Versão do arquivo anexado / Version of attached file:

Versão do Editor / Published Version

Mais informações no site da editora / Further information on publisher's website:

https://www.emerald.com/insight/content/doi/10.1108/BFJ-09-2022-0769/html

DOI: https://doi.org/10.1108/bfj-09-2022-0769

Direitos autorais / Publisher's copyright statement:

Green food purchasing behaviour: a multi-method approach of Generation Y in a developing country

Costa Synodinos
Faculty of Economic and Management Sciences, North-West University, Vanderbijlpark, South Africa
Gustavo Hermínio Salati Marcondes de Moraes
Faculty of Economic and Management Sciences, North-West University, Vanderbijlpark, South Africa and
School of Applied Sciences, State University of Campinas, Limeira, Brazil, and
Nágela Bianca do Prado
School of Applied Sciences, State University of Campinas, Limeira, Brazil

Abstract

Purpose – This research aimed to analyse the antecedents of green food purchasing behaviour amongst Generation Y consumers in a developing country. More specifically, the authors investigated the influence of attitudes towards organic food, subjective norms, perceived behaviour control, environmental knowledge, health awareness and organic food knowledge on the purchase intention of organic food and, consequently, organic food purchase behaviour.

Design/methodology/approach – A multi-method approach combined symmetric techniques with partial least squares structural equation modelling (PLS-SEM) and asymmetric techniques with fuzzy-set qualitative comparative analysis (fsQCA). The primary data sample was collected by a specialist company and included 500 Generation Y consumers from South Africa.

Findings – PLS-SEM results confirmed the positive influence of all antecedents, confirming the hypotheses. The authors also identified a multiple full mediation of environmental knowledge and health consciousness in the relationship between subjective norms and purchase intention. The fsQCA results indicated six different sufficient configurations for a high level of purchase intention, indicating that only some of the constructs are essential to stimulate the intention.

Originality/value – The originality of the research lies in presenting a new perspective on the sustainable consumption behaviour of Generation Y in a developing country, with a combination of techniques that provide greater robustness to the results. Specifically, the authors contribute to the debate on consumer behaviour and sustainability issues by understanding the dynamics between the factors that drive the purchase behaviour of green products. The article also contributes empirical results that help achieve Sustainable Development Goals (SDGs).

Keywords Green products, Sustainable food choices, Generation y, Purchase behaviour, Developing country

Paper type Research paper

1. Introduction

Consumption has skyrocketed in many parts of the world due to economic growth, which has impacted increasing environmental degradation (Ayyub *et al.*, 2018). For the better part of the 19th century, consumers were exposed to various harmful toxins in food production. Farmers had to add chemicals, pesticides and preservatives to match this demand, increasing crop

yield tremendously; it was only with technological advancement that harmful toxins were replaced with safer alternatives.

Mahmood *et al.* (2016) explain that pesticides harm those that consume them and damage the natural environment by contaminating natural water sources, contributing to soil erosion and harming fauna and flora. In today's day and age, consumers are constantly inundated with information concerning environmental issues, leading to a direct surge of personal consumer health concerns. Furthermore, heightened environmental concern and self-health care have altered the purchasing behaviour of products for consumers seeking to increase life longevity. Green products, like organic food, have recently gained prominence because they have been linked with a healthier lifestyle due to their production methods.

In this context, there has been a significant increase in demand and academic interest in green products worldwide, especially with the coronavirus disease 2019 (COVID-19) pandemic, which has increased the importance of analysing food quality and safety (Alabi and Ngwenyama, 2023). Green products, like organic food, have recently gained prominence because they have been linked with a healthier lifestyle due to their production methods. For a food product to be considered organic, it must meet a particular set of criteria in its production process. An organic food product must be produced without any chemically induced growth hormones or harmful pesticides for the entirety of the production process. Organic production includes all aspects, from growth, packaging and environmentally conscious distribution (Singh and Verma, 2017).

In a complementary way, various authors explain that an organic food product must also be produced using environmentally friendly cultivation techniques throughout production (Paul and Rana, 2012). This definition holds especially for farmers in the South African organic food market. Despite being in its infancy, South African farmers have adopted harmonious agricultural methods, which include producing crops and livestock water-consciously and using natural pesticides (South Africa Online, 2021).

In this context, consumers began to pay more attention to the foods they consumed, changing their buying behaviour and increasing healthier foods (Marinković and Lazarević, 2021). Thus, there is a research gap in understanding the buying behaviour of green products in the context of the pandemic (Marinković and Lazarević, 2021), expanding the knowledge of consumers' pro-environmental behaviour, mainly in developing countries, as studies are concentrated in developed countries (Chaturvedi *et al.*, 2022).

Consumer perceptions are essential to understanding how to boost the organic food market, as the consumer needs to have the intention to purchase food to generate demand. In this sense, Generation Y is a prominent audience, as they are the primary consumers of society, being fundamental to the success of green food in a developing country (Molinillo *et al.*, 2020). Thus, the target segment of this article is the consumers of organic products from Generation Y in South Africa.

In this way, the article used the theory of planned behaviour (TPB) to formulate a model to analyse the antecedents of organic food purchasing behaviour amongst Generation Y consumers in South Africa. More specifically, we investigated the influence of attitude towards organic food, subjective norms, perceived behaviour control, environmental knowledge, health awareness and organic food knowledge on purchase intention and consequently on organic food purchase behaviour. Additionally, we investigated the influence of subjective norms on environmental knowledge and health consciousness.

This article includes, in addition to this introduction, a literature review of the TPB and its relation to organic food product consumption; the methodology adopted in the study in section three; the results in four; the discussions in five; the conclusions and contributions, in section six, followed by the references used throughout the development of the study.

2. Literature review

2.1 TPB and its relation to organic products' consumption

The TPB has the individual's intention to perform a specific behaviour as a central factor. It incorporates some of the significant concepts of the social and behavioural sciences to predict and understand particular behaviours in specific contexts (Ajzen, 1991). The intention indicates how hard an individual is willing to try, strive and plan to perform a specific behaviour, capturing factors that influence the behaviour (Ajzen, 1991; Matharu *et al.*, 2021).

