

Determinants Influencing Consumers' Intentions to Purchase Green Products: Empirical Insights from Malaysian Consumers

Zahoor Ur Rehman, Noor Aslinda Abu Seman, and Amran Harun

Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Parit Raja, Malaysia

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Abstract: Consumers around the world have shifted from conventional to green products, and their green consumption is increasing. Growing demand for sustainability and environmental protection drives this shift. Consumers have become more aware of the need to reduce their carbon footprint and make more sustainable choices. Similar is the case in Malaysia as green products are available in open markets, but a low level of intention toward purchasing them still exists. With a specific focus on the Malaysian context, this study is aimed at identifying the factors that contribute to consumers' low intentions for purchasing green products. The Theory of Planned Behavior (TPB) is extended with perceived environmental concern (PEC) and perceived environmental knowledge (PEK). A survey questionnaire with a non-probability sampling technique was used, and 155 survey responses were collected from respondents in Malaysia. Using structural equation modeling (PLS-SEM), the collected data were analyzed, and the results revealed that PEC, PEK, and subjective are the strongest predictors of consumers' intention as these factors significantly influence intention to purchase green products. Interestingly, the study revealed that attitude toward green products failed to have a significant relationship with the intention to purchase green products. In green marketing contexts, our study results demonstrate that extended the TPB has higher predictability than the TPB variables. The model's additional constructions (PEK and PEC) significantly contribute to a better understanding of green product purchase intention development and potentially become long-term main-stream variables.

Keywords: attitude; environmental concern; environmental knowledge; intention to purchase; Malaysia; subjective norms; TPB

I. INTRODUCTION

The global market is designed to rely on human steady and increasing consumption; thus, every effort is made to make consumers desire more, demand more, and spend more [1]. Obviously, with the growing demands of consumers for products and services, production is also rising to meet these demands. This rising product demand and its consequent increased production lead to quick environmental damage due to the reduction in natural resources [2]. Climate change, environmental degradation, land erosion, biodiversity loss, and lower animal welfare are among the environmental degradation results [3].

Unplanned purchases of products can significantly lead to environmental pollution, so ecological sustainability purchasing is essential. According to Joshi and Rahman [4], consumer household purchasing is responsible for 40% of environmental impact. By choosing green products (also known as environmentally friendly products), consumers can help avoid or reduce environmental damage. "A green product could be a product designed, manufactured, used and disposed of according to economic, environmental and social efficiency criteria, which maximize net benefits across generations" [5].

Hence, the Malaysian government and the other 192 world leaders adopted the 2030 Agenda for Sustainable Development (2030 Agenda) at the United Nations General Assembly in New York on September 25, 2015, EPU [6]. In addition, the Malaysian government has launched several green initiatives, including the

Ministry of Energy and Natural Resources (KETSA), MyHIJAU, and the national eco-labeling scheme, to promote and encourage the public use of green technology and the consumption of green products [7]. In addition, the Malaysian government also signed on with ISO 14001 for environmental sustainability in Malaysia. ISO 14001 is an international standard focused on environmental management systems for organizations [8]. Despite government efforts, consumer purchasing of green products remains low in Malaysia [9]. Studies conducted in the Malaysian context by Tan *et al.* [10] and Nair and Balakrishnan [11] investigated consumers' intentions to purchase green products.

However, despite this knowledge, a lack of research presents a complete analysis of the determinants affecting Malaysian consumers' intentions to buy green products. Consequently, the authors establish Malaysian consumers' purchasing intentions by adding perceived environmental concern (PEC) and perceived environmental knowledge (PEK) and their influence on attitude and subjective norms to explore the phenomenon of green product purchasing. Consumer purchasing behavior refers to the actions and choices consumers make when purchasing. It involves evaluating alternatives, making decisions, and concluding the purchase transaction. On the other hand, consumers' purchase intentions are at an early stage of the decision-making procedure. It is the likelihood that a customer will make a subsequent purchase of a good or service. A consumer is said to be in "buying intent" when he or she indicates an interest in making a purchase but has not yet gone through with the transaction. This study intends to investigate Malaysian consumers' intention to purchase green products, as green products are not common compared to conventional products. The paper is structured as follows.

Corresponding author: Noor Aslinda Abu Seman (e-mail: naslinda@uthm.edu.my).

Section II presents the theoretical framework and literature review. Section III presents data and Methodology, whereas Section IV presents analysis of the data and findings. The remaining paper is structured with discussion, implications, limitations, and future research directions.

II. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

A. THEORY OF PLANNED BEHAVIOR (TPB)

The Theory of Planned Behavior (TPB) developed by Ajzen [12] is a theoretical model extensively adopted by academics to study consumer behavior. Several studies have used TPB to examine consumers' intentions to buy green products. For example, several researchers have adapted and extended TPB based on environmental sustainability to explore consumers' intentions and behavior to purchase green products [13–17]. Therefore, it is evident that TPB has strong predictive power to investigate consumers' intentions. As can be seen from Fig. 1, the authors consequently derived purchase intention, attitude, and subjective norms from the TPB and extended it with environmental concern and environmental knowledge to investigate Malaysian consumers' intentions to purchase green products.

B. ATTITUDE TOWARD GREEN PRODUCTS

Attitude is "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" [12]. When purchase outcomes are favorably regarded, a person's attitude tends to be positive, and he or she is more inclined to be involved in that particular behavior [12]. Consumer attitudes and intentions toward green purchases have been described in a variety of countries and cover a broad spectrum of environmentally friendly products, such as organic food [13–15], green hotels visit intentions [18–20], and sustainable cosmetics purchase [21,22]. At the same time, some recent research has added to the field of green products by examining the influence of consumers' attitudes toward intentions to purchase products. For example, Chi and Zheng [23], Ko and Jin [24], Chang and Watchravesringkan [25], and Rausch and Kopplin [26] have proven that consumers' attitudes significantly affect intentions to purchase green products. The hypothesis for this study has been hypothesized based on the findings:

H1. Attitude toward green products significantly influences intention to purchase green products.

C. SUBJECTIVE NORMS

The terms "social norm" and "subjective norm" are used interchangeably and defined as "the amount of social pressure exerted on an individual to do or abstain from performing a particular action or behavior" [27]. Subjective norms serve a practical purpose when expressing an individual's impression of their closed relations [28]. Based on the researcher's discussion, the authors of this study thus conclude that subjective norms are the feelings and impressions that an individual receives from others close to him/her and that he/she follows them and acts in the same way. Hence, in the purchase decision, the individuals follow their referents and thus purchase the specific products. Subjective norms are found to have a significant relationship with behavioral intentions. For example, Kim and Chung [29], Nilssen et al. [30] and Saleki et al. [13], Tan et al. [10], and Chen and Tung [18] have investigated subjective norms in the context of green products. The findings revealed that subjective norms significantly affect consumers' intentions to purchase green products. However, literature is scarce providing information about Malaysian subjective norms and their intention to purchase green products. Consequently, we proposed the hypothesis that:

H2. Subjective norms significantly influence the intention to purchase green products.

D. PERCEIVED ENVIRONMENTAL CONCERN (PEC)

Environmental concern alludes to public awareness, willingness to tackle environmental concerns, or willingness to help with their solutions individually [31]. There has been a growing public concern regarding environmental issues. Our environment is deteriorating daily, and we, as humans, are responsible for it, which we must control. In the same way, many people are becoming aware that their purchasing decisions can damage the environment. Thus, they have started shifting from ordinary to sustainable products and paying even more for them. [18]. Aman et al. [32] mentioned that environmental concern is an essential aspect of consumers' decision-making. Most of those worried about the environment will increase their intention to purchase green products. Therefore, environmental concerns are frequently identified as a critical driver of purchase intention. For example, Paul et al. [33], Chaudhary and Bisai [31], and Maichum et al. [27] found that environmental concern significantly affects individuals' purchase intention for green products. In the meantime, we found no study examining the relationships between environmental concern, attitude, subjective norms, and purchase intention, particularly in Malaysia and the



green product context. Hence, we adopted the framework of Chaudhary and Bisai [31] and Maichum *et al.* [27] and investigated the Malaysian consumers' intentions to purchase green products with the following proposed hypotheses.

H3. Environmental concerns significantly influence attitudes toward green products.

H4. Environmental concerns significantly influence subjective norms.

H5. Environmental concerns significantly influence the intention to purchase green products.

III. PERCEIVED ENVIRONMENTAL KNOWLEDGE (PEK)

Environmental knowledge is "factual information that individuals have about the environment, the ecology of the planet, and the influence of human actions on the environment" [25]. Researchers revealed a need for education related to the environment since it influences their environmental purchase intentions when buying sustainable products with positive and significant environmental effects [25,27]. Furthermore, Chang and Watchravesringkan [25] stated that customers' knowledge is essential in explaining the discrepancy between their purchasing intention and actual purchase behavior. Earlier research has discovered that PEK is one of the main characteristics that significantly affect customers' intention to purchase green products [26,27]. Furthermore, existing research has demonstrated the influence of PEK as a strong determinant of creating a green attitude [26,34,35]. Alternatively, recent studies on the effects of environmental knowledge on subjective norms toward green purchase intention have been cited [27]. The studies mentioned have found a positive relationship between PEK, attitude, subjective norms, and purchase intention. Due to the scarcity of such relationships in the Malaysian context, the authors thus proposed that:

H6. Environmental knowledge significantly influences attitudes toward green products.

