



# Consumers' decision-making mechanism differs under the presence of risk, habits, and past behavior for organic fisheries foods

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## Abstract

The intention-behavior gap exposes the pressing demand for more studies to investigate consumers' behavior toward organic fisheries foods in developing contexts owing to the growing demand for these foods. Additionally, while most research exploits heavily the beneficial effects of organic foods, very few probe the potential risk counterpart. The present study, thus, aims to contribute to the existing gap by examining how risk plays out in the provided context. Besides core factors borrowed from the seminal Theory of Planned Behavior, consumers' intention and stated behavior can be explained through the influence of perceived risk, past behavior, and their habits. The Structural Equation Modeling method was utilized to analyze the data of 202 participants from Ho Chi Minh City, Vietnam. Findings revealed that, for consumers with prior organic shopping experience and repetitive buying habits, perceived risk is less likely to render an impact on their intentions to buy. In the absence of habits and past experience, consumers' attitudes and intentions are barricaded by the potential risks perceived. Further details and multiple implications were also discussed.

**Keywords:** Theory of Planned Behavior; organic food; fisheries consumption; risk; habit; past behavior.

**Practical Application:** The research provides insights into how to bridge consumers' intention-behavior gap for organic fisheries foods. Forming a buying habit and delivering excellent service to enhance consumers' experience help to deter potential risks perceived thus inciting the conversion of intention into a real purchase.

## 1 Introduction

Willer et al. (2021) reported that organic food demand in Asia continues to bloom surpass the domestic supply capabilities. While organic aquaculture areas in Vietnam in 2019 account approximately for 57% of the total organic areas (Willer et al., 2021), the majority of the production volume serves mainly the export market rather than the domestic one (Vietnam Association of Seafood Exporters and Producers, 2021). Since Vietnam is market-driven, the mentioned mismatch appears counterintuitive to the incrementing demand for organic fisheries food (OFF) in Vietnam, thus implying the need for more research on the demand side. With the issuance of Decision 885/QĐ-TTg about the sustainable development of organic farming periods 2020-2030, organic aquacultural enterprises are being incentivized towards supporting the underdeveloped domestic market which is overwhelmed by export. The shift of focus to the domestic market is also generally observed in other Asia countries (Willer et al., 2020). While the crucial role of fisheries products in the organic market is inarguably conspicuous, research on consumers' behavior towards OFF remains scant, especially in the emerging economies context. This situation alludes to the need for more research to shed light on the consumption behavior for OFF in a vibrant and developing economy such as Vietnam.

Although in the field of consumer studies, the Theory of Planned Behavior (TPB) (Ajzen, 1991) is genuinely dominant, the role of context-specificity between studies is highlighted to complement the generic state of the TPB. Indeed, Rana & Paul (2017) stated that the organic food buying patterns differ between developed and developing countries. This justifies the necessity for more insights into developing economies. Using TPB as a guiding theory, most studies have focused on the benefit of organic food compared to their conventional alternatives (Hoang et al., 2020; Konuk, 2018; Le-Anh & Nguyen-To, 2020; Pham et al., 2019; Van et al., 2018). Notwithstanding, organic does not equate "risk free"; actually, organic foods may carry a higher risk of microbial contamination than conventional foods (Singh & Verma, 2017) as well as other risks related to financial, availability, and information (Lobb et al., 2007; Singh & Verma, 2017). Observably, very few have investigated the risk side of organic food consumption despite transparent evidence of the predominance of consumers' motivation to avoid mistakes than maximize utility in purchasing. Also, there persists the intention-behavior gap (or the green gap) was reported in studies (Ajzen, 2020; De Koning, Crul et al., 2015; ElHaffar et al., 2020; Scalco et al., 2017; Singh & Verma, 2017). In other words,

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consumer's intentions and overt actions are not converging. Based on mentioned rationales, this study sets out to bridge the intention-behavior gap by investigating consumers' behavior towards OFF in the developing context. More specifically, consumers' risk mentality along with their habitual factors were examined to delve into insights elucidating how the green gap could be mitigated in a specific context. Findings from this study, therefore, are useful to assist relevant stakeholders (e.g., marketers, policymakers) to facilitate the development of the organic fisheries market in other analogous contexts worldwide.

## 2 Literature review and empirical framework

The dominance of the Theory of Planned Behavior (TPB) as a successful guiding model in the field of organic studies was confirmed in past research (ElHaffar et al., 2020; Massey et al., 2018; Scalco et al., 2017). A review about sustainable behaviors conducted by Biasini et al. (2021) even indicated that TPB explained the variance of intention and behavior up to 87% and 81%, respectively. Among TPB's applied studies, factors influencing organic food consumption were contextual across territories, especially between developed and developing countries (Thi Nguyen & Dang, 2022; Rana & Paul, 2017; Wang et al., 2019).

