Determinants of Green Product Purchase Intentions: the Roles of Environmental Consciousness and Product Attributes

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บทคัดย่อ

งานวิจัยที่ศึกษาพฤติกรรมการซื้อที่เป็นมิตรต่อ
สิ่งแวดล้อมในอดีตส่วนใหญ่จะให้ความสนใจศึกษา
ความสัมพันธ์ระหว่างความตระหนักในสิ่งแวดล้อมของ
ผู้บริโภคกับความตั้งใจในการซื้อสินค้า หากแต่ผลการ
ศึกษาเหล่านั้นยังไม่ได้มีความสอดคล้องตรงกัน งานวิจัย
ชิ้นนี้จึงทำการศึกษาอิทธิพลของความตระหนักในสิ่ง-
แวดล้อมที่มีผลต่อทัศนคติและความตั้งใจซื้อสินค้าที่เป็น
มิตรต่อสิ่งแวดล้อม โดยเพิ่มเติมปัจจัยด้านการรับรู้ใน
คุณลักษณะของสินค้าที่เป็นมิตรต่อสิ่งแวดล้อมเข้าไปใน
แบบจำลองสำหรับการศึกษาด้วย ผลของการศึกษาพบว่า
ความตระหนักในสิ่งแวดล้อมนั้นไม่ได้มีผลกระทบ
โดยตรงต่อความตั้งใจซื้อสินค้า หากแต่มีผลกระทบทาง
อ้อมต่อความตั้งใจซื้อสินค้าผ่านการรับรู้ในคุณลักษณะ
ของสินค้าและทัศนคติที่มีต่อสินค้า ส่วนการรับรู้ใน
คุณลักษณะของสินค้าจะมีผลกระทบต่อความตั้งใจซื้อ
สินค้าทั้งในทางตรง และในทางอ้อมผ่านทัศนคติที่มีต่อ

สินค้า ผลของการศึกษานี้ชี้ให้เห็นว่าผู้ประกอบการ
ที่จำหน่ายสินค้าที่เป็นมิตรต่อสิ่งแวดล้อมจำเป็นต้องให้
ความใส่ใจกับคุณลักษณะของสินค้าโดยรวม และ
พยายามสื่อสารสิ่งเหล่านี้ให้แก่กลุ่มเป้าหมายมากกว่า
การให้ความสนใจแต่เพียงการสร้างภาพลักษณ์ความเป็น
มิตรต่อสิ่งแวดล้อมให้แก่สินค้าและบริษัท

คำสำคัญ : ความตระหนักในสิ่งแวดล้อม สินค้าที่เป็นมิตรต่อสิ่งแวดล้อม พฤติกรรมการซื้อที่เป็นต่อสิ่งแวดล้อม
ความตั้งใจซื้อ คุณลักษณะของสินค้า การตลาดที่เป็นมิตรต่อสิ่งแวดล้อม

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Abstract

Many preceding studies on green purchasing behavior have focused on the relationship between environmental consciousness and purchase intentions, but the findings are inconsistent. This study, by including perceived product attributes into the analysis, examines the influence of environmental consciousness and perceived attributes of green products on attitudes toward green products and purchase intentions. The results show that the degree of individuals' environmental consciousness has no direct effect on purchase intentions, but indirectly influences purchase intentions via perceived product attributes and attitudes toward green products. It is the perceived product attributes that have a direct effect on green buying intentions, and also has an indirect effect via attitudes toward the products. The findings suggest that those selling **green products** need to pay greater attention to the overall product attributes and communicate these to their target audience rather than focusing only on building an environmentally friendly image of the products and companies.

Keywords : environmental consciousness, green products, green purchase behavior, purchase intentions, product attributes, green marketing

INTRODUCTION

The determinants of environmentally friendly behavior by consumers have evoked the interest of researchers and practitioners alike since the 1970s (see the review in Kalafatis et al, 1999). Early research aimed to identify green consumer profiles using demographics as well as psychographic variables as determinants of green behavior in both consumption and buying decisions. Implicitly assumed in this research is that consumers who are highly aware of green issues will be positively disposed to green behavior and act accordingly. Interestingly, later research found, however, that being environmentally conscious or ecologically literate does not necessarily translate into green buying behavior (Ginsberg and Bloom, 2004; Kilbourne and Pickett, 2008; Kollmuss and Agyeman, 2002; Peattie and Crane, 2005).