H7. Environmental knowledge significantly influences the intention to purchase green products.

H8. Environmental knowledge significantly influences subjective norms.

IV. DATA AND METHODOLOGY

This study is designed to assess the effects of selected variables on customers' intentions to purchase green products in Malaysia. The study population is Malaysian consumers. Although it is challenging, especially as a cross-sectional study, to cover all Malaysian consumers. Therefore, redefining the target population, the millennial consumers (18 to 44 years old) are the target population for this study. A cross-sectional approach was used for data collection, and a QR Code was generated for the questionnaire. The target population was Malaysian consumers residing in Selangor, Perak, and Johor. These states of Malaysia are selected based on the high population penetration compared to other states. In these states, consumers comprise most of the urban population, making them an ideal study location to understand better how they view green products. Complete data were collected using a convenience sample strategy during the two months (March and April 2022) from 155 respondents, with valid responses 141, which is enough for the analysis. One hundred twenty-nine samples were the minimum requirement for this study to test the framework comprised of four variables. The sample size was calculated with G-Power statistical software. To avoid any problems due to the small sample size, the authors collected data from 155 respondents. Among 155 questionnaires, the valid and usable number of data was 141, which meets the criteria for PLS-SEM as suggested by [36].

V. ANALYSIS OF DATA AND FINDINGS

A. RESPONDENTS DEMOGRAPHICS

Table I presents the demographic analysis of the respondents. There were 38 respondents between 18 and 24 years of age, 47 respondents were 25–34 years of age, and 56 respondents were 35– 44 years of age. Among 141 respondents, 43 were male and 98 were female. In addition, the respondents' monthly income shows that 34 have an income of less than 2000 Malaysian Ringgit (RM). Thirty-six respondents mentioned their monthly income between

Table I.Demographics

Demographics	Description	Frequency	Percent (%)
Age	Aged from18 to 24 years	38	24.8
	Aged from 25 to 34 years	47	31.7
	Aged from 35 to 44 years	56	43.4
Gender	Male	43	33.3
	Female	98	66.7
Monthly income (Malaysian Ringgit)	RM 2000 and below	34	26.3
	RM 2000 to RM 2999	36	23.2
	RM 3000 to 4999	52	40.3
	RM 6000 and above	11	8.5
	Prefer not to say	8	1.5
Education status	SPM	47	31.7
	SPTM/Matriculation	35	27.1
	Degree	45	30.2
	Masters and above	14	10.8

RM 2000 and 2999. Fifty-two respondents have RM 3000 and 4999, and 11 respondents with RM 6000 or above. In contrast, eight respondents did not mention their monthly income. From Table I, we can see that 41 respondents have SPM education, while 39 are degree holders and 35 are at the matriculation level. In addition, 14 respondents hold master's degrees or above.

B. MEASUREMENT MODEL VALUATION

In analyzing a reflective measurement model, the indicator loadings need to be examined first. Indicator loading higher than 0.708 is considered since it implies that the latent variable accounts for more than 50% of the difference in the indicator, resulting in adequate reliability [37]. Following the recommended threshold value of 0.708, two indicators are deleted due to low values (PEK5 and PEK6). The second step is to calculate the internal consistency reliability that is commonly calculated with the composite reliability (CR) concept. Higher values of CR represent higher levels of reliability. Regarding exploratory research, reliability values in the range of 0.60 and 0.70 are acceptable, whereas values from 0.70 to 0.90 are considered satisfactory [37]. Table II presents the CR values in good positions and satisfactory. In contrast, Cronbach's alpha (CA) is an additional measurement of internal consistency reliability that assumes related thresholds but produces lower values as compared to CR values.

Hence, the CA values presented in Table II are also acceptable and meet the recommended threshold value.

After the reliability analysis, the next stage to assess the model is to analyze each variable's validity, which can be done with convergent validity [37]. The measure to which a variable meets to elucidate its components' variance is called its convergent validity. The average variance extracted (AVE) is a statistical method used to assess the convergent validity for all components of each variable. A threshold value of 0.50 or above designates that the variable describes a variance of at least 50% in its elements. Table II demonstrates the AVE of the constructs for this study, and all the AVE values (0.677, 0.624, 0.643, 0.580, and 0.658) are higher than 0.50.

