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The comprehensive analysis of pro-environmental food purchasing behaviour among consumers observing halal diet

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Abstract

This study aimed to analyse the purchasing behaviour of pro-environmental food products among halal-diet consumers by adapting the Theory of Planned Behaviour as a research model. A quantitative method approach involved an online questionnaire administered to Malaysian consumers in Klang Valley to assess their norms, social norms, consumer sustainability orientation and perceived availability towards pro-environmental food consumption. Using structural equation modelling (SEM) in AMOS21, the findings reveal significant (p-value < 0.001) correlations between the Theory of Planned Behaviour constructs towards the environmentally conscious purchase behaviour among halal-dietary consumers. Personal norms, social norms, consumer sustainability orientation and perceived availability significantly influence consumers' environmentally conscious purchases. Therefore, this study contributed to a deeper understanding of pro-environmental food consumption among behaviour halal-dietary observers in Malaysia. Theoretically, there are strong relationships on the pro-environmental behaviour among halal-dietary observers. This study contributed to the existing literature by offering a comprehensive analysis of halal food consumption behaviours among Malaysians, employing quantitative methods within the Theory of Planned Behaviour framework. By examining the interplay between personal norms, social norms, consumer sustainability orientation and perceived availability, this study provided a nuanced understanding of halal food consumption dynamics in the Malaysian context, filling a gap in the literature and offering valuable insights for future research and practical applications. The findings had implications for industry and managers involved in the halal food industry, guiding targeted marketing strategies, product development, and policy initiatives to promote halal food consumption.

1. Introduction

Global populations are increasing daily; thus, the consumption of goods and services has mainly increased, depleting natural resources and damaging the environment (Joshi and Rahman, 2015; Sharma *et al*., 2022). The community is beginning to realize the current food consumption pattern may have a negative impact that can hurt the environment. The key to environmental sustainability is to promote more sustainable consumption, such as environmentally friendly behaviour (Han, 2021). For example, the environmentally conscious purchase of eco-friendly products is among the pro-environmental behaviours that can significantly improve the environment. Environmentally conscious purchase behaviour refers to the purchase behaviour of a product that promotes pro-environmental elements. In the food market, the food products commonly associated with pro-environments are identified through eco-labels (Potter *et al*., 2021). Different causes, processes, and motivations produce food with eco-labels. Despite the promising impact of the effort of the food eco-label initiatives, such a product's economic scale may be less felt and insignificant.

Ali and Suleiman (2016) coined a strong overlap between halal food production and sustainability principles. Halal food production is not only to provide

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Muslims (halal-dietary observers) with pure and safe food for consumption (Tahir and Muslih, 2023) but also to ensure hygiene, wholesomeness and environmentally friendly (Pg Hj Idris *et al*., 2022). It is also known as 'thayib', which is healthy for human consumption and benefits the consumer, community and environment. In short, the concept of "Halal and Thayib" supports the production of food that benefits consumers and indirectly promotes the environment by developing a pro-environmental product. Halal food production requires certification of compliance by a certifying body that will perform a series of inspections through the food production processes, including raw materials harvested, animal raising, slaughtering, transportation, materials handling, technical processing, and packaging. In this light, halal food production will contribute to sustainable development, also known as a significant pro-environmental food product.

The rising number of global populations drives the food industry to produce more food. In addition, consumers' purchase behaviour has changed and moved towards preserving the environment (Ashrafi and Maoua, 2024). In addition, the rising consumer demand for halal food has inspired considerable research to fulfil functional needs such as healthy, safe, and nutritious has inspired significant research. Various factors influence consumer attitude and behaviour, including egoistic (health, taste, safety, and fashion) and biosphere (local support, environment, and animal welfare) motives, have been reported by Rai *et al*. (2023), Yılmaz (2023) and Rana and Paul (2017) and Verma, Chandra, and Kumar (2019). However, scarce research attempts to amalgamate the pro-environmental purchasing behaviour and halal food (Zhang *et al*., 2022). Hence, this study will analyse the pre-environmentally conscious purchase behaviour among the halal-dietary observer. The specific aim of achieving the main objective is to evaluate the main factors affecting environmentally conscious purchase behaviour towards halal food consumption.

