

Predictors of the Intention to Purchase Organic Food in the Brazilian Context

Gabriel Horn Iwaya¹, Andrea Valéria Steil²,
Luis Felipe Dias Lopes³, Roberto Moraes Cruz⁴

¹ <http://orcid.org/0000-0002-1075-9294> / Universidade Federal de Santa Catarina (UFSC), Brasil

² <http://orcid.org/0000-0001-7853-6532> / Universidade Federal de Santa Catarina (UFSC), Brasil

³ <http://orcid.org/0000-0002-2438-0226> / Universidade Federal de Santa Maria (UFSM), Brasil

⁴ <http://orcid.org/0000-0003-4671-3498> / Universidade Federal de Santa Catarina (UFSC), Brasil

Abstract

This study used an extended model from the Theory of Planned Behavior (TPB) in order to explain the intention to purchase organic food (IPOF). In addition to the three TPB constructs (attitudes, subjective norms and perceived behavioral control), the following were included in the model: positive moral norms, negative moral norms and descriptive norms. The adequacy of the model was assessed via structural equation modeling. This survey study used online data collection and non-probabilistic sampling. Participants were 705 Brazilian consumers, over 18 years of age, responsible or partially responsible for the food purchases of their homes. In order of path coefficient size, perceived behavioral control, attitudes, negative moral norms, subjective norms and descriptive norms were predictors of the IPOF. The positive moral norms had no relevant impact as predictor of the IPOF. In the discussions, theoretical and practical implications, limitations of the study, and possibilities for future studies are presented.

Keywords: intention, organic food, attitudes, consumer behavior, structural equation modeling.

Preditores da Intenção de Compra de Alimentos Orgânicos no Contexto Brasileiro

Resumo

Esse artigo utiliza um modelo estendido da Teoria do Comportamento Planejado (TCP) com o objetivo de explicar a intenção de compra de alimentos orgânicos (ICAO). Além dos três construtos da TCP (atitudes, normas subjetivas e controle comportamental percebido), foram incluídos no modelo: normas morais positivas, normas morais negativas e normas descritivas. A adequação do modelo foi avaliada por meio de modelagem de equações estruturais. A pesquisa utilizou o delineamento de levantamento com coleta de dados online e amostragem não-probabilística. Participaram 705 consumidores brasileiros, maiores de 18 anos, responsáveis ou parcialmente responsáveis pelas compras de alimentos em suas residências. Em ordem de tamanho dos coeficientes de caminho, controle comportamental percebido, atitudes, normas morais negativas, normas subjetivas e normas descritivas são preditores da ICAO. As normas morais positivas não demonstraram impacto como preditora da ICAO. Nas discussões, são apresentadas as implicações teóricas e práticas, limitações da pesquisa e possibilidades de estudos futuros.

Palavras-chave: intenção, alimentos orgânicos, atitudes, comportamento do consumidor, modelagem de equações estruturais.

Predictores de la Intención de Compra de Alimentos Orgánicos en el Contexto Brasileño

Resumen

Este artículo utiliza un modelo extendido de la Teoría del Comportamiento Planificado (TCP) con el objetivo de explicar la intención de compra de alimentos orgánicos (ICAO). Además de los tres constructos de TCP (actitudes, normas subjetivas y control comportamental percibido) fueron incluidos en el modelo: normas morales positivas, normas morales negativas y normas descriptivas. La investigación utilizó el delineamiento de levantamiento con recolección de datos online e muestreo no probabilístico. Participaron 705 consumidores brasileños, mayores de 18 años, responsables o parcialmente responsables de la compra de alimentos en sus hogares. En orden de tamaño de los coeficientes de camino, control comportamental percibido, actitudes, normas morales negativas, normas subjetivas y normas descriptivas son predictores de la ICAO. Las normas morales positivas no demostraron impacto como predictor de la ICAO. En las discusiones, se presentan implicaciones teóricas y prácticas, limitaciones de la investigación y las posibilidades de estudios futuros.

Palabras clave: intención, alimentos orgánicos, actitudes, comportamiento del consumidor, modelado de ecuaciones estructurales.

Changes in consumer behavior patterns over the past few decades have leveraged the growth of alternative production sectors, particularly the organic food sector (Willer, Schlatter, Trávníček, Kemper, & Lernoud, 2020). The growing demand for organic food has led the sector's global sales to achieve consecutive records over the past few years, reaching the mark of US\$100 billion in sales in the year 2018. Recent data indicate that the sector moves a world production chain of approximately 2.8 million producers, with around 70 million hectares of agricultural land allocated to the production of organic food (Willer et al., 2020). This scenario, associated with important changes in behavioral patterns, raises questions and highlights new academic challenges. Researchers have started studying the psychological factors involved in decision-making processes related to sustainable consumption. Heterogeneous theoretical perspectives have been developed in order to identify the main predictive factors that influence the process of the consumption of organic foods (Massey, O'cass, & Otahal, 2018; Diez-Martin, Blanco-Gonzalez, & Prado-Roman, 2019).

Among the most used theoretical models, the Theory of Planned Behavior (TPB), proposed by Ajzen (1991) (Joshi & Rahman, 2015; Liobikienė & Bernatienė, 2017) stands out. Based on a cognitive perspective, the TPB is a theoretical model that explains the predictive factors of planned behavior. Planned behavior is any behavior in which the decision to perform it is deliberate and conscious. Recent systematic reviews present evidence of the robustness of the TPB for predicting the purchasing behavior of organic foods and products of sustainable origin (Scalco, Noventa, Sartori, & Ceschi, 2017; Han & Stoel, 2017).

For the TPB, all planned behavior is preceded by the formation of a behavioral intention. The behavioral intention is defined as the deliberate and conscious decision of the individual to perform a behavior and the degree of effort that the individual plans to use for this purpose. The behavioral intention has three predictors: attitudes (ATT), subjective norms (SN) and perceived behavioral control (PBC) (Ajzen, 2008; Ajzen & Kruglanski, 2019).