Within TPB's core concepts, the impact of attitude on behavioral intention has been verified in previous studies (Dang & Tran, 2020; Koklic et al., 2019; Menozzi et al., 2021; Thi Nguyen & Dang, 2022) as the strongest factor impacting consumers' intention towards food options (Chu, 2018; Dangi et al., 2020; Hoang et al., 2020; Nguyen et al., 2019; Pham et al., 2019; Tuu et al., 2008). Thus, the following is hypothesized:

H1: Attitude towards OFF positively influences purchasing intention of OFF.

Next, subjective norms (SN) represents an individual's perception of social pressures on one's behavior (Ajzen, 1991). Consumers' intention to shop has been proved to be affected by such social pressures (Al-Swidi et al., 2014; Dang & Tran, 2020, 2021; Xing et al., 2022). Also, prior analyses have revealed such identical impacts on consumers' attitude (Chu, 2018; Tarkiainen & Sundqvist, 2005). Hence, it is reasonable to hypothesize the following:

H2: SN significantly and positively influences the intention of consuming OFF.

H3: SN significantly and positively influences the attitude towards purchasing OFF.

The perceived behavioral control (PBC) demonstrates an individual perception of how facile or arduous it is to perform the behavior in question (Ajzen, 2020). This concept initially played a role in moderating the impact of attitude and subjective norms on intention (Ajzen, 1985), yet later studies illustrated the direct impact of perceived behavior control on intention and behavior (Ajzen, 2020; Al-Swidi et al., 2014; Dang & Tran, 2020; Tuu et al., 2008). In this vein, the following proposition is established:

H4: PBC significantly and positively influences the purchase intention of OFF.

H5: PBC influences the behavior of OFF consumption.

In general, when considering discrete food choices, attitudes were found to have the strongest association with intention, followed by PBC and subjective norms, while the behavior was mostly affected by intention and, to a lesser extent, by PBC (Huang et al., 2020; Menozzi et al., 2021; Rana & Paul, 2017; Xing et al., 2022). Based on these rationales, this study postulates that:

H6: Intention significantly and positively influences OFF consumption behavior

Perceived risk has been a pivotal concept in a spectrum of sustainable food studies worldwide, (Pandey et al., 2020; Wang & Tsai, 2014). Perceived risk is an expectation of a probably potential loss and plays a prime role in determining an individual's intention and is likely to negatively influence attitudes toward a behavior (Chen, 2017; Dang & Dam, 2022). In the consumption context, Hussain et al. (2017) defined perceived risk as a subjective perception regarding the uncertainty and negative consequences of the purchase of a product, and Wu et al. (2011) reported that in these situations, consumers often decreased purchase intentions. Furthermore, the negative effect of perceived risk on attitude also was widely adopted (Choi et al., 2013; Lobb et al., 2007; Nguyen et al., 2019). Thus, the following additional hypothesis were formulated:

H7: Perceived risk has a negative effect on the attitude in OFF consumption

H8: Perceived risk has a negative effect on the intention in OFF consumption

Past behavior was exposed to significantly improve the prediction of later behavior (Huang et al., 2020; Koklic et al., 2019; Menozzi et al., 2021). Kidwell & Jewell (2008) found that past behavior is a central determinant of intention to perform various consumption behavior. Fishbein & Ajzen (2010) contended that the frequency of past behavior explains the significant variance of intention and is able to account for future behavior after controlling for intention and PBC. In a recent research using meta-analytic structural equation modeling, Hagger et al. (2018) reported that in the context of social cognitive models, the inclusion of past behavior as a predictor of behavior alongside the theory determined constructs has four major effects: (a) past behavior predicts behavior; (b) it predicts the other social cognitive variables in the model, including intention; (c) it attenuates the effects of the other social cognitive variables on intentions and behavior; and (d) it leads to a significant increase in the amount of variance in behavior accounted for by the model. In addition, since the uncertainty regarding organic food product attributes increases perceived risk (Wang et al., 2019), and providing experience to the consumers by free samples is a potential solution (Konuk, 2018), it is apparent that exists a relationship between perceived risk and past behavior. In accordance with these arguments, the next hypotheses recommended were:

H9: Past behavior has an impact on the perceived risk in OFF.

H10: Past behavior would significantly predict intention to buy OFF

H11: Past behavior would significantly predict current behavior to buy OFF

H12: Past behavior would moderate the relationship between intention and current behavior to buy OFF