This research has been informed by the Theory of Planned Behaviour (Ajzen, 1991), which suggests that the consumer's norms, orientation, and perception affect the behaviour. Specifically, this research aims to investigate how environmentally conscious purchasing behaviour and halal-dietary observer consumer sustainability, perceived availability, and personal and social norms. In short, the research model for the current study was developed as in Figure 1. The research model suggests that variables affect environmentally conscious purchase behaviour, significantly highlighting sustainable consumption among halal-dietary observers. The aim of achieving the main objective is to evaluate the main factors affecting environmentally conscious purchase behaviour among halal-dietary observers. As a result of various modifications and refinements, this study measures four factors adapted from the Theory of Planned Behaviour through 16 items: personal norms (PN), social norms (SN), consumer sustainability orientation (CSO) and perceived availability (PA). The constructs of environmentally conscious purchase behaviour consist of five items.

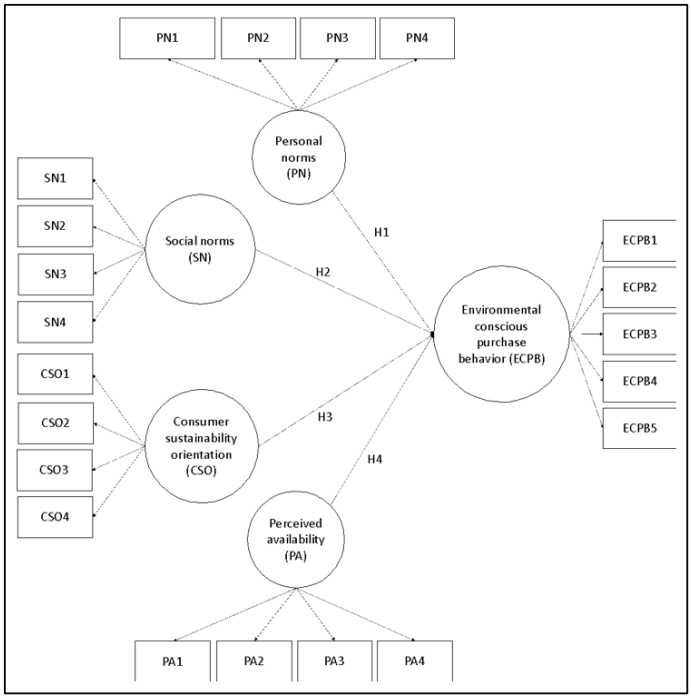

Figure 1. Research model of ECPB towards Halal food consumption.

Personal norms are self-expectations, self-responsibility, and sanctions rooted in the norm activation model (NAM) (Setiawan, Afiff and Heruwasto, 2019). Personal norm is also known as a reflection of internal values to decide. In this case, the halal-dietary observer aims to consume pure and safe food. Consumer perception, religion, and nutrition are factors that influence the consumption of Halal food (Triansyah, 2023). According to Farah (2020), norms influence consumers to purchase halal food products and services rather than non-halal ones. Kamboj and Kishor (2022) and Mazhar *et al*. (2022) confirmed that personal norms, such as individualistic values towards health safety and hedonistic values and eating pleasure, affected the purchase behaviour of more sustainable food products. Accordingly, this hypothesis adheres:

H1: Personal norms are a factor that positively influences an environmentally conscious purchase behaviour.

Social norms are attitudes and behaviours considered acceptable in culture, which give individuals an idea of how to behave. According to Salmivaara *et al*. (2021), social norms highly influence consumers' food choices, such as food intake, healthiness, and characteristics of

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food. Also mentioned, social norms also play an essential role in environment-related behaviour. According to Setiawan, Afiff and Heruwasto (2019), social norms have already been known as a behavioural influence and change factor. They also confirm that social norms positively influence pro-environmental purchasing behaviour by defining social norms as consumers' perceptions towards purchasing eco-friendly products. Hence, it is hypothesized that:

H2: Social norms are a factor that positively influences environmentally conscious purchase behaviour.

Zhao *et al*. (2021) defined consumer orientation as beliefs, attitudes, and reactions towards product, advertisement, and promotion marketing efforts. They also stated that decision-making and purchase intentions are influenced by consumer orientation. Consumer behaviour towards a product is also based on their beliefs. In this context, consumer attitudes and beliefs in sustainability towards the environment by consuming pro -environmental products. Research by Golob *et al*. (2018) and Piligrimienė *et al*. (2020) has shown that consumer sustainability orientation influenced the consumption behaviour of green products positively. Based on the research found, the below hypothesis was proposed.