The next step is determining the covariance of the items, known as the variance inflation factor (VIF), which is often used for the covariance analysis of the formative constructs. A value of 5 or greater suggests critical concerns with collinearity among the constructs' indicators. The recommended values for VIF should preferably be close to 3 or less than 3 [38]. For this study, the VIF result is shown in Table II, and all scores are less than 3 and considered satisfactory, except for a single item of subjective norms (SN5 = 3.847). The final stage for model evaluation is determining the discriminant validity, which is the degree to which a variable is statistically different from other model variables. As Henseler *et al.* [38] revealed, the Fornell–Larcker standard does not

 Table II.
 Measurement model results

Variables	Codes	Loadings	VIF	Cronbach's alpha	CR	AVE
Attitude toward green product	ATT1	0.828	2.007	0.837	0.892	0.677
	ATT2	0.897	2.628			
	ATT3	0.856	2.358			
	ATT4	0.711	1.436			
Subjective norms	SN1	0.799	2.159	0.880	0.908	0.624
	SN2	0.743	1.550			
	SN3	0.794	2.305			
	SN4	0.768	2.283			
	SN5	0.881	3.847			
	SN6	0.747	2.354			
Perceived environmental concern	PEC1	0.775	1.988	0.888	0.885	0.643
	PEC2	0.855	2.608			
	PEC3	0.842	2.670			
	PEC4	0.839	2.648			
	PEC5	0.762	2.152			
	PEC6	0.732	1.677			
Perceived environmental knowledge	PEK1	0.859	2.436	0.853	0.891	0.580
	PEK2	0.800	2.157			
	PEK3	0.827	2.509			
	PEK4	0.791	2.305			
	PEK5	0.650	1.712			
	PEK6	0.605	1.590			
Intention to purchase	IP1	0.784	2.067	0.895	0.880	0.658
	IP2	0.862	2.819			
	IP3	0.855	2.902			
	IP4	0.858	2.993			
	IP5	0.765	2.355			
	IP6	0.731	1.851			

Items	ATT	PEC	PEK	IP	SN
ATT	0.823				
PEC	0.730	0.802			
PEK	0.668	0.737	0.761		
IP	0.730	0.754	0.733	0.811	
SN	0.643	0.746	0.585	0.750	0.790

 Table III.
 Discriminant validity HTMT

achieve well, especially when the indicator's factor loading on a variable varies only marginally (e.g., all the indicators' loadings are between 0.65 and 0.85). For this study, the discriminant validity values for each construct are present in Table III, and all the values are less than 0.85, indicating that the values are acceptable based on the recommendation by Henseler *et al.* [38].

C. STRUCTURAL MODEL EVALUATION

After determining the measurement model's acceptability, the structural model is evaluated using PLS-SEM results. The coefficient of determination (R2), significance level, and assessment of path coefficients are the basic valuation criteria for a structural model. The R2 represents the framework's predictive ability explained by independent variables [39]. R2 values of 0.75 represent substantial, 0.50 represents moderate, and 0.25 represents weak predictive ability [37]. More importantly, the R2 depends on the number of independent variables. The more independent variables, the greater the R2 will be. As mentioned in Table IV, we have three R2 values for this study. The first R2 is 0.570, which is the combined effect of PEC and PEK on attitude. The second R2 is 0.559, which is the combined effect of PEC and PEK on subjective norms, while the third R2 is 0.586, which is the combined effect of PEC, PEK, attitude, and subjective norms on purchase intention. The R2 of 0.856 indicates that all independent variables collectively affect purchase intention by 85%, which is a very good sign for the model's predictive ability. Q2 is another means of assessing the model's predictive accuracy [40]. Q2 is based on the blindfolding procedure where PLS-SEM eliminates single points in the data matrix, assigns the eliminated points with the mean, and guesses the model restrictions [41]. Q2 values greater than 0 indicates small, 0.25 indicates medium, and 0.50 indicates large predictive relevance. For this study, as demonstrated in Table IV, the O2 values are greater than 0, which is 0.379 and 0.324 shows the medium, and 0.552 shows the large model's predictive relevance.