The theory distinguishes between three behavioural antecedents - attitudes towards behaviour, subjective norms and perceived behaviour control, which generally predict behavioural intentions accurately. Combined with perceived behavioural control, these intentions can account for a considerable proportion of variation in behaviour (Ajzen, 1991).

TPB has been a practical framework for predicting purchase intentions for green products, including organic foods, in various contexts (de Toni *et al.*, 2018; Nguyen *et al.*, 2019; Tarkiainen and Sundqvist, 2005; Yazdanpanah and Forouzani, 2015; Zayed *et al.*, 2022). The theory denotes that the individual's behaviour can be favourable or unfavourable to the performance of such behaviour (Matharu *et al.*, 2021).

TPB model has been applied in different contexts, such as green hotels and restaurants (Fielding *et al.*, 2008; Yadav and Pathak, 2016), green products (Kim and Choi, 2005), organic textile decoration (Gam *et al.*, 2020) and recycled clothing (Chaturvedi *et al.*, 2020). Consequently, the TPB has been a practical framework for predicting purchase intentions for organic foods in various contexts (de Toni *et al.*, 2018; Nguyen *et al.*, 2019; Tarkiainen and Sundqvist, 2005; Yazdanpanah and Forouzani, 2015; Zayed *et al.*, 2022). The theory denotes that the individual's behaviour can be favourable or unfavourable to the performance of such behaviour (Matharu *et al.*, 2021).

According to TPB, organic food purchase performance is a joint function of intentions and perceived behavioural control (Tarkiainen and Sundqvist, 2005). The first condition for a behavioural prediction concerns the individual's attitudes towards purchasing organic food. The more favourable the attitude towards an individual's behaviour, the greater the likelihood that the individual will perform a particular behaviour. Therefore, an individual tends to have a favourable attitude when they positively evaluate the use and are likely to engage in this specific behaviour (Cavite *et al.*, 2022; Yadav and Pathak, 2016).

In the case of buying organic food, Nguyen *et al.* (2019) state that attitudes are one of the most potent precursors of purchase intentions and can strongly affect actual consumption or purchase behaviour towards organic foods. Therefore, a positive attitude towards the purchase of organic food is a good opening for the motivation to consume this class of products (Matharu *et al.*, 2021) and, with this, the first research hypothesis emerges.

H1. Attitude towards organic foods positively influences the organic food purchase intention.

The second predictor that influences the purchase of organic foods through the TPB is a social factor called subjective norms. For Ajzen (1991), subjective norms relate to perceived social pressures to perform or not a particular behaviour. In other words, the subjective norm is the influence the individual receives from the people who are important to him (Cavite *et al.*, 2022; Fielding *et al.*, 2008; Matharu *et al.*, 2021). Thus, subjective norms shape consumer behaviour based on elements agreed in community customs or traditional views (Cahyasita *et al.*, 2021).

Subjective norm influences the consumer's intention to purchase organic foods (Matharu *et al.*, 2021; Teixeira *et al.*, 2021). With this, the second research hypothesis (H2) is presented.

H2. Subjective norms positively influence the organic food purchase intention.

The third antecedent is the degree of perceived behavioural control. According to Ajzen (1991), the variable concerns the perceived ease of performing the behaviour. Perceived behavioural control also affects how much the citizen believes that acting that way can

contribute to a more significant result. Behaviour control reflects the person's past experiences, anticipated impediments and obstacles.

Thus, the greater the perception of behavioural control, the greater the intention of the individual to have a specific behaviour (Kim and Choi, 2005; Yadav and Pathak, 2016). In the context of organic food purchases, perceived behavioural control, also through Cavite *et al.* (2022), positively influences purchase intention. Therefore, the third hypothesis (H3) of this study is addressed.

H3. Perceived behaviour control positively influences the organic food purchase intention.

2.2 Incorporating additional constructs in the TPB

In addition to TPB constructs, scholars have added other variables as influential in the Purchase Intention of organic foods, such as personality traits (Chen, 2007), environmental awareness (de Toni *et al.*, 2018; Kim and Choi, 2005; Singh and Verma, 2017), food security (Khayyam *et al.*, 2021), environmental knowledge (Dursun *et al.*, 2019; Mostafa, 2007; Paul and Rana, 2012; Tarkiainen and Sundqvist, 2005; Teixeira *et al.*, 2021; Wu *et al.*, 2022), health awareness (Cavite *et al.*, 2022; Iqbal *et al.*, 2021; Kumar *et al.*, 2022; Paul and Rana, 2012; Tarkiainen and Sundqvist, 2005; Teixeira *et al.*, 2021) and knowledge of organic food (Ayyub *et al.*, 2018; Chen, 2007; Iqbal *et al.*, 2021; Kumar *et al.*, 2022; Singh and Verma, 2017; Zayed *et al.*, 2022).

Environmental knowledge refers to the individual's level of knowledge about issues involving human beings and the environment, with their impacts and responsibilities, to think about sustainable development (Mostafa, 2007).

For Dursun *et al.* (2019), environmental knowledge is the dominant determinant of environmental behaviour or intention. In this same sense, Yadav and Pathak (2016) and Wu *et al.* (2022) agree that knowledge about environmental issues results in pro-environmental and ecologically correct behaviour and influences purchasing intention. So, we assume that environmental knowledge makes the consumer knows the benefits of such foods for ecosystem health. Thus, the fourth hypothesis (H4) of this study is identified.

H4. Environmental knowledge positively influences the organic food purchase intention.

The intention for organic food, however, may also be related to the search for healthier and more nutritious food, less harmful to the environment (Chen, 2007; de Toni *et al.*, 2018; Smith and Paladino, 2010; Tarkiainen and Sundqvist, 2005), compatible with a sustainable lifestyle (Gam *et al.*, 2020), favourable to good physical conditioning (Khayyam *et al.*, 2021) and related to an interest in well-being and self-care (Teixeira *et al.*, 2021).

The health awareness construct generally refers to an individual's readiness to do something for their health (Nguyen *et al.*, 2019). In other words, health awareness is the degree to which health concerns are considered in the individual's daily activities (Cavite *et al.*, 2022).