H3: Consumer sustainability orientation is a factor that positively influences environmentally conscious purchase behaviour.

According to Kamboj and Kishor (2022) and Mazhar *et al*. (2022), studies have found that perceived behavioural control has had a significant and positive impact on intention and actual purchase of green products. Golob *et al*. (2018) and Piligrimienė *et al*. (2020) showed that a previous study found that consumers who consumed green products and had accessibility to the product were more likely to exhibit green consumption behaviour. Also mentioned in their study was perceived availability, which positively and significantly impacted buying sustainable dairy products. With these findings, the following hypothesis was proposed.

H4: Perceived availability is a factor that positively influences an environmentally conscious purchase behaviour.

Thus, the specific aim of this study is to evaluate the four factors adapted from the Theory of Planned Behaviour through 16 items: personal norms (PN), social norms (SN), consumer sustainability orientation (CSO) and perceived availability (PA) that affecting the environmentally conscious purchase behaviour towards halal food consumption.

2. Methodology

2.1 Participants and procedures

This study was conducted among consumers in Klang Valley, a region that comprises Federal Kuala Lumpur, Selangor district of Petaling, Klang, Gombak, Hulu Langat, Sepang, and Kuala Langat. The study was conducted to study the impact of consumers' environmentally conscious purchase behaviour among halal-dietary observers. A total of 424 respondents responded to this study, but only 355 were selected based on eligibility and the criteria required for this study. A few eligibility criteria are considered to control and obtain a correct measurement. The respondents must be Malaysian in nationality, follow a halal diet and consume pro-environmental food or so-called green food products. As per the decision on critical thinking and controlling the response, respondents must be at least 18 years old. An online questionnaire created using Google Forms is a tool used to collect data.

2.2 Measures

The questionnaires are developed based on hypotheses created. The survey is divided into two sections. The first section was respondents' demographic profile, which included age, gender, education level, employment status, and household income. The second section was five-point Likert scale questions. Each question in this section has sub-questions based on each hypothesis. The five-point Likert scale was used in this questionnaire to increase the response rate, and the respondents easily understood it. The items were adapted from Golob *et al*. (2018), which has been employed to measure personal norms, social norms, consumer sustainability orientation, perceived availability, and environmentally conscious purchase behaviour. After analysing the data through the Exploratory Factor Analysis (EFA), it has been found that all 21 items were suitable for measuring the variables in this study.

2.3 Demographics

In this study, 424 respondents participated in the survey. However, the total number of respondents selected was 355 upon completing the questionnaire, and the rest were discarded. Table 1 shows the demographic analysis of respondents included respectively in the regression. It can be seen that 75.21% of the respondents were female, and 24.78% were male. According to Droogenbroeck and Hove (2020), this data is realistic since women are responsible for grocery shopping. Most respondents were between 18 and 24 years old, with 71.77%. Also, most of the respondent's education level

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is a bachelor's degree at 66.76%, followed by a diploma at 23.94%. Most of the respondents are employed full-time, at 65.63%, followed by unemployed at a rate of 21.41%. Finally, the household income of respondents is RM 1,000- 3000, RM 1,000 and below, RM 7,001-10,000, RM 5,001- 7,000, and RM 10,001 and above at rates of 28.73%, 24.51%, 20%, 10.99%, 8.45%, and 7.32% respectively.

Table 1. Demographic analysis.

Age of respondents		
Factor	Number	Percentage (%)
18-24 years old	254	71.55
25-34 years old	56	15.77
35-44 years old	29	8.17
45-54 years old	12	3.38
55 years old and above	4	1.13
Gender of respondents		
Factor	Number	Percentage (%)
Male	88	75.21
Female	267	24.79
Education level of respondents		
Factor	Number	Percentage (%)
Primary	1	0.28
Secondary	20	5.63
Diploma, Certificate	85	23.94
Bachelor's degree	237	66.76
Master's degree	8	2.25
Doctorate' degree	4	1.13
Employment status of respondents		
Factor	Number	Percentage (%)
Employed full-time	233	65.63
Employed part-time	11	3.1
Employed contact	10	2.82
Self-employed	21	5.92
Unemployed	76	21.42
Retired	4	1.13
Household income of respondents		
Factor	Number	Percentage (%)
RM 1,000 and below	87	24.51
RM 1,001 to RM 3,000	102	28.73
RM 3,001 to RM 5,000	71	20.00
RM 5,001 to RM 7,000	30	8.45
RM 7,001 to RM 10,000	39	10.99
RM 10,000 and above	26	7.32