A *p*-value is a metric that expresses the likelihood that a variance may have arisen by chance. For hypothesis testing, the

 Table IV.
 Structural model results

p-value can be used instead of, in addition to, or before confidence levels. Following the guidelines of Sarstedt et al. [41], p-values higher than 0.95 and below 0.05 indicate a significant difference between the variables. For this study, the *p*-values are presented in Table IV and Fig. 1. Among eight hypotheses, six are positively and significantly accepted with p-values less than 0.05. For H2, that is, the relationship between subjective norms and intention to purchase green products is significant, and the finding aligns with Tan *et al.*'s study [10]. Furthermore, this study found a significant and positive relationship between environmental concerns and attitudes toward green products (H3), which is consistent with previous studies with similar findings [27,31,33]. Likewise, for hypotheses (H4 and H5), the results are consistent with previous studies showing a significant relationship between environmental concern, subjective norms, and intention to purchase [27,31,33]. Further, the relationship between environmental knowledge and attitude for hypothesis H6 is significant, as well as the relationship between environmental knowledge and subjective norms (H8). Several previous studies have shown positive and significant relationships between these variables [26,27,34].

As can be seen in Table IV and Fig. 1, hypotheses H1 and H7 are not supported due to insignificant values higher than 0.05. The insignificant relationship for hypothesis H1 is consistent with the study of Tanwir and Hamzah [42]. Whereas, for H7, there is no supporting study for the insignificant relationship. Hence, this study is the first to find such a relationship.

VI. DISCUSSION

The findings show that attitude toward the green product, subjective norms, environmental concern, and environmental knowledge are relevant determinants of intention to purchase green products. Although we drew our conclusions from Malaysia, creating a more accurate prediction on green purchase intentions is easier. As a result of our study, we found that adopting a green mindset is essential in setting an example for Malaysian consumers. The more positive consumers toward green products, the more likely they will purchase them. Surprisingly, our study discovered that Malaysian consumers' attitudes do not significantly affect their intentions to purchase green products. This finding is similar to the study by Joshi and Rahman [4], which mentioned that positive attitudes do not always translate into behaviors. Based on such a weak relationship, it may be concluded that green products either fail to meet their requirements or fail to meet their expectations. In addition, subjective norms are significantly related to the intention to purchase green products. The finding is in line with the study of Kim and Chung [29], Nilssen et al. [30], and Saleki et al. [13].

Hypothesis	Path	Path coefficient	t-Values	<i>p</i> -Values	R2	Q2
H1	$ATT \rightarrow IP$	0.055	0.661	0.509	0.570	0 370
H2	$SN \rightarrow IP$	0.153	3.088	0.002^*	0.570	0.579
H3	$PEC \rightarrow ATT$	0.520	4.397	0.000^{**}		
H4	$PEC \rightarrow SN$	0.688	9.780	0.000^{**}	0.856	0.552
H5	$PEC \rightarrow IP$	0.533	3.521	0.000^{**}		
H6	$PEK \rightarrow ATT$	0.285	2.358	0.019^{*}		
H7	$PEK \rightarrow SN$	0.078	0.932	0.352	0.559	0.324
H8	$PEK \rightarrow IP$	0.280	3.186	0.002^*		

Note: Significant at $p < 0.05^*$ and 0.000^{**} .

Thus, it is worth noting that consumers in Malaysia are interdependent and believe in their social norms. This is true in a collectivist culture such as Malaysia, where individuals prioritize social and cultural needs more than individual needs, in contrast to a Western context where individuals behave more independently, and subjective norms have less influence on their independent views of green products.

Environmental concern positively and significantly affects consumer attitudes and intentions to buy green products. Such relationships imply that consumers with strong attachments to the environment habitually consider environmental issues and problems before purchasing any conventional products, and they are more likely to develop positive attitudes and greater intentions to purchase green products [33,43]. In addition, environmental concerns significantly influence subjective norms, and the finding is similar to a study by [27,31]. From such a relationship, it can be concluded that when individuals' referents have concerns about the environment, they are more likely to change their purchase intentions from conventional to green products. For this reason, green products should be marketed first to those consumers in Malaysia who are highly concerned about the environment.

Our study has provided findings on the significance of environmental knowledge in developing green products. The results found that environmental knowledge weakly influenced subjective norms but significantly influenced consumers' attitudes and intentions to purchase green products. However, we reach the conclusion that increased environmental knowledge encourages consumers to develop positive attitudes toward green products, thereby strengthening the direct relationship between environmental knowledge, attitude, and intention to purchase green products, which is consistent with previous research [26,31,33].

VII. IMPLICATIONS

The study presents some theoretical and practical implications that are clear and understandable. First, previous studies on green purchasing behavior have been fully elucidated using frameworks such as TPB [27,33,34,44], whereas research on intention to purchase a green product has been limited. Therefore, we extended the TPB (refer to Fig. 1) with prevalent variables (PEK and PEC) from green literature to improve the current body of knowledge by offering a comprehensive framework that defines the primary backgrounds of purchasing intentions for green products.