Studies that investigate the formation of the intention to purchase organic food (IPOF) are carried out to: a) test the applicability of the theoretical model of the TPB; b) propose the addition of new constructs to this theoretical model; and c) verify the effect size that each construct has as a predictor of the IPOF. The practice of including additional constructs in the TPB model is encouraged by Ajzen (1991), aiming to verify whether the addition of new constructs improves the predictive power of the model.

In a recent systematic review, Iwaya and Steil (2019) found that the positive moral norm (PMN), negative moral norm (NMN) and descriptive norm (DN) constructs were the ones that most increased the explained variance (R^2) value of the tested models in international studies. The PMN and NMN constructs are sets of beliefs related to internalized values, learned throughout life, about what is right or wrong. The PMN and NMN influence behavior, as individuals have a tendency to behave congruently with their personal values. Positive moral norms are beliefs associated with feelings of well-being linked to the execution of a behavior, while negative moral norms are associated with feelings of guilt and/or moral obligation linked to the performance of the behavior. These constructs can be used as a single set of beliefs (positive and negative) and are also known as: personal norms; moral norms; and moral attitudes (Arvola et al., 2008; Dowd & Burke, 2013; Yadav & Pathak, 2016).

Donahue (2017) and Urban, Zverinová and Scasny (2012)

suggested that the DN construct is an underlying facet of the SN construct. According to Urban et al. (2012), the SN construct is composed by injunctive and descriptive normative beliefs. Injunctive beliefs are related to the perception of social pressure and consolidate the SN construct. The descriptive beliefs that make up the DN construct are related to the perception of whether the person's "significant others" carry out the behavior in question. In this study, it was decided to verify the unique effect, of the moral norms (positive and negative), and of the subjective and descriptive norms.

The main aim of this study was to evaluate the applicability of an extended TPB model as an alternative explanatory model for the IPOF, considering the inclusion of the PMN, NMN and DN constructs. From the verification of the model's applicability, the effect sizes that the constructs exerted as predictors of the IPOF were measured. The article also presents evidence of validity of the internal structure of the TPB model, confirming its relevance as an explanatory alternative to IPOF in the Brazilian context.

The contributions of this study will be relevant for the constituent organizations of the organic food production chain (agribusiness, family farming, cooperatives, and retailers). The evidence presented by this study will also be useful for professionals in the areas of Marketing, among others, who develop campaigns with the aim of promoting the purchase of organic foods and develop promotional strategies in this market segment.

The Hypothesized Extended Model of the Theory of Planned Behavior

The effectiveness of the TPB as an explanatory model for the formation of the intention to purchase organic food and products of sustainable origin was confirmed by systematic literature reviews (Scalco et al., 2017; Han & Stoel, 2017). This study was developed with the aim of verifying the applicability of the TPB in the Brazilian context. Accordingly, the following research hypotheses were established:

H1. Attitudes are predictors of the intention to purchase organic food;

H2. Subjective norms are predictors of the intention to purchase organic food;

H3. Perceived behavioral control is a predictor of the intention to purchase organic food.

This study also aimed to verify whether the inclusion of the PMN, NMN, and DN constructs improved the explanatory power of the TPB model. Ajzen (1991) expressly encouraged research into the role of additional variables in the TPB, stating that: "the theory of planned behaviour is, in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention or behaviour after the theory's current variables have been taken into account" (p. 199).

According to Iwaya and Steil (2019), the constructs PMN, NMN, and DN have the greatest evidence of an increase in the explained variance of the IPOF. For example, with the addition of the PNM, Yadav and Pathak (2016) found a 17.4% increase in the variance explained by the TPB model. Guido, Prete, Peluso, Maloumy-Baka and Buffa (2010) present evidence of a 10% increase in the explained variance of the IPOF with the addition of NMN. Donahue (2017) points to a 9% increase in the explained variance of the IPOF with the addition of DN. Yadav and Pathak (2016), Guido et al. (2010), Urban et al. (2012), and Donahue (2017) present acceptable discriminant validity evidence for these constructs.

Historically, Ajzen (1991) points out that SN are less associated with intention. It is argued that this lack of association reveals a predominance of personal factors (ATT, PBC) over intention. However, this can also be attributed to a narrow conceptualization of the SN construct. Usually, SN is measured by considering only injunctive norms (what others think I should do), but social influence also has a descriptive normative dimension (what people important to me do). While the injunctive component considers the potential personal gains or the potential sanctions from significant others for engaging in a behaviour, the descriptive component considers significant people's actions as relevant information in the decision-making process. Not infrequently, there are situations where injunctive and descriptive norms conflict, as when an adult smoker warns a teenager not to smoke (Urban et al., 2012). This leads us to believe that DN have a distinct way of action on IPOF.

Another criticism present in the literature regarding SN is that it specifically captures perceptions associated with external social pressures. However, a normative component can also be considered as in internal aspects, such as moral norms built and internalized throughout life that reflect an individual's unique views of what is right or wrong. The perceived consequences of violating or defending established moral norms are linked to an individual's self-concept. Moral norms are distinguished from SN and DN because there is a conviction that acting in a certain way is inherently right or wrong, regardless of social consequences (Arvola et al., 2008; Dean, Raats, & Shepherd, 2008; 2012; Dowd and Burke, 2013).

Organic food consumers can be classified as utilitarian or altruistic consumers (Hemmerling, Hamm, & Spiller, 2015). Utilitarian consumers can also be considered food phobics or hedonists consumers worried about health, the use of pesticides,

additives, and chemicals in food or who enjoy the pleasure of good eating. Altruistic consumers could also be considered green consumers or humanists interested in the safeguarding of the ecosystem and concerned with factory agriculture systems and processes (Guido et al., 2010).