3. Results

3.1 Reliability analysis

The reliability analysis was conducted to verify the instrument's reliability for the personal norms, social norms, consumer sustainability orientation, perceived availability, and environmentally conscious purchase behaviour. Based on Table 2, Cronbach's Alpha was greater than 0.7 for all constructs. Awang (2011, 2012), Hair *et al*. (2010), and Sekaran and Bougie (2010) stated that Cronbach's Alpha value greater than 0.6 indicates the instruments are reliable enough to be employed for this study.

3.2 Mean and standard deviation

Table 3 shows the mean value of halal food consumption among Malaysians. The values of consumers' norms, social norms, consumer sustainability orientation and perceived availability towards environmentally conscious purchase behaviour to choose halal food products. The mean value and standard deviation for every item show that the score distribution is consistent since the standard deviation is less than 1.0. Generally, the respondents were satisfied with all of the items, as the mean score is greater than 3.8. Since this study used a 5-point Likert scale, it shows that all the items in this study were at a good level.

3.3 Confirmatory factor analysis

Prior to modelling the structural model and executing structural equation modelling (SEM), the study needs to validate the measurement model of all latent constructs in the model for one-dimensionality, validity, and reliability (Awang, 2014, 2015). The procedure involved for validation is confirmatory factor analysis (CFA). The measurement model for five latent constructs needs to achieve the requirement for validity: Convergent Validity, Construct Validity and Discriminant Validity. Based on the results, the Fitness Indexes for the GFI = 0.732 have not achieved the required level. Therefore, the low factor loading item must be removed from the model if the fitness indexes are not achieved (Awang, 2014, 2015). However, since the factor loading for all items is above 0.60, the poor fitness indexes might be caused by redundant items. The redundant items can be identified through Modification Indexes (MI), where the value of MI > 15.0 indicates the pair of items is redundant.

The modification must be done one at a time until the fitness indexes are attained. Hence, the items with MI greater than 15.0 need to be deleted or correlated to have a good fit of the measurement model (Awang, 2015). Thus, after several MI has been done, by deleting the items (CSO4, PA1) and correlated the items (PN2 with PN3, PN3 with PN4, SN1 with SN2, CSO1 with CSO3) based on its lower loading, the fitness indexes were achieved: GFI = 0.90, RMSEA = 0.07, TLI = 0.96, CFI = 0.96, Chisq/df = 2.637. The final measurement model after modifications is shown in Figure 2. The assessment for construct validity is shown in Table 4. Table 4 shows

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Table 2. Reliability assessment for all constructs (n = 355).

Items		α
Personal norms (PN)		0.86
PN1	It is important for me to buy halal food that pro-environmental.	
PN2	It is important for me to choose pro-environmental food product.	
PN3	I feel an obligation for me to buy halal food product.	
PN4	I feel a moral obligation for me to buy pro-environmental food product.	
Social norms (SN)		0.91
SN1	Consumers around me influence my behaviour to buy halal food that pro-environmental.	
SN2	Contacts who are important to me think I should buy halal food that pro-environmental.	
SN3	My family members think I should buy halal food that pro-environmental.	
SN4	My friends who are important to me think I should buy halal food that pro-environmental.	
Consumer sustainability orientation (CSO)		0.92
CSO1	It is important to me to care about environmental sustainability.	
CSO2	It is important to me to buy Halal food that pro-environmental.	
CSO3	It is important to me to preserve the environment.	
CSO4	It is important to me to use biodegradable food packaging.	
Perceived availability (PA)		0.86
PA1	I believe halal food can be obtained easily in Malaysia.	
PA2	I believe halal food that pro-environmental can be obtained easily in Malaysia.	
PA3	I believe halal food that pro-environmental can be obtained easily in my housing area.	
PA4	I believe halal food that pro-environmental can be obtained easily in my workplace area.	
Environmentally conscious purchase behaviour (ECPB)		0.92
ECPB1	When there is choice, I always buy halal food that pro-environmental.	
ECPB2	I always buy halal food with biodegradable packaging when there is choice.	
ECPB3	It is important to me for manufacturer to reduce their emission.	
ECPB4	I buy halal food products that pro-environment.	
ECPB5	I always purchase product from responsible environmental manufacturers.	