Another debate embedded in health awareness, as a predictor of positive behaviours for healthier eating, is related to the food supply crises in recent years. According to (Chen, 2007), episodes such as mad cow disease and the foot-and-mouth disease epidemic, for example, increased attention to the quality of the food they eat. More recently, the COVID-19 pandemic has considerably changed the food industry, raising awareness of sustainability in general and organic food consumption (Khayyam *et al.*, 2021).

Another debate embedded in health awareness, as a predictor of positive behaviours for healthier eating, is related to the food supply crises in recent years. According to Chen (2007), episodes such as mad cow disease and the foot-and-mouth disease epidemic, for example, increased attention to food quality. More recently, the COVID-19 pandemic has considerably changed the food industry, raising awareness of sustainability in general and organic food consumption (Khayyam *et al.*, 2021).

Furthermore, growing environmental awareness and concern for safer food have led to questions about modern agricultural practices and their potential dangers – e.g. the use of pesticides and their residues in food (Chen, 2007; Kumar *et al.*, 2022).

Organic foods are much healthier and more sustainable (Chen, 2007; Paul and Rana, 2012). Thus, we propose hypothesis number five (H5).

H5. Health consciousness positively influences the organic food purchase intention.

Another determining factor in the purchase intention of organic foods is consumers' knowledge of the "biology" of the food (Ayyub *et al.*, 2018). Organic foods are products grown without synthetic chemicals, such as herbicides, pesticides and artificial fertilisers (Chen, 2007; Iqbal *et al.*, 2021; Kumar *et al.*, 2022). Therefore, organic food products can promote best practices across the ecosystem (Iqbal *et al.*, 2021; Singh and Verma, 2017; Zayed *et al.*, 2022).

According to Singh and Verma (2017) and Smith and Paladino (2010), consumers must have more profound knowledge of organic food. Many consumers consider organic products free of chemicals or more natural than conventional foods. Given this, consumers understand the main features of organic products but do not understand organic farming practices. Furthermore, consumer distrust of organic labelling practices affects the absence of a more profound understanding (Ayyub *et al.*, 2018; Smith and Paladino, 2010). So, knowledge is a significant influencer in purchasing organic foods (Smith and Paladino, 2010).

Given the above, the sixth hypothesis (H6) is proposed.

H6. Organic food knowledge positively influences the organic food purchase intention.

In addition to the traditional influences of the constructions proposed by the TPB, some studies seek to observe the effects of moderation, mediation and relationships between the predictors of intention to consume organic foods (Kim and Choi, 2005; Kumar *et al.*, 2022; Smith and Paladino, 2010). For example, Dursun *et al.* (2019) state that the environmental psychology literature provides empirical evidence on the effect of subjective knowledge on pro-environmental behaviours.

In other words, an individual's environmental knowledge can be influenced by third parties on how much he knows about the environment (Dursun *et al.*, 2019). For Cahyasita *et al.* (2021), consumers' preference for organic foods is influenced by how people vital to them believe about consumer behaviour. Thus, people who favour organic food ingredients can influence other consumer attitudes. We assume, because of the above, that subjective norms positively influence the individual's environmental knowledge, impacting their intentions to purchase organic foods (H7).

H7. Subjective norms positively influence environmental knowledge.

Similarly, Fielding *et al.* (2008) report having observed in the literature that research shows that behaviourally relevant group norms significantly predict an individual's behaviour to engage in regular exercise and be active in household recycling. Smith and Paladino (2010) also argue that subjective norms have been shown to influence buying behaviours and suggest that the influence of others is an essential factor in determining behaviour. Thus, health-conscious individuals consistently favour an impact on purchasing organic products from those around them. For example, Khayyam *et al.* (2021) have identified that food security concerns, in the context of Pakistani immigrants in China, can be a potential barrier for foreigners to consume unfamiliar local and non-ethnic foods.

Especially with the advent of COVID-19, food security and health awareness have strongly influenced food consumption behaviour, as people have sought support and instruction for healthier eating with their social groups, including religious ones (Khayyam *et al.*, 2021). Consequently, the eighth research hypothesis (H8) is outlined.

H8. Subjective norms positively influence health consciousness.

So far, we have presented some predictors of the intention to purchase organic foods based on the TPB theory, added three other constructs to predict such intention and proposed some influence relationships. Returning to TPB, Ajzen (1991) mentions that intention refers to the extent to which an individual is willing to perform a particular behaviour and says how many times a person tries to achieve a specific behaviour.

Since humans are considered rational actors, Ajzen plans to achieve a specific goal and execute it accordingly, meaning that human behaviour is shaped by intentions (Smith and Paladino, 2010). Therefore, the purchase intention of organic foods can result in the adoption of this purchase behaviour by consumers (Mostafa, 2007). Consequently, we present the last hypothesis of this study (H9).

H9. The organic food purchase intention positively influences green purchase behaviour.

In the next section, we will present the methods. As shown, our model includes the classic variables of Ajzen's TPB (1991) and proposes the inclusion of additional constructs and indirect effects on green food purchase intention.

3. Methods
This causal study used a descriptive research design following a cross-sectional analysis to collect the required data. The methodology used in the research was quantitative, with the combination of PLS-SEM and fsQCA. The use of PLS-SEM is because the technique allows the estimation of complex models, with several constructs, indicator variables and structural paths, in addition to having a mediation analysis and because it is a causal-predictive approach, which emphasises prediction in the estimation of statistical models whose structures are designed to provide causal explanations (Hair *et al.*, 2019). The multi-method approach of symmetric (PLS-SEM) and asymmetric (fsQCA) techniques are suitable for research that aims to validate hypotheses but also provide deeper information into the complex configurations of variables (Rasoolimanesh *et al.*, 2021).

The scope of the target population was Generation Y consumers who were residents of the Republic of South Africa at the time of the interview, which took place in July 2021. No other limitations were stipulated regarding the target population to ensure a representative sample. Given many names (Millennials, Gen We and Echo Boomers), in 2020, the Generation Y cohort boasted the most significant global spending power of all current affiliates, with a projected global spending power of $1.4 tr (Kasasa, 2021). This sample spending power can be directly linked to the cohort's size, as in South Africa, around 35% of the population was formed by the Generation Y cohort in 2021. The age classification of the Generation Y cohort is widely debated; however, this study used the definition of McKinsey generational cohort, which says Generation Y consumers are born between 1980 and 1994.

