ME)}$$

$$\text{Measurement error (ME)} = 1 - (\text{Standardized loading})^2$$

$$\text{Average variance extracted (AVE)} = \frac{\sum (\text{Standardized loading})^2}{\text{Number of indicators}}$$

Abbreviations

AGFI: Adjusted goodness of fit index; AVE: Average variance extracted; CFI: Comparative fit index; CR: Composite reliability; FTC: Food therapy culture; GFI: Goodness of fit index; KNWGE: Knowledge; NFI: Normed fit index; PA: Purchase attitude; PBC: Perceived behavior control; PD: Purchase decision; PI: Purchase intention; RI: Revealed information; RMSEA: Root mean square error of approximation; SN: Subject norms; TPB: Theory of planned behavior

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Authors' contributions

NSJ conducted the conceptual framework design, questionnaire design and data analysis. SL conducted the write-up and data analysis. The authors approved the final manuscript for publication.

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Competing interests

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