Table 3. Halal food consumption among Malaysian (n = 355).

Items		Mean	SD
Personal norms (PN)			
PN1	It is important for me to buy halal food that pro-environmental.	4.51	0.80
PN2	It is important for me to choose pro-environmental food product.	4.30	0.82
PN3	I feel an obligation for me to buy halal food product.	4.78	0.63
PN4	I feel a moral obligation for me to buy pro-environmental food product.	4.34	0.81
Social norms (SN)			
SN1	Consumers around me influence my behaviour to buy halal food that pro-environmental.	4.05	0.92
SN2	Contacts who are important to me think I should buy halal food that pro-environmental.	4.09	0.95
SN3	My family members think I should buy halal food that pro-environmental.	4.01	0.90
SN4	My friends who are important to me think I should buy halal food that pro-environmental.	4.10	0.82
Consumer sustainability orientation (CSO)			
CSO1	It is important to me to care about environmental sustainability.	4.51	0.77
CSO2	It is important to me to buy Halal food that pro-environmental.	4.43	0.82
CSO3	It is important to me to preserve the environment.	4.54	0.76
CSO4	It is important to me to use biodegradable food packaging.	4.41	0.82
Perceived availability (PA)			
PA1	I believe halal food can be obtained easily in Malaysia.	4.75	0.64
PA2	I believe halal food that pro-environmental can be obtained easily in Malaysia.	4.05	0.99
PA3	I believe halal food that pro-environmental can be obtained easily in my housing area.	4.07	0.91
PA4	I believe halal food that pro-environmental can be obtained easily in my workplace area.	4.11	0.80
Environmentally conscious purchase behaviour (ECPB)			
ECPB1	When there is choice, I always buy halal food that pro-environmental.	4.33	0.90
ECPB2	I always buy halal food with biodegradable packaging when there is choice.	4.21	0.92
ECPB3	It is important to me for manufacturer to reduce their emission.	4.50	0.76
ECPB4	I buy halal food products that pro-environment.	4.16	0.94
ECPB5	I always purchase product from responsible environmental manufacturers.	4.00	0.97

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the Fitness Indexes for the measurement model. The results have achieved the acceptance level for Construct Validity as recommended by Meyer *et al*. (2006), Awang (2011, 2012, 2014, 2015), Bentler (1990) and Bentler and Bonett (1980).