The study provides practical implications such as for green product manufacturers and marketers. The study offers useful insights to marketers that they may want to devote more attention to these determinants when developing their marketing strategy. Furthermore, marketers can work to build trust and good environmental attitudes toward their green products by funding various pro-environmental projects that might reinforce firms' environmental claims, hence increasing consumers' green purchasing behavior. This could also be accomplished by creating successful communication tactics aimed at increasing consumer awareness of and trust in the consumption of green products to protect the environment for present and future generations. Moreover, as eco-labels enter the market, manufacturers must adhere to certain criteria before referring to their goods as "green" or "ethically produced." Therefore, it is recommended that manufacturers should produce green products while considering environmental features as well as the attitude of environmental concern and environmental knowledge.

This study is helpful for governmental bodies associated with environmental sustainability by offering new insights, such as the government may be interested in increasing purchase intention and, ultimately, purchase behavior of green products. In particular, findings on the potential effects of environmental knowledge and concern on intention provide new and significant insights. In addition, Malaysian consumers' attitudes and intentions regarding green products are greatly affected by environmental knowledge and concern. Still, their attitudes toward intentions are not significantly influenced. As a result, the government should adopt or reinforce environmental policies that encourage green consumption among the nationals.

VIII. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Regardless of its significant implications, the study also keeps a few limitations. This study seeks to determine why consumers are hesitant to purchase green products, focusing specifically on the Malaysian context to understand the reasons. Even though purchase intention directly predicts purchase behavior, a gap exists between intention and behavior [12]. Though consumers want to purchase green products, they may end up purchasing counterfeit ones due to unforeseen or impulsive consumption. Future studies might add actual purchase behavior into the framework and further investigate the effects of these variables and purchasing behavior. Second, our study found no significant effect of attitude on purchase intention and environmental knowledge on the subjective norm, which should be investigated further. Consumers' positive attitudes can be investigated further by researching the barriers that prevent them from translating their positive attitudes into purchase behavior and intention. The authors investigated limited variables: attitude, subjective norms, PEK, and PEC. Alongside these variables, some additional variables such as "Perceived value," "willingness to pay a premium," and "product availability" are also essential determinants in determining whether customers will purchase green products. As a result, these variables should be considered in future research. Finally, this study collected data using a convenience sample strategy. The convenience sampling technique is nonprobability, which can impair the findings' generalizability. As a result, probability sampling techniques such as stratified and cluster sampling can be used in future studies.

IX. CONCLUSION

Green products, also referred to as sustainable or eco-friendly products, can be found on the open market in both developed and developing countries, including Malaysia. Despite this, green products are available in Malaysia, and the government has been working to promote green consumption among Malaysian consumers for the past decade. Nevertheless, green product purchase intentions and behaviors are still low among consumers. Accordingly, this study aims to examine the factors influencing Malaysian consumers' intentions toward purchasing green products. A survey of consumers was conducted, and upon analyzing the data, it was determined that attitudes toward green products have the most influence on consumers' intentions to purchase green products. It is thus revealed that when consumers have positive attitudes toward green products, they are more likely to intend to purchase them. In contrast, consumers who have negative attitudes toward the product are less likely to intend to purchase it. Aside from consumers'

attitudes toward green products, PEK, environmental concern, and subjective norms were found to significantly impact their intentions toward green products. This study suggests that consumer attitudes are not the only factor influencing the purchase of green products and that other factors, such as environmental knowledge and concern, should also be considered.

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CONFLICT OF INTEREST STATEMENT