This suggests that previous research may have placed too much emphasis on the role of environmental consciousness and neglected the role of product attributes in consumers' buying decisions regarding green products. Hence, it is necessary to revisit the factors that predict consumers' intentions to purchase green products.

Against this background, the purpose of this study is to investigate the process that consumers go through from being aware of environmental issues to making a decision regarding the purchase of green products. To do so, we employ the conceptual framework of Fishbein and Ajzen (1975) explaining the relationship between beliefs and purchase intentions to examine green product buying. The reason for choosing this model is that it is widely used for the analysis of the consumer decision process and has been applied in a wide range of fields, including marketing, psychology, and environmental psychology.

The remainder of this paper is organized as follows. The next section presents a review of the literature on green profiling and models of consumers' purchase intentions of green products. It also presents the model used for the analysis. Section 3 then outlines the research design. This is followed by the presentation of the results in section 4 and a discussion of the results and their implications for corporate management in section 5. Finally, section 6 considers some of the limitations of our study and highlights areas for future research.

LITERATURE REVIEW

Profiling Green Consumers

Early research attempted to identify the characteristics of those buying green products. Thus, research tended to focus on demographic factors such as consumers' age, gender, marital status and occupation (for a review of this research, see Kollmuss and Agyeman, 2002; Peattie and Crane, 2005; Soler, 1996). Such studies are implicitly based on the idea that buying green products is an **ought** to action driven by ethical motives and research along these lines hence attempts to identify those who really meet that norm. However, as there is no consistency in the findings as to whether, for example, an older female with at least one child at home is more likely to buy green products than

a young male bachelor. Subsequent research has tended to focus more on psychographic factors such as attitudes, locus of control, altruism, and so forth, and has shown these to be powerful predictors of green buying behavior (e.g., Auger et al, 2003; Bhate and Lawler, 1997; Cleveland et al, 2005; Laroche et al, 2001; Luzar and Cosse, 1998; Roberts, 1996; Straughan and Roberts, 1999).

The Role of Attitudes, Preferences, and Intentions

Another strain of research, instead of profiling consumers, focuses on their environmental literacy, beliefs, consciousness, and/or concerns and the effect of these on the tendency to purchase and consume green products (e.g., Follows and Jobber, 2000; Kaiser et al, 1999; Kilbourne and Pickett, 2008; Schlegelmilch et al, 1996). Regarding analytical models used in this research, various models have been developed by different researchers, with many following Fishbein and Ajzen's theory of reasoned action (Bamberg, 2003; Kaiser et al, 1999; Kalafatis et al, 1999).

Figure 1 Fishbein and Ajzen's (1975) theory of reasoned action
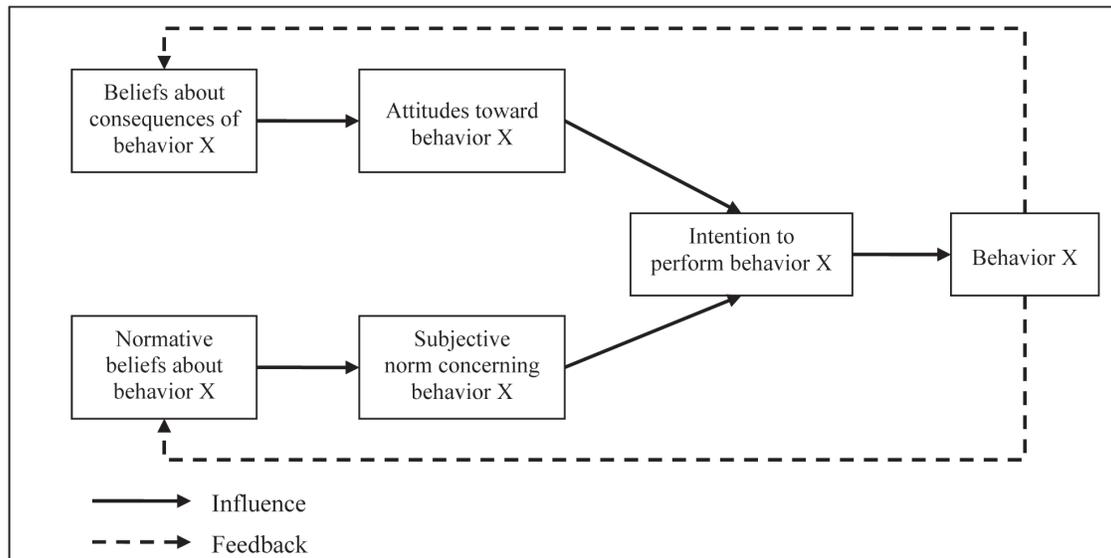
Source: Fishbein and Ajzen (1975), p. 16.