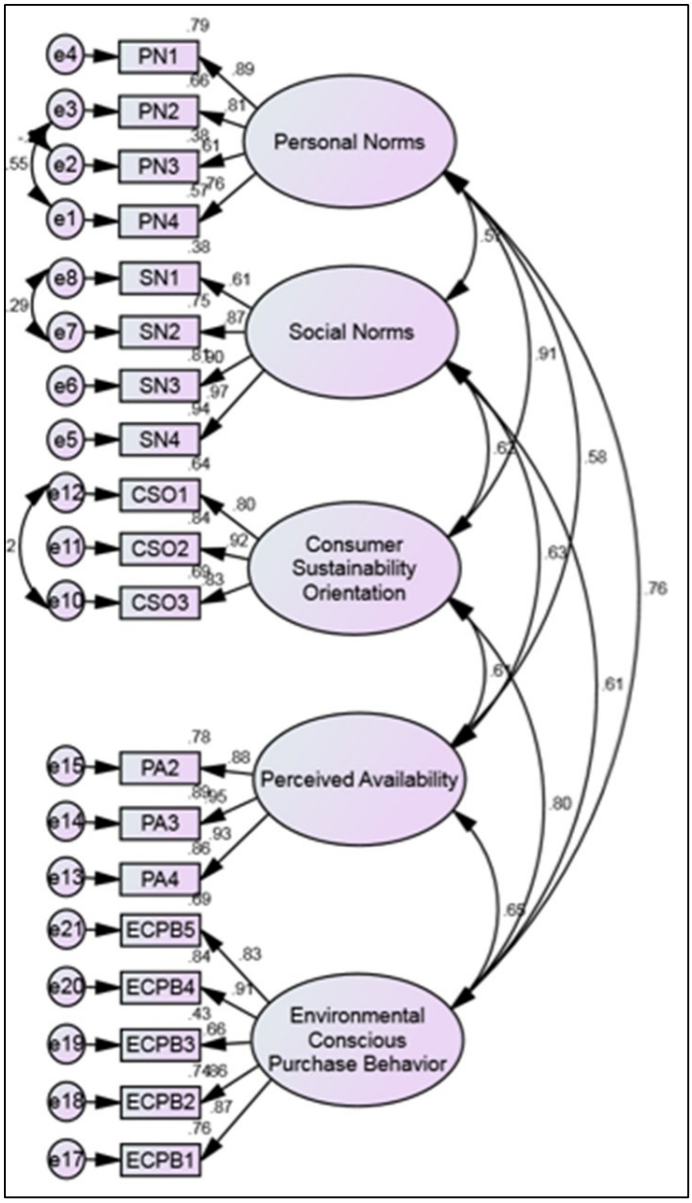

Figure 2. The final measurement model combining all five constructs.

3.3.1 Convergent validity and reliability

After the fitness indexes had been accepted, the study needed to assess the convergent validity and reliability through the average variance extracted (AVE) and composite reliability (CR) values. For AVE, the minimum value is 0.5, while the minimum value for CR is 0.6 (Awang, 2011, 2012, 2014, 2015). The results show that all the constructs and items involved in the measurement model achieved the required value. All items from the model in Figure 2 were included for further analysis. The results for AVE, which indicates Convergent Validity and CR, which indicates Construct Reliability, are summarized in Table 5.

Table 5. The summary for AVE and C3R for all constructs.

Construct	Composite reliability (CR)	Average Variance Extracted
Personal norms	0.86	0.60
Social norms	0.91	0.72
Consumer sustainability orientation	0.89	0.72
Perceived availability	0.94	0.84
Environmentally conscious purchase behaviour	0.92	0.69

3.3.2 Discriminant validity

The Discriminant Validity was assessed by developing a discriminant validity index summary, as shown in Table 6. Based on Table 6, it can be concluded that the Discriminant Validity for all constructs in this model is achieved because the diagonal value is higher than the values in its row and column (Awang, 2011, 2012, 2014, 2015). It is shown that no multicollinearity problem was encountered in the model. Once all the requirements for testing the one-dimensionality, Validity and Reliability of Measurement Model are achieved, this Confirmatory Factor Analysis model can develop the SEM.

3.4 Structural equation modelling and hypotheses testing

This study proposed that four exogenous variables, which consist of personal norms, social norms, consumer sustainability orientation and perceived availability, will influence environmentally conscious purchase behaviour. The inter-relationship among the constructs is modelled, and the estimated results are shown in Figure 3. In summary, all hypotheses were significant, as shown in Table 7. The results show that hypotheses 1, 2, 3 and 4, where personal norms, social norms, consumer sustainability orientation, and perceived availability significantly influence environmentally conscious purchase behaviour ($\beta = 0.76$, $p < 0.001$, $\beta = 0.61$, $p < 0.001$, $\beta = 0.51$, $p < .001$ and $\beta = 0.22$, $p < 0.001$).

Table 4. The fitness indexes assessment for the measurement model in Figure 2.

Name of category	Fitness Indexes	Acceptance level	Result
Absolute fit	Goodness of fit index	GFI > 0.80	0.90: Achieved
	Root mean square error of approximation	RMSEA < 0.08	0.07: Achieved
Incremental fit	Tucker-Lewis indices	TLI > 0.90	0.96: Achieved
	Comparative-fit indices	CFI > 0.90	0.96: Achieved
Parsimonious fit	Chi Square/Degrees of Freedom	Chisq/df < 3.0	2.637: Achieved

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Table 6. The discriminant validity index summary.

Constructs	PA	PN	SN	CSO	ECPB
Perceived Availability (PA)	**0.919**				
Personal Norms (PN)	0.577	**0.776**			
Social Norms (SN)	0.634	0.573	**0.848**		
Consumer Sustainability Orientation (CSO)	0.605	0.614	0.621	**0.851**	
Environmentally conscious Purchase Behaviour (ECPB)	0.650	0.758	0.610	0.802	**0.832**

Note: The bold numbers in diagonal row are the square root AVE values

Table 7. Hypotheses and results.