Altruistic reasons are associated with long-term concerns in favor of socio-environmental sustainability (Yazdanpanah & Forouzani, 2015). These reasons are also associated with what has been called ethical consumerism in the literature. Ethical consumerism is a pattern of conscious and deliberate consumption that considers moral aspects internalized by a person (Dowd & Burk, 2013). Thus, it is expected that normative aspects such as PMN, NMN are associated with organic food purchase decisions.

The studies of Arvola et al. (2008), Dean et al. (2008; 2012), Guido et al. (2010), Urban et al. (2012), Dowd and Burke (2013), Yazdanpanah and Forouzani (2015), Yadav and Pathak (2016) and Donahue (2017) provide evidence that the PMN, NMN, and DN constructs are predictors of the IPOF. Accordingly, the following research hypotheses were established:

H4. Positive moral norms are predictors of the intention to purchase organic food;

H5. Negative moral norms are predictors of the intention to purchase organic food;

H6. Descriptive norms are predictors of the intention to purchase organic food.

The conceptual model of this study establishes that the attitudes, subjective norms, perceived behavioral control, positive moral norms, negative moral norms and descriptive norms have a positive effect as predictors of the intention to purchase organic food (Figure 1).

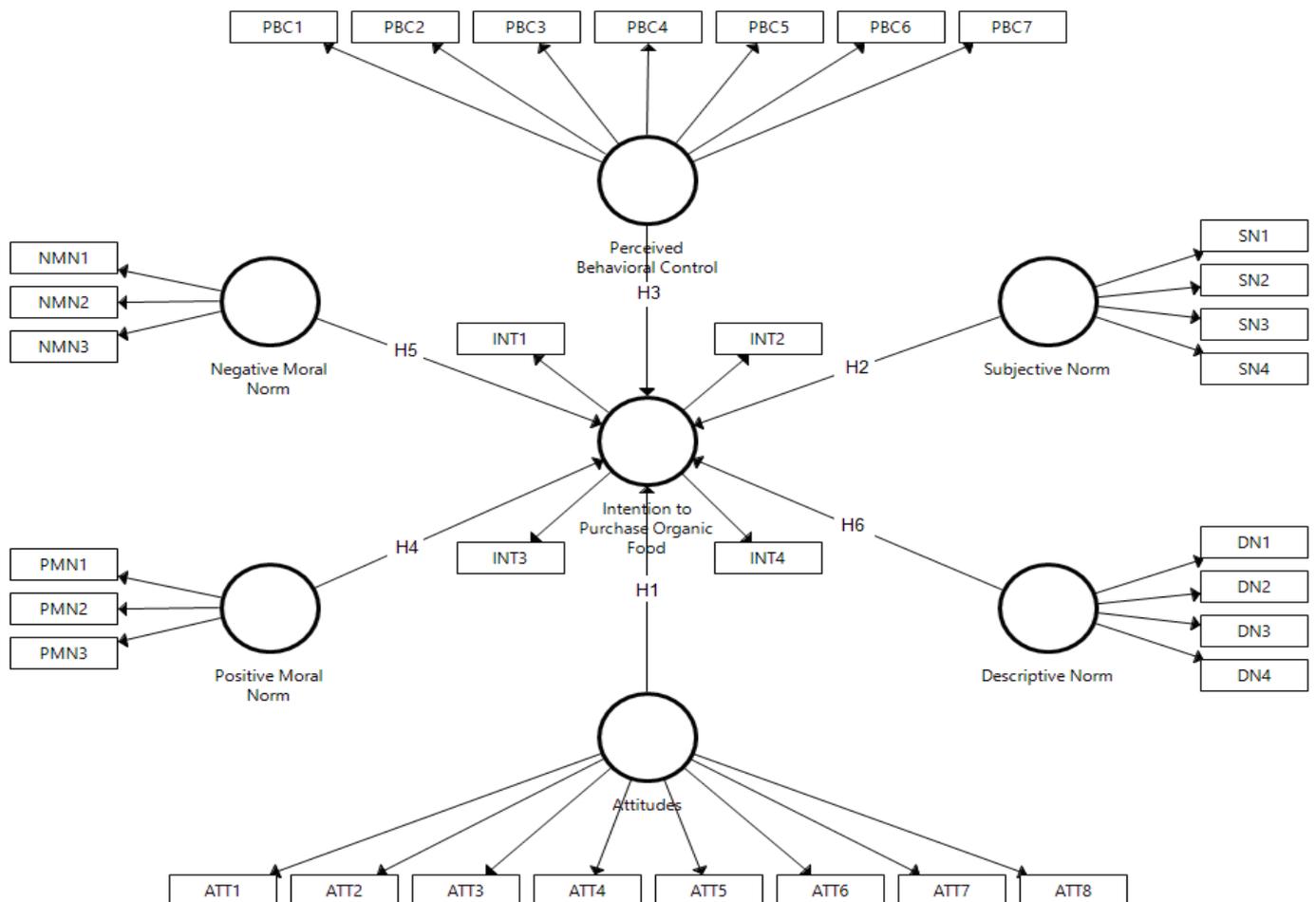


Figure 1. The hypothesized extended model of the Theory of Planned Behavior.

Method

Participants

This was a quantitative, cross-sectional study with a convenience sample and an online survey design (Shaughnessy, Zechmeister, & Zechmeister, 2012). Data collection was carried out via the researchers’ social networks (Facebook and WhatsApp) from 28/05/2019 to 07/08/2019. The data collection instrument was developed using the Google Forms tool. To participate in the study, participants had to fulfill two inclusion criteria: being over 18 years of age and being responsible or partially responsible for the food purchases of their home.

Instruments

The indicators used in the scale underwent an adaptation process from the studies of Arvola et al. (2008), Dean et al. (2008; 2012), Donahue (2017), Guido et al. (2010), Thøgersen, De Barcellos, Perin and Zhou (2015), Urban et al. (2012), Yazdanpanah and Forouzani (2015) and Yadav and Pathak (2016). All these studies also focused on investigating the IPOF. The indicators used to measure the constructs are a mix of direct

and indirect measurements (Francis et al., 2004).