The internationally renowned marketing research company IPSOS, Global Market Research and Public Opinion Specialist, captured the required data for this study. IPSOS owns a database of 40.000 participant panellists in the Republic of South Africa. To the research companies' vast participant pool size, a researcher's sample size target is often attained in full. The questionnaire's collection time-run was set over three days in which Generation Y participants formed part of the study.

To evaluate the sample size and the statistical power of the analysis, the G*Power software was used (Hair *et al.*, 2022). Considering that the model presents a maximum number of predictors for a construct of six, a significance level of 5%, a statistical power of 0.8 and an average effect size ($f^2 = 0.15$, which is equivalent to $r^2 = 13\%$), the minimum sample size required is 98. As the final sample comprised 500 respondents, it is suitable for estimation by

partial least squares path modelling (PLS-PM). The posterior (post hoc) analyses for the obtained sample indicate that: (a) any r^2 greater than 2.68% would be detected as significant, maintaining the power of 0.8 and the significance level of 5%; and (b) for the mean effect size, the power is 0.999, well above the value of 0.8.

Concerning the measurement instrument and data collection technique, IPSOS data collecting company implemented their FastFacts information capturing system to collect the required data. The FastFacts system entails participants undertaking a structured self-administered online questionnaire. Participants were allowed sufficient time to complete the questionnaire, and they were only allowed to complete the questionnaire once. The constructs that made up the measuring instrument were adapted from prior published and validated research.

To measure the independent variables (antecedents) of Generation Y consumers' organic food purchase behaviour, the following constructs were used: attitude towards organic foods (Yadav and Pathak, 2016); Subjective norms (Fielding *et al.*, 2008); perceived behaviour control (Kim and Choi, 2005); environmental knowledge (Mostafa, 2007); health consciousness (Tarkiainen and Sundqvist, 2005) and organic food knowledge (Singh and Verma, 2017). Finally, the independent measuring variables of purchase intention and purchase behaviour were adapted from Mostafa (2007). The questionnaire utilised a six-point Likert scale ranging from one strongly disagree to six strongly agree. Additionally, a cover letter on the front of the questionnaire explained the purpose of the study, included relevant contact information and informed participants that all data captured would be anonymous and reported solely in a statistical nature.

4. Results

Initially, we analysed the measurement model by performing a confirmatory factor analysis (CFA), considering that the indicators of the constructs were based on different authors. In this analysis, all factor loadings had values greater than 0.70 (Hair *et al.*, 2022) and no indicator had to be excluded. Table 1 presents the CFA result and the questionnaire indicators.

Next, we performed the PLSE-SEM analysis. We first analysed the measurement model. As all model constructs are reflexive, the study involved the criteria of convergent validity, discriminant validity and reliability (Hair *et al.*, 2022).

Convergent validity is the extent to which the construct converges to explain the variance of its items and is assessed by the average variance extracted (AVE), which must present values above 0.50. It should also be evaluated whether the factorial loads of the indicator are above 0.70. Discriminant validity is the extent to which a construct is empirically distinct from other constructs in the structural model. To assess discriminant validity, the square root of AVE must be greater than the correlation between constructs. It should also be evaluated whether the factor loadings of the indicators are greater than the cross-factor loadings (Hair *et al.*, 2019). The reliability of a measure is its consistency and stability. A measurement is reliable if the exact value is obtained if the measurement is repeated. To evaluate, we used Cronbach's Alpha and Composite Reliability indicators, which must be greater than 0.70 (Hair *et al.*, 2019).

Table 2 presents all the mentioned indicators and shows that the results are within those established by Hair *et al.* (2019).

For the validation of the structural model, the first step was evaluating the variance inflation factor (VIF) and all values were below 5 (Hair *et al.*, 2022). Then, we assessed the significance of the indicators with the bootstrapping technique and the effect sizes f^2 and R^2. The Student's *t*-test indicates that all relationships are significant except the relationship between subjective norms and purchase intention. To evaluate the outcomes of the structural model, we used the coefficient of determination (R2), where values of 0.75, 0.50 and 0.25 can be considered substantial, moderate and weak. The purchase intention presented an R2 of 0.672, the organic food purchase behaviour an R2 of 0.597, the environmental knowledge 0.452 and the health conscience 0.321. Thus, all results are considered between moderate and substantial.

Questions	Factor loading	Mean	Standard deviation	T-value	p-value
Attitude Towards Organic Food					
(ATT1) Buying organic food is a good idea	0.909	5,040	1,025	60,183	0.000
(ATT2) Buying organic food is a wise choice	0.895	5,070	1,032	56,663	0.000
(ATT3) I like the idea of buying organic food	0.901	4,952	1,107	69,092	0.000
(ATT4) Buying organic food is pleasant	0.866	4,748	1,124	54,930	0.000
Subjective Norms					
(SN1) People who are important to me behave in an environmentally friendly way	0.866	4,496	1,259	53,219	0.000
(SN2) People who are important to me would approve of me behaving in an environmentally friendly way	0.819	5,082	0.984	34,277	0.000
(SN3) People who are important to me encourage me to behave in an environmentally friendly way	0.888	4,596	1,241	71,372	0.000
Perceived Behaviour Control					
(PBC1) By signing a petition that promotes environmental protection, every person can have a positive effect on society	0.750	4,998	1,138	22,095	0.000
(PBC2) I feel I can help solve natural resource problem by conserving water and energy	0.811	5,074	1,041	26,460	0.000
(PBC3) I can protect the environment by buying products that are friendly to the environment	0.842	5,166	0.979	42,249	0.000
(PBC4) There is a lot I can do about the environment	0.858	5,006	1,067	44,979	0.000
(PBC5) I feel capable of helping to solve the environment problems	0.793	4,820	1,092	30,651	0.000
Environmental Knowledge					
(EK1) I know that I buy products and packages that are environmentally safe	0.790	4,602	1,138	32,596	0.000
(EK2) I know more about recycling than the average person	0.822	4,506	1,165	42,159	0.000
(EK3) I know how to select products and packages that reduce the amount of waste ending up in rubbish dumps	0.843	4,592	1,192	49,082	0.000
(EK4) I understand the environmental phrases and symbols on product packages	0.788	4,606	1,184	29,530	0.000
(EK5) I know a lot about environmental issues	0.814	4,594	1,103	40,368	0.000
Health Consciousness					
(HC1) I choose food carefully to ensure good health	0.890	4,788	1,162	62,246	0.000
(HC2) I think of myself as a health-conscious consumer	0.907	4,536	1,248	78,043	0.000
(HC3) I think often about health issues	0.853	4,804	1,175	47,501	0.000
Organic Food Knowledge					
(OFK1) I know when food is organic or non-organic	0.876	4,422	1,343	60,139	0.000
(OFK2) I know the production process of organic products	0.850	4,138	1,417	50,429	0.000
(OKF3) I think that organic foods are safer to eat	0.799	5,016	1,043	34,968	0.000
Purchase Intention					
(PI1) Over the next month, I will consider buying organic products because they are less polluting	0.918	4,802	1,120	75,828	0.000
(PI2) Over the next month, I will consider switching to other organic brands for environmental reasons	0.935	4,678	1,116	107,639	0.000
(PI3) Over the next month, I plan to switch to an organic version of a product	0.911	4,616	1,112	81,877	0.000