Despite the similarities, past behavior cannot be assumed to be a measure of habit (Ajzen, 1991) since frequently performing a behavior does not necessarily result in forming a habit (Verplanken, 2006). Continuing this view, Cherchi et al. (2012) argued that past behavior is only an indicator of habitual behavior, while the true process behind the formation of habitual behavior is latent. Habit is defined as automatic or unconscious responses to behave to future behaviors and as the learned consequences of repetition (Honkanen et al., 2005; Tuu, 2015). The evidence in previous studies reported TPB lacked predictive power for less-deliberative-processing decisions, habitual behaviors, or those behaviors that were repeated over time (Klößner, 2013). Thus, some researchers recommended that habit should be entered into the TPB as an additional predictor of behavior and as a moderator of the intention–behavior-link for behaviors that are performed frequently, which tends to increase the proportion of variance explained for habitual behaviors (Huang et al., 2020; Verbeke & Vackier, 2005). The studies of concurrent habits and intentions tend to present high habit-intention correlations (Gardner et al., 2015). Extant studies have continued to endorse the essential role of habits on the behavior at play (Dang & Tran, 2020; Tuu, 2015). Some identified it as the most key predictor of behavior (Russell et al., 2017) and intention (Bell & Ulhas, 2020). Habit was confirmed to moderate the association between intention and behavior (de Bruijn et al., 2012; Gardner et al., 2012; Menozzi et al., 2021). Given these arguments, the following hypotheses were formulated:

H13: Habit will significantly predict intention to buy OFF.

H14: Habit will significantly predict current behavior to buy OFF.

H15: Habit will moderate the relationship between intention and current behavior to buy OFF.

### 3 Materials and methods

#### 3.1 Data collection and sample

The convenient sampling method was employed to collect data through face-to-face interviews using a structured questionnaire in May 2021. The respondents participated in the study voluntarily with their personal information not collected and received no monetary perk. Data were collected from the citizens living and purchasing OFF in major supermarkets in Ho Chi Minh City.

According to Hair et al. (2017), the PLS-SEM method accepted a (minimum) sample size of ten times the maximum

number of arrows pointing at a construct (six of the arrows pointing at OFF purchasing intention) in a reflective model. G\*Power program (<http://www.gpower.hhu.de>) was also utilized to calculate the sample size as suggested by Hair et al. (2017) and found a sample size of 148 for the same calculation with a statistical power of 99% and a level of 0.01. Thus, a sample size of 202 was appropriate in this study.

Overall, the study sample consisted of 202 participants (86 male and 116 female) from Ho Chi Minh City. The main sample characteristics were reported in Table 1. In general, most participants have consumed OFF for a long time (70% utilized OFF over 6 months). The consumption frequency of at least 2 times a month occupied 67% even though this is not popular in Vietnam.

#### 3.2 Measures

The measurement items were referenced from related previous studies such as (Al-Swidi et al., 2014; Dangi et al., 2020; Honkanen et al., 2005; Mora & Menozzi, 2008; Singh & Verma, 2017; Stone & Grønhaug, 1993; Taylor & Todd, 1995; Verbeke & Vackier, 2005). Each construct was measured by the 7-point Likert scale (see Appendix A)

The questionnaire was first developed in English and then translated into Vietnamese. The back-translation method was utilized to avoid semantic discrepancies (e.g., translation errors, different interpretations, etc.). The questionnaire was designed in two main sections: Section A delineates the research constructs in the study model and section B comprised of questions collecting the characteristics of the participants. Before data collection, a pilot study was conducted with 20 randomly selected consumers and consulted with two organic food business professionals to further identify and correct existing errors. The completed questionnaires were passed on to four student enumerators to collect data at local supermarkets and shopping centers. The screening question to confirm an organic consumer was

**Table 1.** Descriptive statistics of the study sample.

Variables	Categories	Frequency	Percentage
Gender	Male	86	43
	Female	116	57
Education	High school	19	9
	College/University	115	57
	Postgraduate	68	34
Consumption Frequency	<1 time/month	33	16
	1 time/month	33	16
	2-3 times/month	67	33
	1-2 times/week	42	21
	3-4 times/week	17	8
	5-6 times/week	6	3
Consumption Duration	every day or more	4	2
	< 3 months	29	14
	3-6 months	30	15
	7-12 months	23	11
	over 1 year	120	59

uniformly carried out before collecting data to make sure only OFF buyers can enter the survey.

### 3.3 Data analysis

This study employed structural equation modeling (SEM) using the SmartPLS software version 3.3 to investigate the proposed model and hypotheses. Partial Least Square (PLS) is a method of analyzing SEM models without the assumption of normally distributed data (Hair et al., 2017).

After the removal of PBC1 (weak factor loading of 0.285), Table 2 presented that CA of most items was above 0.6, excepted for past behavior but with acceptable CR ranging between 0.77 and 0.91 denoting the existence of good reliability (Hair et al., 2017). The convergence value is confirmed when AVE is 0.5 or higher (Fornell & Larcker, 1981). Good convergence values were established with all AVEs larger than 0.5.

Ringle et al. (2015) proposed the utilization of both Fornell-Larcker's criteria and the Heterotrait-Monotrait ratio (HTMT) to determine the discriminant validity of latent variables. The discriminant validity of two constructs was asserted with HTMT ratio smaller than 1 (Garson, 2016) and all diagonal values (square root of AVEs) were higher than other values in

the corresponding columns (cross-loadings) (Fornell & Larcker, 1981). Such conditions were satisfied (see Table 3 and Table 4).