The indicators used were translated from English into Portuguese and underwent a semantic evaluation of their content carried out by an English-speaking specialist (native of the Portuguese language). After translation, a committee formed by three researchers that used the TPB in their investigations assessed the relevance of the content of the indicators according to their theoretical dimension (ATT, SN, PBC, PMN, NMN, DN, and IPOF). The preliminary version of the scale was then submitted to the process of content validation of the indicators, as proposed by Cassepp-Borges, Balbinotti and Teodoro (2010).

The study adopted methods of measuring generalized intentions and direct measures, with responses made on a 7-point Likert-type scale. In most indicators, “totally disagree” and “totally agree” anchors were used. In five cases, semantic differential anchors (e.g. hard/easy) were used. The final version of the research instrument contained 33 indicators: ATT (08), SN (04), PBC (07), PMN (03), NMN (03), DN (04), and IPOF (04) (Table 1).

At the end of the research instrument translation and content validation process, a Portuguese-speaking specialist made minor grammatical adjustments to the indicators and the process of the construction research instrument was completed.

Table 1
Indicators of the research instrument

Constructs	Indicators
ATT	ATT1: “I think that purchasing organic food, instead of conventional food, is...” (wrong/right).
	ATT2: “Purchasing organic food, instead of conventional food, would make me feel...” (foolish/intelligent).
	ATT3: “I think that purchasing organic food, instead of conventional food, is...” (useless/useful).
	ATT4: “I think that purchasing organic food, instead of conventional food, is...” (insensate/sensible).
	ATT5: “Purchasing organic food, instead of conventional food, would make me feel satisfied”.
	ATT6: “I think organic foods are tastier than conventional foods”.
	ATT7: “Purchasing organic food, instead of conventional food, would make me feel good”.
	ATT8: “I think organic foods are healthier than conventional foods”.
SN	SN1: “People, whose opinion I value, would approve of purchasing organic food”.
	SN2: “Most people that are important to me would like me to purchase organic food”.
	SN3: “People, whose opinion I value, would approve of me purchasing organic food”.
	SN4: “Most people that are important to me think that I should purchase organic food”.
PBC	PBC1: “For me, purchasing organic food, instead of conventional food, is an/a ... task” (easy/difficult).
	PBC2: “If I wanted to, I could purchase organic food instead of conventional food”.
	PBC3: “To purchase or not purchase organic food depends entirely on my desire”.
	PBC4: “I am confident that, if I want, I can decide to purchase organic food instead of conventional food”.
	PBC5: “I have money to purchase organic food”.
	PBC6: “My purchase of organic food depends only on my decision and not on external conditions”.
	PBC7: “I have time to purchase organic food”.
PMN	PMN1: “Purchasing organic food would make me feel like a better person”.
	PMN2: “Purchasing organic food would make me feel like I’m personally contributing to a higher cause”.
	PMN3: “Purchasing organic food would make me feel like I’m doing the right thing”.
NMN	NMN1: “Purchasing conventional foods, instead of organic foods, goes against my principles”.
	NMN2: “I would feel guilty if I purchased conventional foods instead of organic foods”.
	NMN3: “Due to my personal values, I feel compelled to purchase organic food instead of conventional food”.
DN	DN1: “People who are important to me purchase organic food”.
	DN2: “I feel motivated to purchase organic food, because people important to me also purchase organic food”.
	DN3: “I feel motivated to purchase organic food, as I see that people whose opinion I value purchase organic food”.
	DN4: “People whose opinion I value purchase organic food”.
IPOF	INT1: “I will purchase organic food in the near future”.
	INT2: “I plan to purchase organic food for my next purchases”.
	INT3: “I am willing to purchase organic food for my next purchases”.
	INT4: “I intend to purchase organic food for my next purchases”.

Note. ATT = attitudes; SN = subjective norms; PBC = perceived behavioral control; PMN = positive moral norms; NMN = negative moral norms; DN = descriptive norms; IPOF = intention to purchase organic food.

Data Collection Procedures and Ethical Considerations

To estimate the minimum sample size, the G* Power 3.1.9.7 (Faul, Erdfelder, Buchner, & Lang, 2009) software was used, considering that the endogenous construct has six predictors and establishing a test power of .95 and effect size (f^2) of .15 (Ringle, Silva, & Bido, 2014). The minimum sample recommended by the software was 146 cases. Ringle, Silva and Bido (2014) suggest that triple that value (438) should be considered. This minimum number of cases is close to the value recommended by Hair, Black, Babin and Anderson (2019), considering 15 cases for each indicator used (495).

The study was carried out after approval by the Ethics Committee for Research with Human Subjects, following resolution No. 510/16 of the National Health Council of Brazil (authorization for the research via Plataforma Brasil: 3.027.720; presentation certificate for ethical research appreciation: 02404818.0.0000.0121).

Data Analysis Procedures

Data analysis followed the recommendations of Hair, Hult, Ringle and Sarstedt (2017) and Ringle et al. (2014), using the structural equation modeling (SEM) technique, with the partial least square (PLS) method. The software used for the analyses was "SmartPLS 3" (Ringle, Wende, & Becker, 2015).

In the evaluation process of the measurement model, the following aspects were considered: a) convergent validity; b) internal consistency and composite reliability; and c) discriminant validity. In the evaluation process of the structural model, the following aspects were considered: a) quality of fit of the model; b) general fit of the model; and c) interpretation of the path coefficients (Hair et al., 2017).

Convergent validity was assessed by observing the average variance extracted (AVE), following the Fornell and Larcker criteria (AVE >.50). Regarding the internal consistency indices (Cronbach's α) and composite reliability, the established criterion was that values above .70 and less than .95 are considered adequate for both measures. The evaluation of the discriminant validity was made: a) by observing the cross factor loadings of the indicators; b) comparing the square roots of the AVE values of each construct with the Pearson's correlations between the constructs, considering that the square roots of the AVE must be superior to the correlation between the constructs, and c) evaluation of the correlations between the constructs through the Heterotrait-Monotrait Ratio (HTMT) method, which is more efficient than the Fornell-Larcker criterion to estimate the correlations between the constructs. Lopes et al. (2020) state that the upper limit (UL) values for HTMT, considering 95% confidence, using the bootstrapping method for 5,000 subsamples, should be less than 1.0.