According to Fishbein and Ajzen's theory of reasoned action, to predict a person's intention to perform a behavior such as green buying behavior, one must know the attitudes toward that behavior as well as subjective norms concerning that specific behavior (see Figure 1). Fishbein and Ajzen (1975) used the term attitudes to express how much a person likes an object, for example, a behavior. Attitudes are affected by the beliefs about consequences of that behavior. Here, beliefs refer to the cognition of a person that an object holds specific attributes, for example, that buying a green product contributes to the mitigation of environmental destruction. On the other hand, subjective norms, that is, the social pressure felt by that person, are affected by normative beliefs about that behavior, for example, a person knows that his/her friend perceives green buying behavior as an altruistic behavior.

Framework and Proposed Analytical Model

A careful examination of previous research that applied Fishbein and Ajzen's theory of reasoned action shows that the large majority of these studies were published in journals that are closely concerned with environmental issues, such as the **Journal of Business Ethics, Journal of Environmental Psychology, Environment and Behavior,** and **Environmental Education Research.** However, some of these studies were published in marketing journals such as the **Journal of Consumer Marketing** and the **European Journal of Marketing,** but the studies shared the assumption that beliefs were represented by the level of environmental consciousness. A close reading of these studies suggests that they took it for granted that greater awareness, stronger beliefs, and so on, with regard to environmental issues are the only predictive factors for purchase intentions of green products, and therefore used environmental consciousness to represent **beliefs about consequences of behavior X.** However, subsequent research has shown that consumers' purchasing decisions regarding green products are in fact also determined by other factors, including product attributes such as ease of use, design, and so forth (Ginsberg and Bloom, 2004; Peattie and Crane, 2005; Soler, 1996). The implication is that there must be some other factors that previous studies failed to consider, namely product attributes.

Based on these considerations, this study employs a modified version of this theory of reasoned action to explain consumers' intention to purchase green products (see Figure 2). Specifically, we divide beliefs about the consequences of green buying behavior into two factors: environmental consciousness and perceived product attributes. We have two reasons for doing so. First, following past studies, we assume that environmental consciousness matters. That is, we assume that people who believe that green buying behavior contributes to environmental preservation are more inclined to buying green products. Second, based on the findings of earlier studies, we expect that product attributes, such as price, convenience of use, design, and so forth, play a role in purchasing decisions.