(*continued*)

Table 1.
Confirmatory
factor analysis

Questions	Factor loading	Mean	Standard deviation	T-value	p-value
Organic Food Purchase Behaviour					
(PB1) When I want to buy an organic product, I look at the ingredients label to see if it contains things that are environmentally-damaging	0.819	4,248	1,354	41,072	0.000
(PB2) I prefer organic products over normal products when their product qualities are similar	0.849	4,586	1,213	47,875	0.000
(PB3) I choose to buy organic products because they are environmentally friendly	0.866	4,704	1,166	61,357	0.000
(PB4) I buy organic products even if they are more expensive than the non-organic ones	0.820	3,936	1,437	48,757	0.000

Table 1.

Source(s): Developed by the authors

Constructs	ATT	SN	PBC	EK	HC	OFK	PI	PB
ATT	*0.893*							
SN	0.458	*0.858*						
PBC	0.578	0.646	*0.812*					
EK	0.511	0.671	0.668	*0.812*				
HC	0.624	0.566	0.572	0.681	*0.883*			
OFK	0.737	0.488	0.544	0.635	0.680	*0.841*		
PI	0.756	0.528	0.613	0.628	0.659	0.697	*0.921*	
PB	0.658	0.553	0.492	0.661	0.660	0.714	0.773	*0.838*
Cronbach's Alpha	0.915	0.821	0.870	0.870	0.859	0.974	0.911	0.859
rho_A	0.916	0.825	0.872	0.872	0.867	0.798	0.911	0.865
Composite Reliability	0.940	0.893	0.906	0.906	0.914	0.879	0.944	0.904
Average Variance Extracted (AVE)	0.797	0.737	0.659	0.659	0.780	0.708	0.849	0.703

Table 2.
Analysis of the measurement model

Source(s): Developed by the authors

According to the results, the relationships between subjective norms and purchase intention (H2) are not significant, a different result from previous studies (Matharu *et al.*, 2021; Teixeira *et al.*, 2021). A possible explanation may be that there is a total mediation effect of environmental knowledge and health consciousness in the relationship between subjective norms and purchase intention (Kim and Choi, 2005; Kumar *et al.*, 2022; Smith and Paladino, 2010).

Multiple mediation models were analysed considering each model in isolation, only with the relationships of the independent variable (subjective norms) with both mediating variables (environmental knowledge and health consciousness) and the dependent variable (purchase intention), as well as of the mediators with the model-dependent variable. Regarding the analysis of multiple mediations, the mediation effect of these variables can be seen with a good level of adjustment to a saturated model since the standardized root mean square residual (SRMR) indicator is less than 0.08 (Hair *et al.*, 2022) in all mediation scenarios.

It is observed that the effect of subjective norms on purchase intention is fully transmitted through the explanatory variables of environmental knowledge and health consciousness. The results indicate that subjective norms are one of the influencing factors in purchase intentions and that there is a full mediation by the other two constructs, supporting H2. Figure 1 presents the complete empirical model.

Next, we analysed the data with the fsQCA technique. For this, the scores of the latent variables were extracted from the PLS-SEM. The indicators were then standardised and
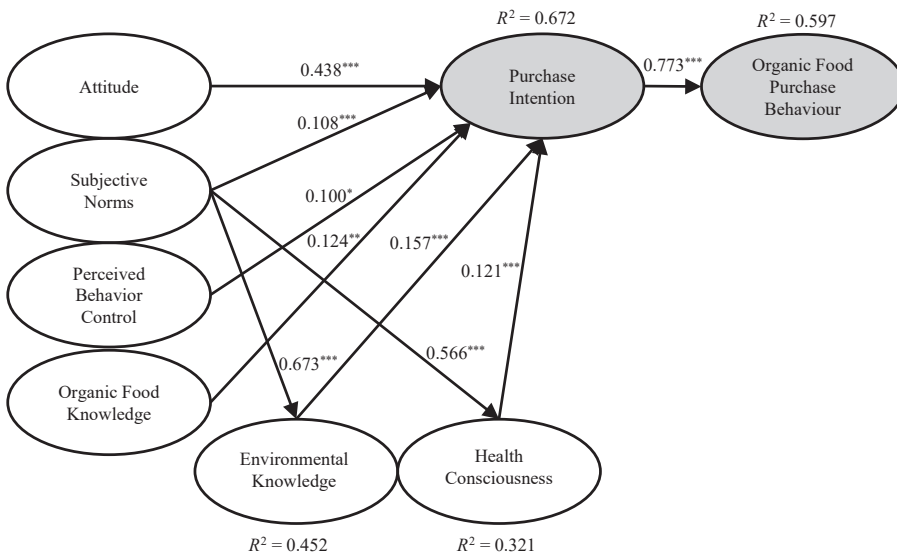
Source(s): Authors work

Figure 1.
Complete
empirical model

calibrated between 0 and 1, considering 0.5 as the crossover point. Thus, we created the truth table and sufficient configurations. Sufficient configurations are those with consistency above 0.8 and coverage above 0.2. There are six sufficient configurations for high levels of purchase intention. Another analysis performed was to verify the existence of necessary conditions. The necessary conditions are indicators that have consistency and coverage greater than 0.9. No indicator reached these values in this analysis, meaning there is no necessary condition.