Other statistical criteria also were abode by the prerequisites, as follows:

Variance inflation factors (VIF) of latent variables (Table 5) are smaller than 5 (Hair et al., 2017) suggesting the absence of multicollinearity.

Additionally, Table 5 includes the  $f^2$  effect sizes of constructs that are utilized to analyze the relevance of constructs in explaining selected endogenous constructs (Hair et al., 2017). Thresholds of 0.02, 0.15, and 0.35 correspond to small, medium, and large impacts.

In **model 1**, attitude was highly impacted by subjective norms ( $f^2 = 0.508$ ) and slightly impacted by perceived risks ( $f^2 = 0.038$ ). Consumers' PBC ( $f^2 = 0.525$ ) rendered a much stronger impact on their behaviors towards OFF than that of intention ( $f^2 = 0.124$ ). Intention was mainly influenced by attitude ( $f^2=0.194$ ), and to a lesser influence of SN ( $f^2=0.054$ ), PBC ( $f^2=0.021$ ), and perceived risk ( $f^2=0.053$ ).

The results in **model 2** reported the significantly high impact of SN on attitude ( $f^2=0.510$ ), habit on behavior ( $f^2=0.395$ ), and medium impact of attitude on intention ( $f^2=0.156$ ). The impact

**Table 2.** Descriptive analysis: outer loading, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE).

Constructs	Items	Mean	Model 1					Model 2				
			Loading	CA	CR	AVE	Q <sup>2</sup>	Loading	CA	CR	AVE	Q <sup>2</sup>
<b>Attitude</b>	AT1	4.975	0.678	0.840	0.893	0.678	0.228	0.678	0.84	0.893	0.678	0.229
	AT2	5.371	0.870					0.871				
	AT3	5.564	0.877					0.877				
	AT4	5.347	0.851					0.851				
<b>Subjective Norms</b>	SN1	4.743	0.670	0.827	0.879	0.595		0.669	0.827	0.879	0.595	
	SN2	5.277	0.797					0.797				
	SN3	4.876	0.892					0.892				
	SN4	4.569	0.825					0.825				
	SN5	5.178	0.644					0.644				
<b>Perceived Behavioral Control<sup>1</sup></b>	PBC2	4.178	0.815	0.849	0.909	0.770		0.816	0.849	0.909	0.77	
	PBC3	3.787	0.916					0.916				
	PBC4	3.748	0.897					0.897				
<b>Intention</b>	INT1	5.663	0.855	0.845	0.906	0.763	0.299	0.851	0.845	0.906	0.763	0.322
	INT2	5.426	0.893					0.894				
	INT3	5.926	0.872					0.875				
<b>Stated Buying Behavior</b>	BE1	4.579	0.854	0.849	0.909	0.769	0.307	0.861	0.849	0.909	0.769	0.486
	BE2	4.45	0.917					0.911				
	BE3	4.584	0.858					0.858				
<b>Perceived Risk</b>	PR1	3.450	0.558	0.678	0.798	0.577		0.575	0.678	0.817	0.6	0.018
	PR2	2.317	0.892					0.885				
	PR3	3.218	0.789					0.792				
<b>Past Behavior</b>	PBE1	5.391						0.815	0.402	0.77	0.626	
	PBE2	5.04						0.765				
<b>Habit</b>	HA1	4.267						0.823	0.811	0.871	0.63	
	HA2	3.812						0.746				
	HA3	2.733						0.746				
	HA4	3.515						0.854				

Note: CA – Cronbach Alpha; CR – Composite Reliability; AVE – Average Variance Extracted; Q<sup>2</sup> – Q<sup>2</sup> value. <sup>1</sup>PBC1 was removed due to weak factor loading of 0.285.

**Table 3.** Discriminant validity of Model 1

Method	Constructs	ATT	BE	IN	PBC	PR	SN
<b>Fornell-Larcker Criterion</b>	ATT	0.823					
	BE	0.236	0.877				
	INT	0.575	0.317	0.874			
	PBC	-0.060	0.580	0.082	0.877		
	PR	-0.156	-0.020	-0.233	0.133	0.759	
	SN	0.573	0.230	0.474	0.076	0.002	0.771
<b>Heterotrait-Monotrait Ratio (HTMT)</b>	ATT						
	BE	0.289					
	IN	0.670	0.375				
	PBC	0.144	0.678	0.227			
	PR	0.198	0.121	0.276	0.293		
	SN	0.659	0.284	0.561	0.171	0.193	