Figure 2 Structure of proposed model of green product purchase intentions
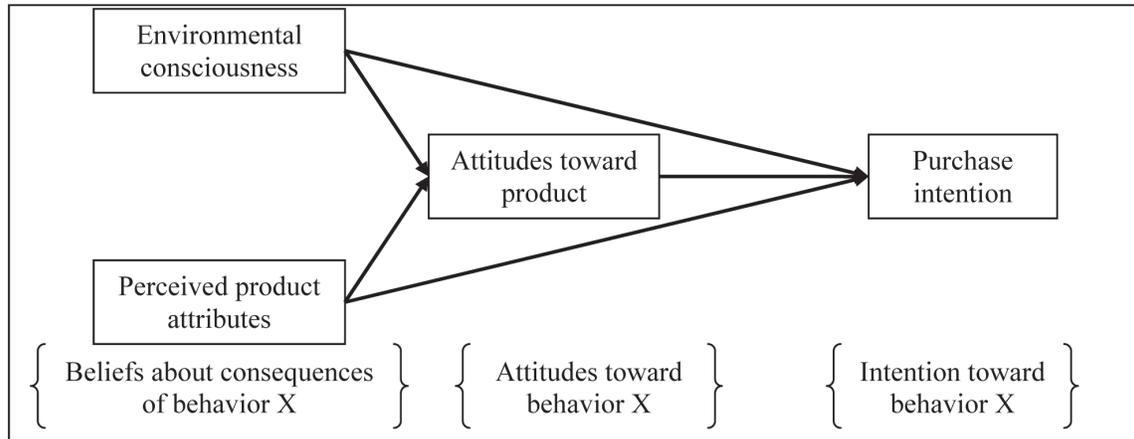
Note that, in terms of Fishbein and Ajzen's theory of reasoned action, we focus on the effect of environmental consciousness and perceived product attributes on purchase intentions. Thus, we only consider **beliefs about the consequences of behavior X and put aside normative beliefs about behavior X.** In other words, we do not include subjective norms in the analysis.

METHODOLOGY

Object of the Study

We used the cloth shopping bag to represent green products. We did so for two reasons. The first is that in Thailand, both for-profit and non-profit organizations have been promoting the use of cloth shopping bags as a means of helping the environment. The second is the high visibility of the use of cloth shopping bags in daily life. In addition, the preliminary interview survey revealed that cloth shopping bags are regarded as an environmentally friendly product.

Data

As we had conducted a scale developing study to segment green consumers according to their level of environmental consciousness by factor and cluster analysis in our prior study (Assarut and Srisuphaolarn, 2008), this study would focus on how the level of environmental consciousness together with perceived product attributes affect green product purchase intentions. Thus, we used the same data set on the level of environmental consciousness as a part of this analysis.

The total data set was constructed from 319 respondents who were undergraduate students majoring in Business Administration and

Engineering in Thailand's three major public universities Chulalongkorn University, Thammasat University and Kasetsart University.

The data used could be divided into three parts. The first part is for the measurement of environmental consciousness, while the second is for gauging respondents' opinions on shopping bag attributes, their product preferences, and purchase intentions. Finally, the third part records respondents' profile.

As mentioned above, the data of environmental consciousness used in this study were derived from Assarut and Srisuphaolarn (2008). The environmental consciousness was measured by asking the respondents to reply to 45 items on a five-point Likert scale (1. Strongly agree, 2. Agree, 3. Neither agree nor disagree, etc.).

Then, respondents' opinion on shopping bag attributes, their product preferences, and purchase intentions were similarly measured based on the five-point Likert scale. The importance of product attributes was measured by focusing on seven items chosen on the basis of focus group discussions: design, usability, availability (ease of obtaining and owning), price, quality of material, durability, and switching cost. Regarding respondents' attitudes toward cloth shopping bags, we asked them to rate how much they like this product, and purchase intentions were measured by asking for the likelihood that respondents would purchase the product in the future.

Finally, in the third part, respondents were asked to provide information on their gender, age, and monthly income after accommodation expenses, if any.

RESULTS

The analytical process consisted of two steps. First, for the sake of simplicity, we conducted an exploratory factor analysis (maximum likelihood and promax rotation methods) to determine the key components of the environmental consciousness construct and the product attribute construct. Then, using the factor scores of each construct obtained in the first step, we used a structural equation model (SEM) to examine the role of environmental consciousness and perceived product attributes in determining attitudes toward cloth shopping bags and purchase intentions.

Constructs of Environmental Consciousness and Perceived Product Attributes

We used a reliability coefficient (Cronbach's alpha) to verify the internal validity of the items measuring environmental consciousness and perceived product attributes. Among the 45 items regarding environmental consciousness, nine items were dropped during the process of reliability testing. Doing so, the reliability coefficient (Cronbach's alpha) rose from .844 to .897 for the remaining 36 items. For the seven items relating to perceived product attributes, the reliability coefficient (Cronbach's alpha) was .762, and no item was dropped in this process.