Table 3 presents the six causal paths, identifying the core and contributing causal conditions and if the indicator is present or absent in the configuration.

5. Discussion
The research analysed organic food purchasing behaviour amongst Generation Y consumers in South Africa, applying a conceptual model validated through symmetrical and

Condition	Path 1	Path 2	Path 3	Path 4	Path 5	Path 6
ATT	●		●	●		○
SN	○	○	○	○	○	○
PBC	●	●				
EK				○	○	
HC		●	●			○
OFK			●		○	○
Raw coverage	0.730	0.695	0.662	0.434	0.345	0.239
Unique coverage	0.011	0.006	0.003	0.002	0.002	0.002
Consistency	0.941	0.944	0.965	0.910	0.813	0.782

Note(s): ● = contributing causal condition present and; ○ = absent contributing causal condition
Source(s): Developed by the authors

Table 3.
Configurational paths
for Purchase Intention

asymmetrical methods, providing a comprehensive view of the determinants and configurations that lead to high levels of organic food consumption. The demand for organic food, which used to be prominent in developed countries, is increasing significantly in emerging economies facing environmental problems and unsustainable consumption (Nguyen *et al.*, 2019).

In the PLS-SEM results, our assessment is in line with previous research. The constructs that make up the TPB confirmed the positive influence on the purchase intention of organic products in its three dimensions. The results are consistent with the literature related to the impact of attitude (Matharu *et al.*, 2021; Nguyen *et al.*, 2019), subjective norms (Matharu *et al.*, 2021) and behaviour control (Cavite *et al.*, 2022; Yadav and Pathak, 2016).

Environmental knowledge was also confirmed as a critical factor for purchase intention, resulting in environmentally friendly behaviour (Dursun *et al.*, 2019; Wu *et al.*, 2022; Yadav and Pathak, 2016). The purchase intention of organic consumers must be consistent with consumers' knowledge about the product (Singh and Verma, 2017). Consumers need to know what they buy to satisfy their needs and wants. Thus, food knowledge is an essential factor that can affect consumer behaviour, in which knowledge is cognitive learning (Singh and Verma, 2017). The same result validates knowledge about organic products, positively influencing purchase intention. However, for Singh and Verma (2017), organic and non-organic food buyers realised that organic products are free of pesticides and chemical fertilisers, pure, natural and healthy.

The influence of health consciousness was positive on purchase intention, demonstrating concern for health with the intake of natural products (Gam *et al.*, 2020; Paul and Rana, 2012). The results of Gam *et al.* (2020) supported the TPB theoretical framework in explaining the effect of health awareness on consumers' purchasing behaviour concerning organic textile decoration. However, health awareness does not describe general attitudes towards organic foods in the studies by Tarkiainen and Sundqvist (2005) and Zayed *et al.* (2022).

The PLS-SEM results also confirmed the full multiple mediation effect of environmental knowledge and health consciousness on the relationship between subjective norms and purchase intention, indicating the relationship and importance of these constructs for organic consumption intention models. This demonstrates that the social influence of essential people in forming the respondent's opinion is more effective in environmental knowledge and health consciousness, with the consumption of green foods as a consequence of this awareness.

The fsQCA results complement the PLS-SM results. Comparing the different antecedent configurations allowed a deeper analysis of the patterns that lead to positive purchase intent outcomes. The first significant result is that there is no necessary condition for high levels of purchase intention for organic. The results showed sufficient configurations that lead to high levels of purchase intention. Although the results of the PLS-SEM point to the positive influence of all the variables proposed in the purchase intention, fsQCA results indicate that not all the indicators of the constructs are essential to stimulate the intention.

In the different configurations that the technique presented, at most, three variables in one of the paths (Path 3) were offered as sufficient configurations, which consider attitude, health consciousness and organic food knowledge. Path 1 (with attitude and perceived behaviour control) and Path 2 (with perceived behaviour control and health consciousness) have only two variables. Path 4 presents only one variable (attitude) and only with it do some respondents have a high purchase intention. Finally, in paths 5 and 6, the results demonstrate some variables that, without them, it is already possible to have high purchase intention.

Based on the results, we can make three main contributions. *First*, we prove the importance of TPB and additional variables in a robust model with the high explanatory power of consumer behaviour about sustainability in a developing country. Environmental knowledge, organic food knowledge and health consciousness significantly influenced behavioural intention, being second only to attitude. Other studies, such as that of Gam *et al.* (2020),

supported the TPB theoretical framework in explaining the consumers' purchasing behaviour concerning organic textile decor, incorporating health consciousness in the model. Wu *et al.* (2022) incorporated environmental knowledge into TPB and had positive results in explaining waste management behaviour.

Second, we demonstrate that having all the antecedent behaviours is unnecessary to have a high sustainable purchase intention. The fsQCA results showed that several different configurations, with few antecedent behaviours, lead to high levels of purchase intention. This result validates and corroborates research like Yazdanpanah and Forouzani (2015), which demonstrated that perceived behaviour control and subjective norms were not significant predictors of intention. And Zayed *et al.* (2022) showed that consumers' subjective norms and perceived behavioural control did not influence the purchase intention of organic products in Egyptian consumers. In the study by Cahyasita *et al.* (2021), subjective norms also did not confirm as predictors of the will to return to consuming organic foods.

Third, we validated a multiple full mediation of environmental knowledge and health awareness in the relationship between subjective norms and purchase intention. These results are essential for behavioural sustainability research as they demonstrate that these three constructs can be incorporated separately into theoretical models. It also indicates that environmental knowledge (in the first place) and health awareness (in the second place) impact the purchase intention of organics more than the subjective norms.

In addition to the contributions presented, the article has important implications for research, practice and society. For research, the new validated model based on the TPB adds comparative indicators to simpler or more complex models in a context of increasing relevance: the consumption of green products in a developing country. In addition, we demonstrate the effectiveness of merging complementary techniques (PLS-SEM and fsQCA) in consumer intent research, presenting more flexible results. The results present important insights into antecedent choices for the consumption of green products in newly formulated models.