**Table 4.** Discriminant validity of Model 2.

Method	Constructs	ATT	BE	HA	IN	PBE	PBC	PR	SN
<b>Fornell-Larcker Criterion</b>	ATT	0.823							
	BE	0.238	0.877						
	HA	0.245	0.773	0.794					
	IN	0.575	0.319	0.242	0.874				
	PBE	0.385	0.521	0.442	0.488	0.791			
	PBC	-0.060	0.578	0.693	0.080	0.241	0.877		
	PR	-0.154	-0.023	0.098	-0.232	-0.189	0.127	0.762	
	SN	0.573	0.232	0.250	0.476	0.450	0.076	0.006	0.772
<b>Heterotrait-Monotrait Ratio (HTMT)</b>	ATT								
	BE	0.289							
	HA	0.288	0.872						
	IN	0.670	0.375	0.300					
	PBE	0.663	0.902	0.810	0.820				
	PBC	0.144	0.678	0.849	0.227	0.551			
	PR	0.198	0.121	0.246	0.276	0.325	0.293		
	SN	0.659	0.284	0.295	0.561	0.789	0.171	0.193	

**Table 5.** Variance inflation factors (VIF) and effect size  $f^2$  of constructs in the models.

Models	Constructs	ATT		BE		IN		PR	
		VIF	$f^2$	VIF	$f^2$	VIF	$f^2$	VIF	$f^2$
<b>Model 1</b>	ATT					1.563	0.194**		
	SN	1.000	0.508***			1.532	0.054*		
	PBC			1.007	0.525***	1.035	0.021*		
	IN			1.007	0.124*				
	BE								
<b>Model 2</b>	PR	1.000	0.038*			1.051	0.053*		
	ATT					1.746	0.156**		
	SN	1.000	0.510***			1.693	0.023*		
	PBC			2.064	0.017	2.164	0.005		
	IN			1.360	0.010				
	BE								
	PR	1.000	0.038*			1.129	0.028*		
	PBE			1.573	0.074*	1.599	0.067*	1.000	0.037*
	HA			2.390	0.395***	2.526	0.001		
<b>Moderating effect of PBE</b>			1.970	0.001					
<b>Moderating effect of HA</b>			2.071	0.003					

0.2 < VIF < 5: multicollinearity does not occur;  $f^2 < 0.02$ : extremely small or no effect. \*  $0.02 \leq f^2 < 0.15$ : small effect. \*\*  $0.15 \leq f^2 < 0.35$ : medium effect. \*\*\*  $f^2 \geq 0.35$ : high effect (Cohen, 1988).

of SN on intention was little ( $f^2=0.023$ ). Perceived risk did not significantly influence consumers' attitude ( $f^2=0.038$ ) and intention ( $f^2=0.028$ ). Similarly, the effect of past behavior on perceived risk ( $f^2 = 0.037$ ), intention ( $f^2 = 0.067$ ), and behavior ( $f^2= 0.074$ ) remained low. Other relationships appeared statistically insignificant.

The predictive relevance of endogenous constructs in a reflective model is reflected by  $Q^2$  values.  $Q^2$  value greater than zero indicates the predictive relevance of the path model for a selected reflective endogenous construct (Hair et al., 2017). In our models,  $Q^2$  values are greater than zero including perceived risk (0.018), attitude (0.228 - model 1 and 0.229 - model 2), intention (0.299 - model 1 and 0.322 - model 2) and stated buying behavior (0.228 - model 1 and 0.229 - model 2) (Table 2). This conveyed that the two models predicted well mentioned constructs.

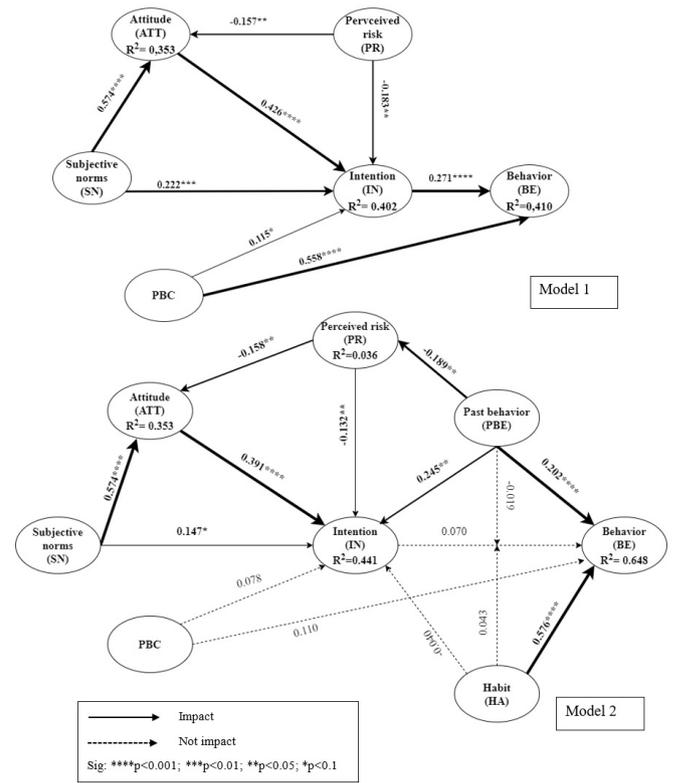
### 4 Results

Figure 1 illustrated the experimental model using the bootstrapping procedure. In model 1, the presented structure was able to explain 40.2% and 41% variance of OFF buying intention and behavior, respectively. Between the two models, it is worth noting that the addition of past behavior and habit remarkably improved the predictive ability of intention and behavior towards OFF purchase. Specifically, model 2 was able to explain 44.1% of the behavioral intention and 64.8% of the actual behavior, corresponding to an increase in the prediction power of 3.9% and 23.8%, respectively. While  $R^2$  of attitude (0.353) remained unchanged between both models, model 2 suggested that past behavior can only explain a completely small variation of how risk is perceived.