The quality of fit of the model was given by the observation: a) collinearity analysis between constructs (Variance Inflation Factor, VIF <5); b) Pearson's determination coefficient (R^2) and effect size analysis (f^2); c) the analysis of structural coefficients (β); d) of predictive relevance (Q^2). The established R^2 effect size classifications were small ($R^2 \geq 20\%$), medium ($R^2 \geq 13\%$) and large ($R^2 \geq 26\%$) (Cohen, 1988). The f^2 values considered were small ($f^2 \geq .02$), medium ($f^2 \geq .15$) and large ($f^2 \geq .35$) (Cohen, 1988). The β values were evaluated through Student's t-test and the predictive relevance (Q^2), considering $.01 \leq Q^2 \leq .075$ (weak degree), $.075 < Q^2 \leq .25$ (moderate degree); and $Q^2 > .25$ (strong degree) (Chin, 2010).

Results

The study participants were 705 consumers. Most of the participants resided in the South (76.74%) and Southeast (16.31%) regions of Brazil. Specifically, most consumers lived in the cities of Joinville (38.30%), Florianópolis (14.60%), São Paulo (3.54%) and Curitiba (3.26%). There is a prevalence of female consumers (67.40%), aged between 28 and 37 years (30.78%), with complete higher education (37.60%), married or in a stable relationship (51.60%), with family income between 3 and 6 minimum wages (26.24%). The research sample is considered biased, considering the region, biological sex, age, education, marital status, and income, and does not reflect the Brazilian population in general.

During the preliminary analysis, tests were performed to verify the normality of the data. All variables rejected the null hypothesis through the Kolmogorov and Shapiro-Wilk tests ($p < .000$), indicating that the data did not follow a normal distribution. However, it should be noted that the partial least squares structural equation modeling (PLS-SEM) is robust for data without normality (Hair et al., 2017). The sample had no missing data, as filling in all questions was mandatory for the subsequent submission of the responses. To assess the severity of common method bias, the Harmon one-factor test was used. The highest explained covariance considering a one-dimensional factor structure was 39.94%, well below the 50% limit. The conclusion is that common bias is not expected to be an issue in this study.

Measurement Model Analysis

The constructs presented acceptable rates of convergent validity (AVE >.50), internal consistency and composite reliability (.70 < α < .95). Therefore, it was assumed that the model converged for a satisfactory result. The AVE values, internal consistency and composite reliability are presented in Table 2.

Table 2
Values of average variance extracted (AVE), Cronbach's Alpha (α) and Composite Reliability (ρ_c)

Constructs	AVE	α	ρ_c
Attitudes	.637	.917	.933
Subjective Norms	.768	.898	.930
Perceived Behavioral Control	.522	.846	.883
Positive Moral Norms	.802	.876	.924
Negative Moral Norms	.703	.789	.876
Descriptive Norms	.726	.873	.913
Intention to Purchase Organic Food	.799	.915	.941

The indicators of each construct presented a greater factor loading within the construct itself. Therefore, the model presented evidence of discriminant validity, indicating that each construct is independent. Table 3 presents the values of the crossed factor loadings of the indicators with the constructs.

The square roots of the AVE values of the constructs were also greater than the values of the correlations between the constructs, as well as the values of the UP (HTMT) $97.5\% < 1.0$, this being further evidence that the measurement model has discriminant validity. The values of the square roots of the AVE values of the constructs and Pearson's correlations between the constructs and the HTMT criterion are presented in Table 4.

Once the convergent and discriminant validity was guaranteed, and acceptable levels of internal consistency and composite reliability were found, the first step of adjusting the measurement model was concluded and the structural model was

Table 3
Cross factor loadings of the indicators with the constructs

Indicators	Constructs						
	ATT	PBC	IPOF	DN	NMN	PMN	SN
ATT1	.797	.115	.419	.297	.357	.561	.403
ATT2	.726	.137	.380	.359	.380	.601	.424
ATT3	.851	.151	.471	.333	.362	.623	.425
ATT4	.832	.115	.422	.316	.368	.624	.416
ATT5	.858	.158	.577	.507	.517	.781	.594
ATT6	.669	.170	.449	.410	.437	.537	.440
ATT7	.845	.148	.545	.512	.518	.843	.570
ATT8	.785	.088	.426	.302	.327	.598	.394
PBC1	.209	.682	.382	.266	.276	.145	.218
PBC2	.155	.799	.422	.326	.221	.119	.225
PBC3	-.050	.760	.265	.259	.169	-.026	.134
PBC4	.176	.833	.492	.393	.261	.176	.325
PBC5	.038	.695	.350	.271	.218	.046	.161
PBC6	-.034	.697	.205	.226	.176	-.004	.094
PBC7	.247	.555	.319	.273	.273	.211	.237
INT1	.519	.341	.801	.453	.486	.497	.484
INT2	.528	.504	.916	.553	.520	.482	.553
INT3	.528	.475	.919	.534	.511	.481	.521
INT4	.527	.489	.932	.574	.582	.522	.539
DN1	.307	.405	.434	.756	.361	.327	.556
DN2	.423	.363	.560	.876	.575	.487	.644
DN3	.488	.313	.512	.884	.536	.580	.678
DN4	.426	.333	.507	.884	.496	.483	.697
NMN1	.332	.194	.396	.354	.767	.372	.356
NMN2	.474	.250	.503	.532	.867	.532	.478
NMN3	.482	.347	.561	.556	.877	.520	.499
PMN1	.730	.115	.474	.531	.501	.866	.572
PMN2	.693	.120	.475	.444	.514	.893	.481
PMN3	.781	.167	.534	.518	.527	.925	.575
SN1	.562	.227	.472	.562	.384	.573	.782
SN2	.517	.256	.516	.659	.487	.537	.910
SN3	.511	.266	.528	.689	.474	.534	.921
SN4	.465	.286	.538	.734	.530	.491	.885