Table 1 Eigenvalues of environmental consciousness components

	No. of Items	Eigenvalues	Cronbach's alpha
F1: Information provision to outer circle	4	7.456	0.796
F2: Electricity saving	5	3.342	0.774
F3: Preference toward green products	6	2.365	0.703
F4: Information provision to inner circle	4	2.158	0.805
F5: Information reception from inner circle	3	1.578	0.779
F6: Aversions to non-green products	4	1.431	0.707
F7: Participation in recycling activities	5	1.261	0.636
F8: Fossil energy saving	2	1.199	0.860
F9: Recognition of global warming	3	1.048	0.550

Next, the exploratory factor analysis was applied to assess the underlying categories of environmental consciousness and perceived product attributes. We used the Kaiser-Meyer-Olkin (KMO) index in order to confirm that it was appropriate to apply factor analysis to the collected data. Normally, a high KMO index value, that is, a value greater than .5 and close to 1, indicates that factor analysis is suitable. For the data on environmental consciousness, the result of the factor analysis for the 36 items showed that the KMO index was .836, and the items can be grouped into nine factors with 60.66% of total variance explained, as illustrated in Table 1 (see more details in Assarut and Srisuphaolarn, 2008). On the other hand, for the data on perceived product attributes, the result of the factor analysis for the seven items showed that the KMO index was .741, and the items can be grouped into two factors with 58.51% of total variance explained, as shown in Table 2.

Table 2 Eigenvalues of perceived product attributes components

	No. of Items	Eigenvalues	Cronbach's alpha
P1: Price and design	2	2.929	0.767
P2: Convenience of use	5	1.166	0.704

Having determined the environmental consciousness and product attributes constructs, we then estimated the factor scores of the factors in each construct using the regressions. We used these factor scores as observed variables in the model used for the analysis.

## Testing the Green Product Purchase Intentions Model

We tested the proposed green product purchase intentions model using AMOS, the software for path analysis provided by SPSS, Inc. The model applied in the path analysis is as shown in Figure 3. To simplify the model, the factor scores of the factors in the environmental consciousness construct and the perceived product attributes construct were used as observed variables.

The relationship between environmental consciousness and purchase intentions has already been examined in previous studies (such as Kalafatis et al., 1999; Minton and Rose, 1997). The present study, however, introduces the new construct of perceived product attributes, and it therefore

seems appropriate to also examine the relationship between environmental consciousness and perceived product attributes. Hence, we consider two specifications of the model: one that does not consider the effect of environmental consciousness on perceived product attributes (model 1), and one that does (model 2).

In order to identify which model has stronger predictive power for purchase intentions regarding green products, we compared the values of the Akaike Information Criterion (AIC) index for each model. The model with the lower AIC index is considered to have stronger predictive power. The results, as shown in Table 3, indicate that the AIC index of model 2, which considers the effect of environmental consciousness on attitudes to product attributes, is lower than that of model 1. Consequently, model 2, which considers the relationship between environmental consciousness and perceived product attributes, provides a more accurate description of the determinants of green product purchase intentions.