Table 6 detailed the results of the hypotheses testing. **Model 1** supported H1, H2, H3, H5, H6, H7, H8. In other words, consumers' intention to buy OFF in Vietnam was governed by attitude, subjective norms and perceived risk, but not PBC. However, PBC predicted consumers' actual purchase decision more substantial than their intention to buy. While consumers' attitude was strongly determined by SN, perceived risk, to a less

extent, negatively affected both consumers' attitude ( $\beta = -0.157$ ) and intention ( $\beta = -0.183$ ).

In **model 2**, the inclusion of past behavior and habit altered the relation of constructs in Model 1, leading to a discrepancy in the hypotheses' acceptance (Table 6). While the conclusions for H1, H3, H7 and H8 were held steady, hypotheses H4, H5 and H6 ceased to be supported; PBC and intention, otherwise, were no longer significant in predicting behavior; also, the



**Figure 1.** The relationship of the constructs in the research model. Model 1: perceived risk was added in TPB; Model 2: past behavior and habit had continued to be added.

**Table 6.** Results of the hypothesis investigation

Hypothesis	Effect	Model 1			Model 2		
		$\beta$	<i>p</i> -value	Support	$\beta$	<i>p</i> -value	Support
H1	ATT → IN	0.426	0.000	Yes	0.391	0.000	Yes
H2	SN → IN	0.222	0.003	Yes	0.147	0.078	Yes
H3	SN → ATT	0.574	0.000	Yes	0.574	0.000	Yes
H4	PBC → IN	0.115	0.056	Yes	0.078	0.399	No
H5	PBC → BE	0.558	0.000	Yes	0.110	0.115	No
H6	IN → BE	0.271	0.000	Yes	0.070	0.157	No
H7	PR → ATT	-0.157	0.031	Yes	-0.158	0.034	Yes
H8	PR → IN	-0.183	0.001	Yes	-0.132	0.036	Yes
H9	PBE → PR				-0.189	0.023	Yes
H10	PBE → IN				0.245	0.016	Yes
H11	PBE → BE				0.202	0.000	Yes
H12	Moderating effect of PBE				-0.019	0.757	No
H13	HA → IN				-0.040	0.694	No
H14	HA → BE				0.576	0.000	Yes
H15	Moderating effect of HA				0.043	0.438	No

association between intention and behavior vanished. SN remained the predictor of intention, however, its significant level was tremendously reduced. Past behavior held a negative impact on perceived risk ( $\beta = -0.189$ ) and a positive effect on intention ( $\beta = 0.245$ ) and behavior ( $\beta = 0.202$ ). Thus, H9, H10, and H11 were supported. Model 2 only supported the direct impact of habit (H14) on consumers' actual behavior ( $\beta = 0.576$ ), whereas H12, 13, and 15 were rejected. Hence, consumers' habit, in this case, did not contribute to their intention to buy, nor moderate the relationship between intention and purchase behavior.

## 5 Discussion

The purpose of this study is to explore the determinants of OFF consumption in the case of perceived risk embedded in two proposed schemes - with(out) past behavior and habit. The results revealed the negative effects of perceived risk on both attitude and intention of Vietnamese consumers in OFF purchase (both in Model 1 and Model 2). Vietnamese consumers still sensed risks of a safe food choice – organic fisheries food, which subsequently induce a negative attitude and reduce purchase intention. Indeed, consumers' food selection is motivated not only by benefit seeking but also by risk avoidance (Dang et al., 2019). Thus, reducing perceived risk in organic food buying is a recommended strategy for increasing organic food consumption (Wang & Tsai, 2014). Several measures can be considered to bolster consumers' confidence including money-back guarantee offers, free sample offers (Konuk, 2018), and educating consumers on how to identify genuine organic products through labels and certifications which are helpful for consumers to evaluate the product quality (Hamzaoui-Essoussi et al., 2013). Furthermore, the positive information provision from social media and experts could mitigate consumers' risk perception (Pandey & Khare, 2015; Samoggia et al., 2019). However, the perceived risk does not have much influence on Vietnamese consumers' intention in the case of OFF. Indeed, when the risk was below a certain threshold, its perception was not strong adequate to barricade intention. Despite the suppressed impact of risk along the inclusion of past behavior and habit, Vietnamese consumers perceived miniature risks regarding OFF (the mean of PR1, PR2 and PR3 were 3.45, 2.317 and 3.218, respectively), therefore, hardly significantly able to sway their intention towards purchasing.