Table 4
Values of square roots of average variances extracted (AVE's), Pearson's correlation matrix and the Heterotrait-Monotrait Ratio (HTMT) criterion

Constructs	√AVE	Pearson's Correlation Matrix					
		ATT	PBC	IPOF	DN	NMN	PMN
ATT	.798	1.000					
PBC	.722	.171	1.000				
IPOF	.894	.587	.509	1.000			
DN	.852	.486	.412	.594	1.000		
NMN	.838	.520	.322	.588	.584	1.000	
PMN	.895	.822	.151	.553	.556	.574	1.000
SN	.876	.584	.296	.587	.757	.537	.607
Upper Limit (HTMT) 97.5%							
PBC	.268						
IPOF	.689	.616					
DN	.586	.544	.717				
NMN	.643	.464	.734	.742			
PMN	.932	.243	.681	.685	.732		
SN	.692	.405	.712	.891	.689	.738	

Note. ATT = attitudes; SN = subjective norms; PBC = perceived behavioral control; PMN = positive moral norms; NMN = negative moral norms; DN = descriptive norms; IPOF = intention to purchase organic food.

analyzed.

Structural Model Analysis

Fit quality and general fit of the model. Table 5 presents the VIF and f^2 values and shows that there were no strong correlations between the constructs, i.e., there were no collinearity problems in the model ($VIF < 5$). The other statistics were analyzed according to the values estimated by the bootstrapping and blindfolding method.

Table 5
Values of variance inflation factor (VIF) and effect size (f^2)

Exogenous Constructs	Intention to Purchase Organic Food	
	VIF	f^2 (p-value)
Perceived Behavioral Control	1.253	.193 (.000)
Attitudes	3.242	.063 (.004)
Negative Moral Norms	1.819	.052 (.004)
Subjective Norms	2.766	.016 (.188)
Descriptive Norms	2.863	.008 (.355)
Positive Moral Norms	3.646	.000 (.918)

Analyzing the explanation coefficient ($R^2=.592$, p -value $> .000$), there was a large effect of the exogenous constructs on the predictive construct ($R^2 \geq 26\%$). Considering the f^2 values, the PBC ($f^2=.193$) had a medium effect ($f^2=.15$) on the IPOF. The ATT and NMN constructs presented a small effect ($f^2=.02$). The other constructs did not present significant effects; however, this does not prevent the validation of the proposed hypotheses. Regarding the Q^2 value ($Q^2 = .466$) the endogenous construct presented $Q^2 > .25$, i.e., a strong degree of predictive relevance, according to Chin (2010).

Most of the regressions between the constructs were also significant. Only the PMN construct did not demonstrate a significant effect ($t=-.413$, $p=.680$) as a predictor of the IPOF. Table 6 shows the path values (β), standard deviation coefficients and the associated t -value and p -value statistics for each regression established in the structural model.

Table 6
Path coefficients, standard deviation (SD), t -value and p -value statistics

Relations	Path Coefficients (β)	Standard Deviation (SD)	t -value ($ \beta / SD $)	p -value
ATT → IPOF	.288	.048	5.992	.000
PBC → IPOF	.314	.029	10.676	.000
DN → IPOF	.096	.047	2.012	.044
NMN → IPOF	.196	.034	5.813	.000
PMN → IPOF	.022	.053	.413	.680
SN → IPOF	.134	.049	2.755	.006

Note. ATT = attitudes; SN = subjective norms; PBC = perceived behavioral control; PMN = positive moral norms; NMN = negative moral norms; DN = descriptive norms; IPOF = intention to purchase organic food.

Although the path coefficients (β) of the DN and SN constructs were significant, their effect sizes (f^2) were not significant. However, the effect size was enough for the relationship to still be considered valid. The PBC, ATT and NMN constructs presented f^2 values that were acceptable as predictors of the IPOF, which made their path coefficients significant. The summary of the evaluation of the hypotheses established by this study is presented in Table 7, with the final path model established shown in Figure 2.

Table 7
Evaluation of research hypotheses

Established hypotheses	Path Coefficients (β)	Effect Size (f ²)	Hypothesis Decision
H1: The ATT are predictors of the IPOF	.288 ***	.063 **	Accept
H2: The SN are predictors of the IPOF	.134 **	.016	Accept
H3: The PBC is a predictor of the IPOF	.314 ***	.193 ***	Accept
H4: The PMN are predictors of the IPOF	.022	.000	Reject
H5: The NMN are predictors of the IPOF	.196 ***	.052 **	Accept
H6: The DN are predictors of the IPOF	.096 *	.008	Accept

Note. ATT = attitudes; SN = subjective norms; PBC = perceived behavioral control; PMN = positive moral norms; NMN = negative moral norms; DN = descriptive norms; IPOF = intention to purchase organic food. *p <.05; **p <.01; ***p <.001.

Discussion

This study presented evidence of convergent and discriminant validity and internal consistency for the proposed measurement model based on an extended TPB model. In the evaluation process of the structural model tested, acceptable indices of quality of fit of the model and of general fit of the model were also found. This evidence confirms the applicability of the extended TPB model as an alternative explanatory model for the IPOF, in the Brazilian context. The proposed structural model explained 59% of the IPOF variance. Dorce et al. (2020) point

to similar results considering a sample of Brazilian consumers - ATT, NS, and PBC explain 63% of the intention to purchase organic vegetables.

The interpretations of the path coefficients (β) indicate that, in order of effect size (f²), the perceived behavioral control (PBC), attitudes (ATT) and negative moral norm (NMN) constructs were predictors of the intention to purchase organic food (IPOF) and had the respective effects: large (PBC) and small (ATT, NMN). The subjective norm (SN) and descriptive norm (DN) constructs were predictors of the IPOF, however, presented null effect sizes (f² <.02). The positive moral norm (PMN) construct did not present regression as a predictor of the IPOF.