From a practical point of view, by demonstrating that not all indicators are necessary to obtain high levels of intention to consume organic products, we present implications on the importance of sustainable education, which stimulates environmental knowledge and health awareness, promoting more sustainable consumption. Thus, public policies encouraging organic products can focus on disseminating environmental knowledge and health awareness.

For society, the paper generates new insights to encourage sustainable consumption, with practical contributions to address specific Sustainable Development Goal (SDG) indicators. In SDG 2 - End hunger, achieve food security and improved nutrition and promote sustainable agriculture - by better understanding the background of organic consumption, the research indirectly stimulates and supports sustainable agriculture. In SDG 3 - Good health and well-being - the research incorporated and validated the health consciousness construct in a model of organic consumption, which is related to the pursuit of a sustainable lifestyle (Gam *et al.*, 2020) and related interest in well-being and self-care (Teixeira *et al.*, 2021). The research results demonstrate that the path to good health and well-being can be associated with the consumption of healthy foods. In SDG 12 - Ensuring sustainable consumption and production patterns - research focusses on understanding the antecedents of sustainable consumption and essential insights to stimulate the increase and production of sustainable consumption in a developing country.

6. Conclusions
The current food production and consumption system are incompatible with climate change mitigation goals and sustainable food production and consumption contribute to protecting and respecting the biodiversity of ecosystems. This article contributes to the debate on

consumer behaviour and sustainability issues by providing a deeper understanding of the dynamics between the factors that can drive green food purchasing behaviour. We present a robust and highly explanatory model to analyse the antecedents of organic food purchasing behaviour amongst Generation Y consumers in South Africa.

The research offers an original perspective on the sustainable consumption behaviour of a sample of generation Y from a developing country, with a combination of techniques that give greater robustness to the results. The results reinforce the complexity of determining the antecedents of sustainable consumption, as different configurations can lead to high consumption. However, some key variables are essential, such as attitude and health consciousness, which showed significant results in both analysis techniques. The article also contributes empirical results that help achieve the SDGs.

Despite the care taken in formulating the model and efforts to ensure methodological rigour, the research has limitations that we must address. The sample was carefully collected from many Y-generation respondents from South Africa. Still, it is not probabilistic, being a convenience sample, which limits the generalisability of the results. Another limitation point is in the model, where the variables used do not include all the influencers of organic consumption.

We can consider some suggestions for future research. The model and questionnaire can be applied in developing and developing countries, comparing results. Other constructs can be added to the model to comprehend further the organic food purchase and behaviours antecedents, like personality traits and socio-ecological values. Multiple full mediation in subjective norms can change in different contexts and types of consumption. Qualitative and longitudinal research that explores antecedents of consumption.

References

Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211, doi: 10.1016/0749-5978(91)90020-T.

Alabi, M.O. and Ngwenyama, O. (2023), "Food security and disruptions of the global food supply chains during COVID-19: building smarter food supply chains for post COVID-19 era", *British Food Journal*, Vol. 125 No. 1, pp. 167-185, doi: 10.1108/BFJ-03-2021-0333.

Ayyub, S., Wang, X., Asif, M. and Ayyub, R.M. (2018), "Antecedents of trust in organic foods: the mediating role of food related personality traits", *Sustainability (Switzerland)*, Vol. 10 No. 10, pp. 1-17, doi: 10.3390/su10103597.

Cahyasita, D., Irham and Jamhari (2021), "Intention to re-consume organic food: sensory attributes, egoistic motive, and warm glow in the extended TPB", *AIMS Agriculture and Food*, Vol. 6 No. 4, pp. 891-919, doi: 10.3934/agrfood.2021054.

Cavite, H.J., Mankeb, P., Kerdsriserm, C., Joedsak, A., Direksri, N. and Suwanmaneepong, S. (2022), "Do behavioral and socio-demographic factors determine consumers' purchase intention towards traceable organic rice? Evidence from Thailand", *Organic Agriculture*, Vol. 12 No. 2, pp. 243-258, doi: 10.1007/s13165-022-00387-1.

Chaturvedi, P., Kulshreshtha, K. and Tripathi, V. (2020), "Investigating the determinants of behavioral intentions of generation Z for recycled clothing: an evidence from a developing economy", *Young Consumers*, Vol. 21 No. 4, pp. 403-417, doi: 10.1108/YC-03-2020-1110.

Chaturvedi, P., Kulshreshtha, K., Tripathi, V. and Agnihotri, D. (2022 In press), "Investigating the impact of restaurants' sustainable practices on consumers' satisfaction and revisit intentions: a study on leading green restaurants", *Asia-Pacific Journal of Business Administration*, Emerald, Vol. ahead-of-print No. ahead-of-print, doi: 10.1108/APJBA-09-2021-0456.

Chen, M.F. (2007), "Consumer attitudes and purchase intentions in relation to organic foods in Taiwan: moderating effects of food-related personality traits", *Food Quality and Preference*, Vol. 18 No. 7, pp. 1008-1021, doi: 10.1016/j.foodqual.2007.04.004.

de Toni, D., Eberle, L., Larentis, F. and Milan, G.S. (2018), "Antecedents of perceived value and repurchase intention of organic food", *Journal of Food Products Marketing*, Vol. 24 No. 4, pp. 456-475, doi: 10.1080/10454446.2017.1314231.

Dursun, İ., Tümer Kabadayı, E. and Tuğer, A.T. (2019), "Overcoming the psychological barriers to energy conservation behaviour: the influence of objective and subjective environmental knowledge", *International Journal of Consumer Studies*, Vol. 43 No. 4, pp. 402-416, doi: 10.1111/ijcs.12519.

Fielding, K.S., McDonald, R. and Louis, W.R. (2008), "Theory of planned behaviour, identity and intentions to engage in environmental activism", *Journal of Environmental Psychology*, Vol. 28 No. 4, pp. 318-326, doi: 10.1016/j.jenvp.2008.03.003.

Gam, H.J., Yu, U. and Yang, S. (2020), "The effects of health consciousness on environmentally sustainable textile furnishing product purchase", *Family and Consumer Sciences Research Journal*, Vol. 49 No. 1, pp. 84-100, doi: 10.1111/fcsr.12376.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", *European Business Review*, Vol. 31 No. 1, pp. 2-24.

Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2022), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 3rd ed., Sage, CA.