Figure 3 Model applied in the path analysis
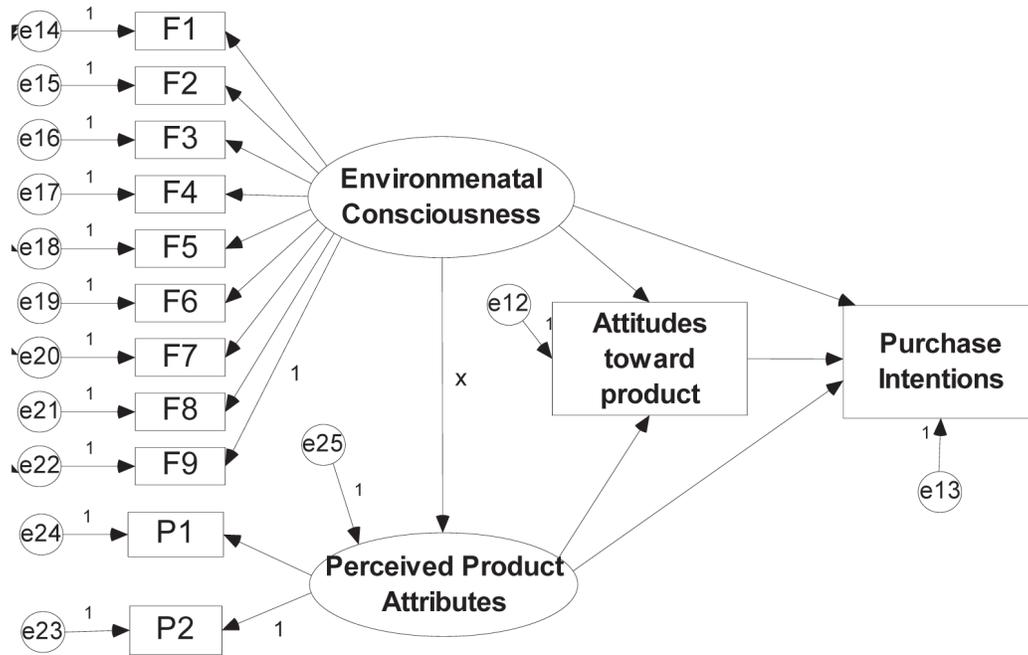
Table 3 Empirical results

			Model 1				Model 2			
			Standardized coefficient	Coefficient	S.E.	P	Standardized coefficient	Coefficient	S.E.	P
Environmental consciousness	--->	F1	0.368	0.720	0.15	***	0.375	0.725	0.148	***
		F2	0.481	0.943	0.136	***	0.479	0.930	0.133	***
		F3	0.578	1.096	0.138	***	0.567	1.065	0.135	***
		F4	0.687	1.339	0.151	***	0.694	1.339	0.148	***
		F5	0.513	0.982	0.135	***	0.513	0.973	0.133	***
		F6	0.820	1.575	0.163	***	0.818	1.554	0.158	***
		F7	0.502	0.936	0.131	***	0.499	0.921	0.128	***
		F8	0.401	0.857	0.143	***	0.400	0.847	0.141	***
		F9	0.567	1			0.573	1		
Perceived product attributes	--->	P1	0.527	0.550	0.112	***	0.528	0.553	0.090	***
		P2	0.994	1			0.992	1		
Environmental consciousness	--->	Attitudes toward Product	0.184	0.314	0.100	0.002	0.184	0.319	0.119	0.008
		Purchase intentions	0	0.001	0.085	0.992	-0.001	-0.002	0.099	0.983
Perceived product attributes	--->	Attitudes toward Product	0.358	0.332	0.077	***	0.336	0.319	0.077	***
		Purchase intentions	0.227	0.226	0.065	***	0.225	0.228	0.065	***
Attitudes toward product	--->	Purchase intentions	0.559	0.599	0.052	***	0.563	0.599	0.051	***
Environmental consciousness	--->	Perceived product attributes	-	-			0.438	0.799	0.124	***
AIC (Akaike Information Criterion)			420.943				368.183			
GFI (Goodness of Fit Index)			0.861				0.880			
AGFI (Adjusted Goodness of Fit Index)			0.786				0.811			
CFI (Comparative Fit Index)			0.789				0.827			
RMR (Root Mean Square Residual)			0.097				0.061			