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

REFERENCES

- W. M. Lim, "Inside the sustainable consumption theoretical toolbox: critical concepts for sustainability, consumption, and marketing," *J. Bus. Res.*, vol. 78, pp. 69–80, 2017.
- [2] T. B. Chen and L. T. Chai, "Attitude towards the environment and green products: consumers' perspective," *Manage. Sci. Eng.*, vol. 4, no. 2, pp. 27–39, 2010.
- [3] S. Jönsson and W. Henriksson, "Determinants affecting the intention to buy green clothing products a quantitative study on Swedish millennials." Sweden: Linnaeus University, 2018, pp. 1–102.
- [4] Y. Joshi and Z. Rahman, "Factors affecting green purchase behaviour and future research directions," *Int. Strategic Manag. Rev.*, vol. 3, no. 1–2, pp. 128–143, 2015.
- [5] G. A. Blengini, M. Busto, M. Fantoni, and D. Fino, "Eco-efficient waste glass recycling: integrated waste management and green product development through LCA," *Waste Manage. (Oxford)*, vol. 32, no. 5, pp. 1000–1008, 2012.
- [6] EPU, "Sustainable development goals," *Economic Planning Unit, Prime Minister's Department*, 2020. Available: https://www.epu. gov.my/en/sustainable-development-goals.
- [7] Myhijau, "Myhijau Directory: your purchasing guide for green products & services in Malaysia," 2018. Available: https://s3ap-southeast-1.amazonaws.com/myhijau1/uploads/ebook/MyHIJAU-Directory-Ebook-december-2018.29.pdf.
- [8] M. R. Shaharudin, K. Govindan, S. Zailani, and K. C. Tan, "Managing product returns to achieve supply chain sustainability: an exploratory study and research propositions," *J. Cleaner Prod.*, vol. 101, pp. 1–15, 2015.
- [9] H. A. Rahman, "Green consumerism," Asian J. Environ. Hist. Heritage., vol. 2, no. 2, pp. 43–54, 2018.
- [10] C. N. L. Tan, A. O. Ojo, and R. Thurasamy, "Determinants of green product buying decision among young consumers in Malaysia," *Young Consumer.*, vol. 20, no. 2, pp. 121–137, 2019.
- [11] A. P. Y. Y. Nair and P. Balakrishnan, "Green food product purchase intention: factors influencing Malaysian consumers," *Pertanika J. Soc. Sci. Hum.*, vol. 27, no. 2, pp. 1131–1144, 2019.
- [12] I. Ajzen, "The theory of planned behavior," Organ. Behav. Hum. Decis. Processes., vol. 50, no. 2, pp. 179–211, 1991.
- [13] R. Saleki, F. Quoquab, and J. Mohammad, "What drives Malaysian consumers' organic food purchase intention? The role of moral norm, self-identity, environmental concern and price consciousness.," J. Agribus. Dev. Emerg. Econ., vol. 9, no. 5, pp. 584–603, 2019.

- [14] R. Yadav and G. S. Pathak, "Young consumers' intention towards buying green products in a developing nation: extending the theory of planned behavior," *J. Cleaner Prod.*, vol. 135, pp. 732–739, 2016.
- [15] Y. Zhou, J. Thøgersen, Y. Ruan, and G. Huang, "The moderating role of human values in planned behavior: the case of Chinese consumers' intention to buy organic food," *J. Consum. Mark.*, vol. 30, no. 4, pp. 335–344, 2013.
- [16] S. S. Alam, C. Y. Lin, M. Ahmad, N. A. Omar, and M. H. Ali, "Factors affecting energy-efficient household products buying intention: empirical study," *Rigas Tehniskas Univ. Zinatniskie Raksti.*, vol. 23, no. 1, pp. 84–97, 2019.
- [17] C.-S. Tan, H.-Y. Ooi, and Y.-N. Goh, "A moral extension of the theory of planned behavior to predict consumers' purchase intention for energy-efficient household appliances in Malaysia," *Energy Policy*, vol. 107, pp. 459–471, 2017.
- [18] M. F. Chen and P. J. Tung, "Developing an extended theory of planned behavior model to predict consumers' intention to visit green hotels," *Int. J. Hosp. Manag.*, vol. 36, pp. 221–230, 2014.
- [19] Y. M. Teng, K. S. Wu, and H. H. Liu, "Integrating altruism and the theory of planned behavior to predict patronage intention of a green hotel," *J. Hosp. Tour. Res.*, vol. 39, no. 3, pp. 299–315, 2015.
- [20] H. Han and H. J. Yoon, "Hotel customers' environmentally responsible behavioral intention: impact of key constructs on decision in green consumerism," *Int. J. Hosp. Manag.*, vol. 45, pp. 22–33, 2015.
- [21] S. Pudaruth, T. D. Juwaheer, and Y. D. Seewoo, "Gender-based differences in understanding the purchasing patterns of eco-friendly cosmetics and beauty care products in Mauritius: a study of female customers," *Soc. Responsib. J.*, vol. 11, no. 1, pp. 179–198, 2015.
- [22] A. Jaini, F. Quoquab, and J. Mohammad, "The moderating effect of eWOM on green cosmetics industry," *Int. J. Pharm. Healthcare Mark.*, vol. 14, no. 1, pp. 89–112, 2019.
- [23] T. Chi and Y. Zheng, "Understanding environmentally friendly apparel consumption: an empirical study of Chinese consumers," *Int. J. Sustain. Soc.*, vol. 8, no. 3, pp. 206–227, 2016.
- [24] S. Bong Ko and B. Jin, "Predictors of purchase intention toward green apparel products: a cross-cultural investigation in the USA and China," J. Fashion Mark. Manage.: Int. J., vol. 21, no. 1, pp. 70– 87, 2017.
- [25] H. J. Chang and K. (Tu) Watchravesringkan, "Who are sustainably minded apparel shoppers? An investigation to the influencing factors of sustainable apparel consumption," *Int. J. Retail Distrib. Manag.*, vol. 46, no. 2, pp. 148–162, 2018.
- [26] T. M. Rausch and C. S. Kopplin, "Bridge the gap: consumers' purchase intention and behavior regarding sustainable clothing," *J. Clean. Product.*, vol. 278, no. 2021, pp. 1–15, 2020.
- [27] K. Maichum, S. Parichatnon, and K. C. Peng, "Application of the extended theory of planned behavior model to investigate purchase intention of green products among Thai consumers," *Sustainability*, vol. 8, no. 10, pp. 1–20, 2016.
- [28] S. M. Noble, D. L. Haytko, and J. Phillips, "What drives college-age generation Y consumers?," *J. Bus. Res.*, vol. 62, no. 6, pp. 617–628, 2009.
- [29] H. Y. Kim and J. Chung, "Consumer purchase intention for organic personal care products," *J. Consum. Mark.*, vol. 28, no. 1, pp. 40–47, 2011.
- [30] R. Nilssen, G. Bick, and R. Abratt, "Comparing the relative importance of sustainability as a consumer purchase criterion of food and clothing in the retail sector," *J. Brand Manag.*, vol. 26, no. 1, pp. 71– 83, 2018.