Iqbal, J., Yu, D., Zubair, M., Rasheed, M.I., Muhammad, H., Khizar, U. and Imran, M. (2021), "Health consciousness, food safety concern, and consumer purchase intentions toward organic food: the role of consumer involvement and ecological motives", *SAGE Open*, Vol. 11 No. 2, doi: 10.1177/21582440211015727.

Kasasa (2021), "Boomers, G.X., Gen, Y. and Gen, Z. and Gen A explained", available at: https://www.kasasa.com/exchange/articles/generations/gen-x-gen-y-gen-z

Khayyam, M., Chuanmin, S., Qasim, H. and Ihtisham, M. (2021), "Food consumption behavior of Pakistani students living in China: the role of food safety and health consciousness in the wake of coronavirus disease 2019 pandemic", *Frontiers in Psychology*, Vol. 12 July, pp. 1-15, doi: 10.3389/fpsyg.2021.673771.

Kim, Y. and Choi, S.M. (2005), "Antecedents of green purchase behavior: an examination of collectivism , environmental concern, and perceived consumer effectiveness", *Advances in Consumer Research*, Vol. 32 August, pp. 592-599.

Kumar, S., Gupta, K., Kumar, A., Singh, A. and Singh, R.K. (2022), "Applying the theory of reasoned action to examine consumers' attitude and willingness to purchase organic foods", *International Journal of Consumer Studies*, Vol. 2026 April, pp. 1-18, doi: 10.1111/ijcs.12812.

Mahmood, I., Imadi, S.R., Shazadi, K., Gul, A. and Hakeem, K.R. (2016), "Effects of pesticides on environment", in *Plant, Soil and Microbes*, Springer International Publishing, pp. 253-269, doi: 10.1007/978-3-319-27455-3_13.

Marinković, V. and Lazarević, J. (2021), "Eating habits and consumer food shopping behaviour during COVID-19 virus pandemic: insights from Serbia", *British Food Journal*, Vol. 123 No. 12, pp. 3970-3987, doi: 10.1108/BFJ-11-2020-1072.

Matharu, G.K., von der Heidt, T., Sorwar, G. and Sivapalan, A. (2021), "What motivates young Indian consumers to buy organic food?", *Journal of International Consumer Marketing*, Vol. 34 No. 2, pp. 1-19, doi: 10.1080/08961530.2021.2000919.

Molinillo, S., Vidal-Branco, M. and Japutra, A. (2020), "Understanding the drivers of organic foods purchasing of millennials: evidence from Brazil and Spain", *Journal of Retailing and Consumer Services*, Vol. 52, 101926, doi: 10.1016/j.jretconser.2019.101926.

Mostafa, M.M. (2007), "Gender differences in Egyptian consumers? Green purchase behaviour: the effects of environmental knowledge, concern and attitude", *International Journal of Consumer Studies*, Vol. 31 No. 3, pp. 220-229, doi: 10.1111/j.1470-6431.2006.00523.x.

Nguyen, T.T.M., Phan, T.H., Nguyen, H.L., Dang, T.K.T. and Nguyen, N.D. (2019), "Antecedents of purchase intention toward organic food in an Asian emerging market: a study of urban Vietnamese consumers", *Sustainability*, Vol. 11 No. 17, p. 4773, doi: 10.3390/su11174773.

Paul, J. and Rana, J. (2012), "Consumer behavior and purchase intention for organic food", *Journal of Consumer Marketing*, Vol. 29 No. 6, pp. 412-422, doi: 10.1108/07363761211259223.

Rasoolimanesh, S.M., Ringle, C.M., Sarstedt, M. and Olya, H. (2021), "The combined use of symmetric and asymmetric approaches: partial least squares-structural equation modeling and fuzzy-set qualitative comparative analysis", *International Journal of Contemporary Hospitality Management*, Vol. 33 No. 5, pp. 1571-1592, doi: 10.1108/IJCHM-10-2020-1164.

Singh, A. and Verma, P. (2017), "Factors influencing Indian consumers' actual buying behaviour towards organic food products", *Journal of Cleaner Production*, Vol. 167, pp. 473-483, doi: 10.1016/j.jclepro.2017.08.106.

Smith, S. and Paladino, A. (2010), "Eating clean and green? Investigating consumer motivations towards the purchase of organic food", *Australasian Marketing Journal*, Vol. 18 No. 2, pp. 93-104, doi: 10.1016/j.ausmj.2010.01.001.

South Africa Online (2021), "Organic farming in South Africa", available at: https://southafrica.co.za/organic-farming-south-africa.html

Tarkiainen, A. and Sundqvist, S. (2005), "Subjective norms, attitudes and intentions of Finnish consumers in buying organic food", *British Food Journal*, Vol. 107 No. 11, pp. 808-822, doi: 10.1108/00070700510629760.

Teixeira, S.F., Barbosa, B., Cunha, H. and Oliveira, Z. (2021), "Exploring the antecedents of organic food purchase intention: an extension of the theory of planned behavior", *Sustainability*, Vol. 14 No. 1, p. 242, doi: 10.3390/su14010242.

Wu, L., Zhu, Y. and Zhai, J. (2022), "Understanding waste management behavior among university students in China: environmental knowledge, personal norms, and the theory of planned behavior", *Frontiers in Psychology*, Vol. 12 January, pp. 1-13, doi: 10.3389/fpsyg.2021.771723.

Yadav, R. and Pathak, G.S. (2016), "Young consumers' intention towards buying green products in a developing nation: extending the theory of planned behavior", *Journal of Cleaner Production*, Vol. 135, pp. 732-739, doi: 10.1016/j.jclepro.2016.06.120.

Yazdanpanah, M. and Forouzani, M. (2015), "Application of the theory of planned behaviour to predict Iranian students' intention to purchase organic food", *Journal of Cleaner Production*, Vol. 107, pp. 342-352, doi: 10.1016/j.jclepro.2015.02.071.

Zayed, M.F., Gaber, H.R. and el Essawi, N. (2022), "Examining the factors that affect consumers' purchase intention of organic food products in a developing country", *Sustainability*, Vol. 14 No. 10, p. 5868, doi: 10.3390/su14105868.

Corresponding author

Gustavo Hermínio Salati Marcondes de Moraes can be contacted at: salati@unicamp.br