Studies with population samples from Malaysia (Al Mamun, Mohamad, Yaacob, & Mohiuddin, 2018) and India (Yadav & Pathak, 2016; Chaudhary & Bisai, 2018) also showed that PBC was the best predictor of intention to purchase environmentally friendly products, organic food and green products. As in the Brazilian context, in Malaysia and India, perceptions related to facilitating and/or impeding factors associated with the purchase of organic foods play a fundamental role in the formation of the IPOF. According to Yadav and Pathak (2016), these strongly indicate a perception that organic foods are more expensive (higher prices) and not easily found. Both factors influence the consumers' self-efficacy when purchasing organic food. In this study, PBC was the main predictor of the IPOF.

Considering that PBC is a strong predictor of IPOF, organizations and policymakers interested in promoting organic consumption can seek to improve organic distribution channels, facilitating the consumption process. Yadav and Pathak (2016) emphasized that most consumers are not willing to search for different stores to find the food they would like to purchase. Accordingly, Chaudhary and Bisai (2018) recommended that an effort should be concentrated on improving the channels of distribution of organic food, with the opening of alternative

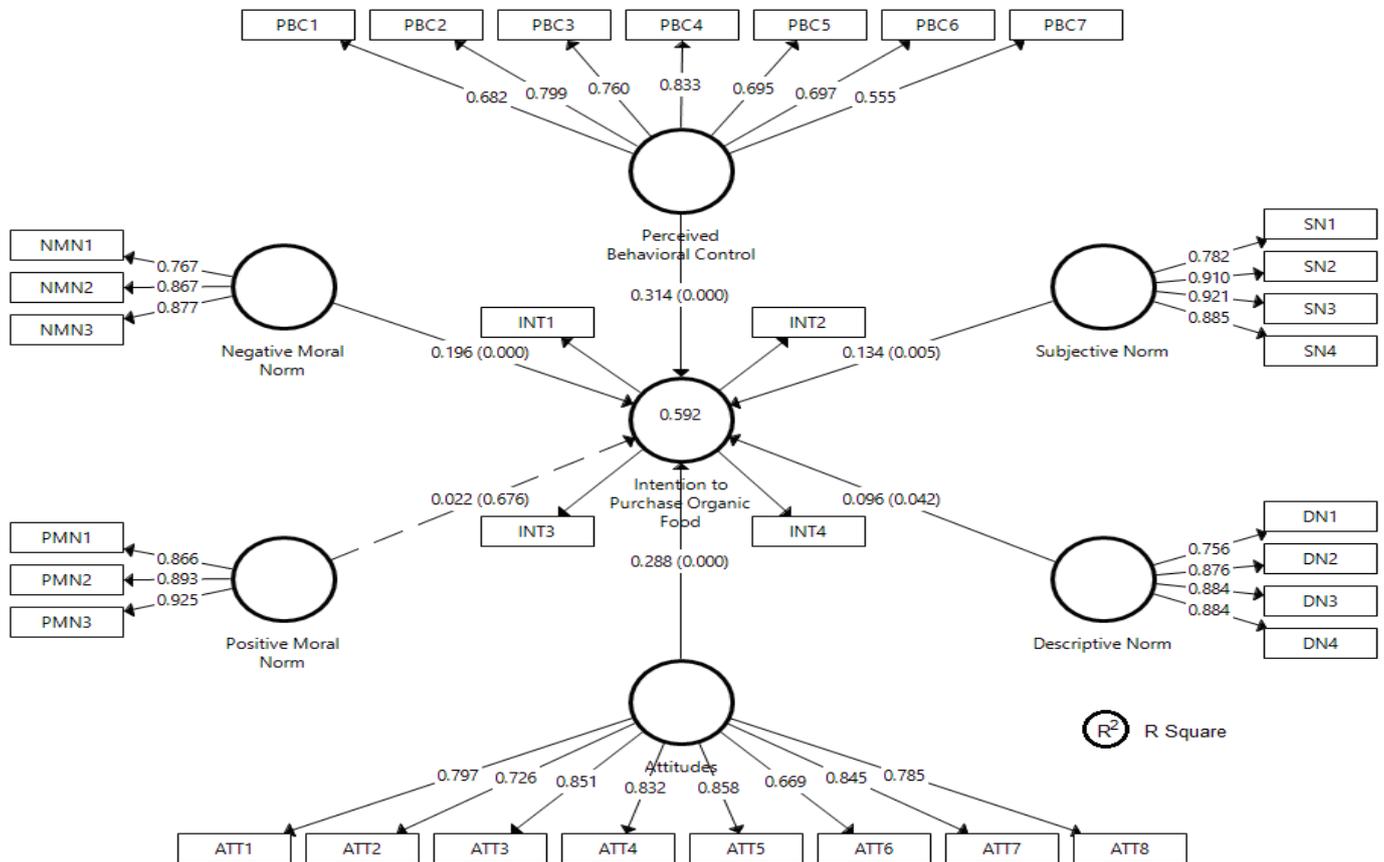


Figure 2. Factor loadings of the indicators with the constructs, path coefficients (p-value) and coefficient of determination (R²) of the structural model

channels close to the markets and stores where there is greater circulation of consumers. According to Chaudhary and Bisai (2018), these actions would reduce the perceived difficulty of acquiring organic foods and improve the perception of behavioral control. Dorce et al. (2020) point out that organizations can consider delivering organic products to consumers' homes as a sales strategy. It is also recommended that government organizations with an interest in promoting the consumption of organics support the development of local organic markets.