Besides perceived risk, model 1 witnessed the most vital role of attitude in shaping consumers' intention to consume OFF in Vietnam. This was supported by various organic studies worldwide including China (Chu, 2018; Xing et al., 2022), India (Dangi et al., 2020) and also Vietnam (Hoang et al., 2020; Thi Nguyen & Dang, 2022; Nguyen et al., 2019; Pham et al., 2019). To manipulate consumers' attitude, it is necessary to have them surrounded by others whose thoughts are critical to them, in the name of SN. Indeed, Tarkiainen & Sundqvist (2005) agreed that the people who think positively about organic food influence the attitude formation of others. This was also in line with a past study about new foods in India that highlighted the persuasion power of the people important to someone on their decision to purchase novel food (Choo et al., 2004), which OFF can be considered as a novel food in Vietnam. Among the items that measure subjective norms, consumers prefer to listen to experts

such as doctors and nutritionists as well as take into reference similar consumption patterns of people important to them (the mean of SN2 and SN5 was 5.277 and 5.178, respectively). To augment the influence of peers, a potential resort could be to organize events such as "Organic Action Days" (Scalco et al., 2017); this activity fortifies consumers' beliefs regarding organic food and shapes their attitudes as well as might foster the outspread of positive social norms towards the consumption of organic food products; and consequently, could promote the diffusion of green food (Scalco et al., 2017). In previous studies, several authors reported the repression in the power of SN and attitude in the case of a strong PBC and vice versa (Dang & Tran, 2021; Hoang et al., 2020; Nguyen et al., 2019; Tuu, 2015). This study found a consistent result. Despite manifesting a meager effect on intention, PBC was the strongest predictor for actual buying behavior. In this study, PBC related to consumers' awareness of whether they have adequate capacity and resources to make a purchase or not. Hence, this finding led to the conclusion that consumers will not actually buy OFF even though their purchase intention has been reinforced by a good attitude and their peers as well as a low perceived risk due to the deficiency of resources and OFF's availability. This was also analogous to the finding of Massey et al. (2018) reporting that when making a purchase decision consumers highly depend on price and availability.

The intention-behavior gap remained a problem in organic studies (De Koning et al., 2015; ElHaffar et al., 2020; Thi Nguyen & Dang, 2022; Scalco et al., 2017). While PBC appeared to be part of the answer to the problem (model 1), PBC's data suggested consumers' need for more resources, knowledge, and ability to buy OFF (the mean score of PBC4 was 3.748), and guidance for the right choice (the mean score of PBC3 was 3.787) (see Table 2). The root causes pointed to high price, unavailability, deficiency of information about the organic market, and inconvenience to buy (Dangi et al., 2020; De Koning et al., 2015; Thi Nguyen & Dang, 2022; Pham et al., 2019; Tavares et al., 2021). For that reason, addressing mentioned barriers could be a good starting point to assist consumers to regain their self-control.

Model 2 with the consideration of past behavior and habit has offered essential insights. The inclusion of past behavior and habit weakened the impacts of SN, perceived risk, and attitude on intention, and eradicated the association between PBC and intention and behavior. This implied that consumers shopping for OFF, once acquired adequate experience which could contribute to molding a habit, follow an unconscious and automatic/repetitive buying pattern rather than intentional. Apparently, the inclusion of past behavior and habit enhanced the predictive power of the model significantly for both intention and most importantly behavior. This certainly added value to bridge the intention-behavior gap (or the green gap). Undoubtedly, elements of automaticity and past behavior have been well-acknowledged in TPB literature (Ajzen, 1991, 2020; Sommer, 2011). Our findings were consistent with past and recent studies (Dean et al., 2012; Menozzi et al., 2021). The results of this paper justified the transfiguration process of a conscious cognitive action through the repetitive performance of a behavior in question into the state of automaticity with the presence of specific cues (Brickell et al., 2006; Dean et al., 2012). This again concluded that when attitudes and intention, or cumulatively

planned behaviors, were stored in memory, the fetching process can be done without much cognitive effort. Since food choice is a repeated behavior, habits ensure the frequently repeated behavior is well-maintained. Thus, when purchasing OFF recurs routinely, buyers may apply a limited cognitive process, which overshadows the strength of TPB constructs in decision-making; alternatively, habits, in such cases, emerge as the key driver of the behavior in action (Sommer, 2011).

The second model might be a superior fit to explain the behavior of the studied sample as 59% of respondents said they have utilized OFF for over a year and 62% have consumed OFF at least one time per week (Table 1). Despite the burgeoning demand for OFF in Vietnam, they are still novel in domestic food categories. Thus, altering the habit of shopping for conventional fisheries food for organic ones remain a challenging quest. Old habits are ordinarily burdensome to convert but it may be more advantageous to try and encourage the formation of new favorable habits to obtain the desired behavior (Bell & Ulhas, 2020; Dang & Dam, 2022; Dang et al., 2019).