Furthermore, the statistical fit of model 2 is acceptable (GFI = .880; AGFI = .811; CFI = .827; RMR = .061). All of the empirical relationships (path coefficients) in the model are significant at the 1 percent level, except for the path coefficient that shows the effect of environmental consciousness on purchase intentions. This means environmental consciousness has a direct effect on 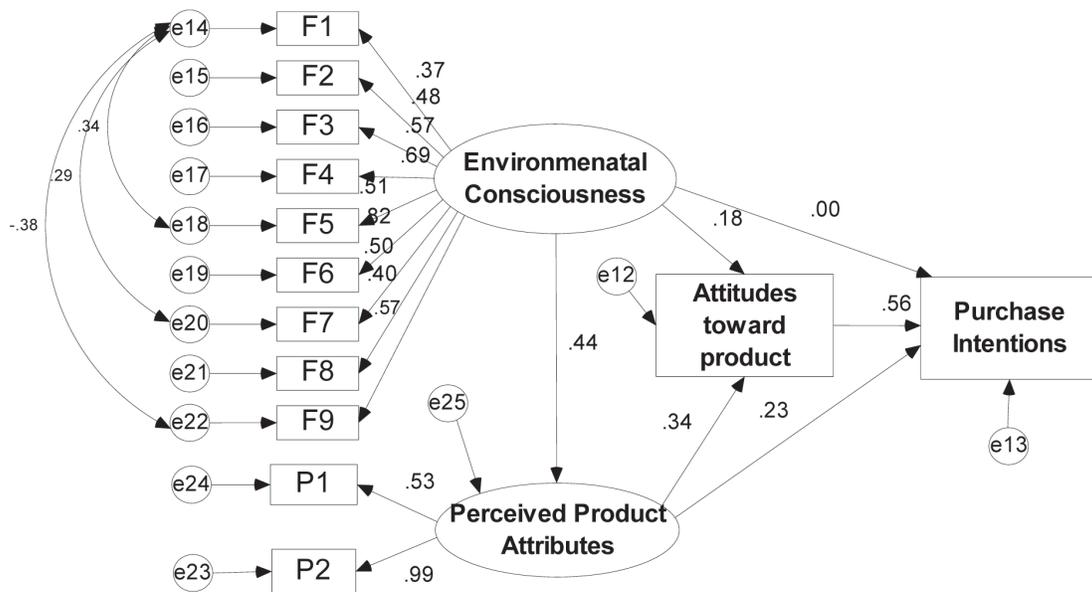how people judge green product attributes, and on attitudes toward products. In addition, perceived product attributes have a direct effect on attitudes toward the product and purchase intentions, while attitudes toward the product have a direct effect on purchase intentions. In sum, although environmental consciousness does not have a direct effect on purchase intentions, it does have an indirect effect on purchase intentions via perceived product attributes and attitudes toward the product.

DISCUSSION AND CONTRIBUTION

The analysis of the data showed that the proposed model is theoretically and statistically sound. Here, we therefore move on to analyzing the results of model 2 in greater detail and discussing the implications.

Figure 4 Analysis results of model 2

The results suggest that environmental consciousness has only an indirect effect on purchase intentions via perceived product attributes and attitudes toward the product, while **product attributes** have both direct and indirect influences on purchase intentions (See Figure 4). In other words, the role that environmental consciousness plays is not that it affects purchase intentions directly but instead reinforces perceived product attributes. This may explain why previous studies using environmental consciousness as a predictor of purchase intentions failed to render results that are consistent with empirical surveys. Hence, by introducing product attributes into the framework of the determinants of environmentally friendly behavior, our approach appears to be able to bridge the gap between studies conducted in the field of environmental psychology and those in the field of marketing.

The study is also of interest to business practitioners involved in the marketing of green products. The results obtained here suggest that firms need to pay more attention to the overall attributes of a product and communicate these to their target audiences rather than focusing only on building an environmentally friendly image of the product and company. Instead of emphasizing how the product contributes to the environment, firms should seek to persuade consumers that they do not need to make any compromises in terms of product features or attributes for the sake of being green. Thus, the implications of the findings for marketing managers of green products are that they should attempt to modify their marketing tools, including aspects such as product design, product quality, price, and so forth, rather than merely promoting the **greenness** of their products.

LIMITATIONS AND FUTURE RESEARCH

Finally, it is useful to mention some of the limitations of this study. First, although the proposed model considers both beliefs with regard to environmental issues as well as perceptions of specific product attributes, it does not include subjective norms, which form part of the original model developed by Fishbein and Ajzen (1975). Incorporating subjective norms into the model may improve the explanatory and predictive power of the model and trying to do so remains a task for future research.

Second, the sample for this study consists of university students, who may not be representative of Thais' behavior and attitudes in general. Thus, extending the sample to cover a wider variety of ages, occupations, and income levels as well as other demographics is another task for future research. In addition, the object of the study should include different types of green products other than cloth shopping bags in order to verify whether it is possible to generalize the proposed model.

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