The ATT construct had the second largest effect size as a predictor of the IPOF. The actions that can be taken to boost the IPOF, through ATT, concern the reinforcement of benefits related to the consumption of organic foods. According to Guido et al. (2010), actions to publicize the benefits associated with the consumption of organic foods should be directed towards large segments of the population, as consumer knowledge about the advantages associated with organic production and the benefit of its consumption is still incipient. Therefore, marketing strategies aimed at promoting these foods should consider highlighting the advantages linked to the consumption of organic foods.

The negative feelings resulting from the nonfulfillment of a moral obligation and/or internalized value also demonstrated a relevant role in the formation of the IPOF. The NMN construct presented the third largest effect size as a predictor of the IPOF. This means that, when deciding, organic food consumers are influenced by the feeling of congruence between their choice and their values and principles. According to Guido et al. (2010), consumers tend to consider the consequences that the consumption of conventional foods can have on their own health and that of their families, as well as considering the possible environmental and animal welfare impacts of their consumption. The strategy proposed by Guido et al. (2010) for the promotion of beliefs associated with NMN consists of the transmission of messages that make consumers feel morally responsible for the protection of their health, the health of their families and for the protection of animals and the environment.

The SN and DN constructs were predictors of the IPOF, however, presented null effect sizes ($f^2 < .02$). It can be said, therefore, that consumers do not consider, during the decision-making process, injunctive or descriptive norms related to the perception of social pressures and/or the perception that important people within a social circle approve of or carry out this behavior. These results are in line with those found in research conducted in Malaysia and India, where the SN construct did not show a significant effect either (Yadav & Pathak, 2016; Al Mamun et al., 2018; Chaudhary & Bisai, 2018).

In the Brazilian context, the studies by Castelo Branco et al. (2019), Reis Neto et al. (2019) and Dorce et al. (2021) present evidence that SN and DN have an impact on the purchase of organic foods. It is worth noting that Castelo Branco et al. (2019) defined as a target of their study "organic fruits and vegetables," while Reis Neto et al. (2019) and Dorce et al. (2021) focused on "organic vegetables." No significant impact of SN on IPOF was found by Hoppe, De Barcellos, Vieira, and De Matos (2012). These Brazilian studies used convenience samples.

Castelo Branco et al. (2019) used indicators to measure SN and DN and reported that both exert impacts. Dorce et al. (2021) used indicators related to SN and DN as the same construct, naming it SN. Reis Neto et al. (2019) used inappropriate items to measure SN. Hoppe et al. (2012) used only one indicator to measure SN. None of the studies reported the effect size and significance level of NS on intention. In view of this evidence, the effect size and relevance of the SN and DN constructs in the Brazilian context remain inconclusive.

The lack of significance between PMN and the IPOF suggests that the purchase of organic food is not influenced by feelings of well-being associated with the fulfillment of an internalized moral value. The evidence does not allow us to say that Brazilian consumers purchase organic foods because they believe that this is morally correct behavior and/or to feel good about being consistent with some moral value of their own. The addition of the PMN construct to the TPB model did not improve the explanatory power of the model in the Brazilian context. This result contradicts evidence presented by studies carried out in Italy, Finland (Arvola et al., 2008), the United Kingdom (Dean et al., 2008, 2012), Australia (Dowd & Burke, 2013) and India (Yadav & Pathak, 2016).

The inclusion of PMN in the TPB model was justified by the argument that consumers experience self-fulfillment when consuming organic foods, resulting from a sense of congruence with their moral values (Arvola et al., 2008). The evidence supporting this hypothesis comes from developed countries (Australia, Finland, Italy, and the United Kingdom), except for the study by Yadav and Pathak (2016) from India. However, the sample of the Indian study is constituted only of young people aged between 18 and 30 years, with postgraduate or doctorate degrees (54%). Yadav and Pathak (2016) purposely delimited the study sample, conjecturing that young people are more concerned with issues related to sustainability and tend to take this into account in their consumption habits.

This likely explains why, with the inclusion of PMN in the TPB model, Yadav and Pathak (2016) obtained a 17.4% increase in the explained variance of the IPOF - helping us to explain why this did not occur in our study. The results of this research corroborate the criticisms already pointed out by Ajzen (1991) about a smaller association between normative variables and intention. It can be conjectured that this lack of association reveals a predominance of personal factors over the IPOF (ATT, PBC) for the sample of this study, which has 47.5% of participants aged over 38 years. This divergence may also indicate that age plays a moderating role on the relationship between normative constructs and the IPOF.

Limitations and Future Directions

Some methodological limitations of this study should be emphasized. As it was a survey study that used self-report measures, it is possible that the data presents consistency bias related to social desirability. Biases in self-report measures can cause regression coefficients and effect sizes between constructs to be under or overestimated. The indicators used to measure the constructs were translations without major changes to the Brazilian context. It is highlighted as a limitation since the indicators do not specify contextual and temporal elements. Given this, weaker and less robust correlations among constructs can be expected. The study had a non-probabilistic sampling approach and the data collection was carried out online, via social networks. Therefore, the results presented cannot be generalized beyond the study sample. It should be noted that this research did not use a measure of real behavior, therefore, the results do not provide enough evidence to prove causal relationships. Future studies in Brazil should consider the feasibility of representative sampling approaches (random or stratified random), the use of other types of research designs (longitudinal and experimental) and the inclusion of a behavioral measure.

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Conflicts of Interest

The authors have no conflicts of interest to disclose.

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Information about the authors**Gabriel Horn Iwaya**

Universidade Federal de Santa Catarina (UFSC)
Campus Universitário Trindade, Centro de Filosofia e Ciências
Humanas (CFH), Programa de Pós-Graduação em Psicologia,
Rua Engenheiro Agrônomo Andrei Cristian Ferreira, s/n
88040-900 Trindade, Florianópolis, SC, Brasil
E-mail: gabrielwaya@hotmail.com

Andrea Valéria Steil

E-mail: andrea.steil@ufsc.br

Luis Felipe Dias Lopes

E-mail: lflopes67@gmail.com

Roberto Moraes Cruz

E-mail: robertocruzdr@gmail.com