Description	Construct and items	Expected relations	β	*t*-value	Path coefficients	Hypotheses	Result
Personal norms to environmentally conscious purchase behaviour	PN → ECPB	+	0.76	2.842	***	H1	Supported
Social norms to environmentally conscious purchase behaviour	SN → ECPB	+	0.61	1.724	***	H2	Supported
Consumer sustainability orientation to environmentally conscious purchase behaviour	CSO → ECPB	+	0.51	3.424	***	H3	Supported
Perceived availability to environmentally conscious purchase behaviour	PA → ECPB	+	0.22	4.260	***	H4	Supported

Note: ***p-value < 0.001

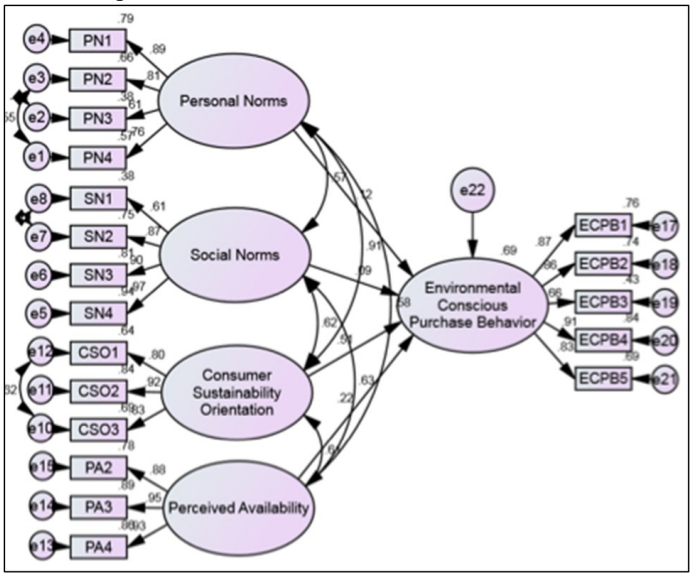

Figure 3. Structural model of personal norms, social norms, consumer sustainability orientation and perceived availability towards ECPB (n = 355).

4. Discussion

Considering the result of this study, consumers observing halal dietary in the Klang Valley are aware of pro-environmental food products. In general, Halal food consumption benefits human consumption and takes care of the environment, extending the claims of halal and sustainability connection by Ali and Suleiman (2016). Based on the result, personal norms, social norms, customer sustainability orientation, and perceived availability positively influence environmentally conscious purchase behaviour at a significance of 0.76, 0.61, 0.51, and 0.22, respectively. As environmentally conscious purchase behaviour was positively influenced, halal food consumption increased. This is determined by readings of previous research that concluded that halal food is a pro-environmental food product.

Industry and managers should benefit consumers who follow halal-dietary guidelines, which are not only concerned from a religious point of view but also signify a sustainable consumption pattern. For both personal and social norms among the halal-dietary observer, the norms go beyond fulfilling religious needs; they also reflect environmental concerns. Managers should also consider consumer opportunities as social factors influencing consumer buying behaviour. The current social media age could influence consumers to buy pro-environmental products and indirectly care about the environment, rooted in the halal-dietary observer. More consumption of pro-environmental products will surely lessen the pressure of harmful effects on the environment. The key players in the food production sector aim to manufacture food products to reach the bottom line of minimizing the negative impact on the environment, facilitating the operations standard and producing a food product with high nutritional values to fulfil the consumers' demand. In this context, the behaviour of the consumers on pro-environmental food products, specifically halal food products, is very important.

5. Conclusion

Consumer purchase behaviour towards pro-environmental food products is confirmed using the lens of the theory of planned behaviour. Factors such as PN, SN, CSO, and PA are indeed important in ascertaining the conscious behaviour of an individual observing a halal diet. Therefore, this paper offers empirical evidence that halal diet observers are not only consciously bound to the religiosity requirement but also being influenced by other important factors. This study had some

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limitations, and this research only specified consumer perceptions. Future studies are suggested to identify the implementation rate of 'thayyiban' concept in the food industry. Industrial implementation is important in environmental sustainability as consumer food consumption increases population. High implementation of the 'thayyiban' concept leads towards food security and protects the environment from unnecessary damage as harmful chemicals.

Conflict of interest

The authors declare no conflict of interest.

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