- [31] R. Chaudhary and S. Bisai, "Factors influencing green purchase behavior of millennials in India," *Manage. Environ. Qual.: Int. J.*, vol. 29, no. 5, pp. 798–812, 2018.
- [32] A. Aman Lizawati, A. Harun, and Z. Hussein, "The influence of environmental knowledge and concern on green purchase intention the role of attitude as a mediating variable," *Br. J. Arts Soc. Sci.*, vol. 7, no. 2, pp. 145–167, 2012.
- [33] J. Paul, A. Modi, and J. Patel, "Predicting green product consumption using theory of planned behavior and reasoned action," *J. Retail. Consum. Serv.*, vol. 29, pp. 123–134, 2016.
- [34] D. Jaiswal and R. Kant, "Green purchasing behaviour: a conceptual framework and empirical investigation of Indian consumers," J. *Retail. Consum. Serv.*, vol. 41, no. November 2017, pp. 60–69, 2018.
- [35] I. Zahan, S. Chuanmin, M. Fayyaz, and M. Hafeez, "Green purchase behavior towards green housing: an investigation of Bangladeshi consumers," *Environ. Sci. Pollut. Res.*, vol. 27, no. 31, pp. 38745– 38757, 2020.
- [36] P. Chandon, V. G. Morwitz, and W. J. Reinartz, "Effects in survey research," J. Mark., vol. 69, no. April, pp. 1–14, 2005.
- [37] J. F. Hair, J. J. Risher, M. Sarstedt, and C. M. Ringle, "When to use and how to report the results of PLS-SEM," *Eur. Bus. Rev.*, vol. 31, no. 1, pp. 2–24, 2019.

- [38] J. Henseler, C. M. Ringle, and M. Sarstedt, "A new criterion for assessing discriminant validity in variance-based structural equation modeling," *J. Acad. Mark. Sci.*, vol. 43, no. 1, pp. 115– 135, 2015.
- [39] G. Shmueli and O. R. Koppius, "Predictive analytics in information systems research," *MIS Q.*, vol. 35, no. 3, pp. 553–572, 2011.
- [40] S. Geisser, "A predictive approach to the random effect model," *Biometrika*, vol. 61, no. 1, pp. 101–107, 1974.
- [41] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), 2nd ed.: SAGE, Cham: Springer International Publishing, 2016.
- [42] N. S. Tanwir and M. I. Hamzah, "Predicting purchase intention of hybrid electric vehicles: evidence from an emerging economy," *World Electric Veh. Journal.*, vol. 11, no. 2, 2020
- [43] A. Mishal, R. Dubey, O. K. Gupta, and Z. Luo, "Dynamics of environmental consciousness and green purchase behaviour: an empirical study," *Int. J. Clim. Change Strategies Manage.*, vol. 9, no. 5, pp. 682–706, 2017.
- [44] R. Yadav and G. S. Pathak, "Determinants of consumers' green purchase behavior in a developing nation: applying and extending the theory of planned behavior," *Ecol. Econ.*, vol. 134, pp. 114–122, 2017.