## 6 Implications

### 6.1 Theoretical implications

This study contributes to explaining the green gap nested in the TPB. Model 2 provided evidence to highlight the existence of the green gap in the presence of past behaviors and habits. Experienced consumers with a habit of buying organic foods are likely to make decisions at the subconscious level bypassing their intentions to buy. The role of intention in such a case is futile. Also, by adding more constructs to the model, we illustrated that studied constructs interact with one another in the model to reflect a specific pattern of thinking or decision-making. Since most studies investigate a sole model, having all pivotal constructs in a specific context could propound interesting and novel results. For example, the direct impacts of PBC in the model were repealed which suggested its trivial role when the behaviors need not be planned, and other constructs might have captured its meaning already.

### 6.2 Practical implications

Several implications for the diffusion of OFF could be considered. The uniqueness of this study was nested in a way that it could dissect consumers into two genuine categories of new and existing consumers of related products. For those that are new to organic food, particularly OFF, marketers could incite their intention to buy by lowering the risk perception of OFF. Because risks were found to associate with perceived food quality, service quality, price fairness, and deficiency of knowledge (Pandey et al., 2020), marketing campaigns should equip consumers with knowledge regarding the true nature of OFF, the quality in accordance with a reasonable price. Also, the spill-over effects of an effective campaign could create a domino impact on those that are surrounded by people who value OFF, more importantly, the role of doctors and nutritionists as well as crucial peers is critical in spreading the message of the advantages and quality of OFF. Consumers with adequate resources and provided knowledge to gain behavioral control

shall form their positive intention and subsequently their actual purchase. For existing consumers, there persists the need to perpetuate their habits of buying and to continue to elevate their positive experience with OFF. Policy-makers could promote the availability or spread of domestic OFF through reducing taxes and facilitating domestic circulation. Alongside policy intervention, marketers of OFF could reinforce consumers' habit by maintaining a steady supply, proceeding with reminding instore messages/images about the benefits of OFF.

## 7 Limitations and future research

Every research is not without limitations included this study. First, all the data in the analysis were limited to respondents living in Ho Chi Minh City owing to time and monetary constraints as well as the government's social distancing policy due to the COVID-19 pandemic. The generalizability of the model is obviously impaired and hardly represents the thinking pattern of all Vietnamese. Even if the cross-sectional design has several advantages such as being more feasible and less resource-intensive as compared to the longitudinal design (Biasini et al., 2021), it is restricted in its nature of acquiring only self-report data rather than the actual behavior that could be collected through experiments or on-site observations. This constitutes the second limitation of the study which could have deflated the predictive power of the model. Third, focusing only on OFF consumers, this study is useful in identifying crucial factors driving buying behavior, however, could not provide an explication as to why others do not utilize OFF. We, therefore, call for more future research to dig deeper to delve into insights to clarify this issue.

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**Appendix A.** Constructs with measurement items and references.

Constructs	Items	Sources
Perceived risk (PR)	<ol style="list-style-type: none"> <li>1. Overall, the thought of buying OFF cause me to be concerned with experiencing some kind of loss if I went ahead with the purchase</li> <li>2. All things considered, I think would be making a mistake if I bought OFF</li> <li>3. When all is said and done, I really feel that the purchase of OFF poses problems for me that I just don't need.</li> </ol>	(Stone & Grønhaug, 1993)
Attitude (ATT)	Buying OFF is an idea that (is): <ol style="list-style-type: none"> <li>1. Unpleasant/pleasant.</li> <li>2. I dislike/like</li> <li>3. Bad/good</li> <li>4. Foolish/wise</li> </ol>	(Taylor & Todd, 1995)
Subjective norms (SN)	I would buy OFF because: <ul style="list-style-type: none"> <li>... family, partner, and friends approve</li> <li>... doctors and nutritionists are in favor</li> <li>... media are in favor</li> <li>... food industry and food supermarkets promote it</li> <li>... people important to me buy this type of food</li> </ul>	(Mora & Menozzi, 2008)
Perceived behavioral control (PBC)	Whether or not I consume OFF is completely up to me. OFF is easily available to me. I can consume OFF without help. I have the resources, the knowledge and the ability to consume OFF	(Verbeke & Vackier, 2005)
Habit (HA)	Buying OFF is something: <ul style="list-style-type: none"> <li>...I do frequently</li> <li>... I do without having to consciously remember</li> <li>... I feel weird if I don't do it</li> <li>... I don't have to think about doing it</li> </ul>	(Honkanen et al., 2005)
Past behavior (PBE)	In the past month, I have purchased OFF regularly for consumption My experience of buying OFF regularly for consumption in the past has been pleasant	(Dangi et al., 2020)
Intention (IN)	I am willing to buy OFF in the future I am willing to buy OFF regularly I would also recommend others to buy OFF	(Al-Swidi et al., 2014)
Behavior (BE)	I have been a regular buyer of organic I still buy OFF even though conventional alternatives are on sale I never mind paying premium price for organic products	(Singh & Verma, 2017)