


The Influence of Personality Traits on Intention to Purchase Green Products

Quan Minh Vu, Nanhua University, Taiwan

Ying Kai Liao, Nanhua University, Taiwan

Yen Thi, Nanhua University, Taiwan

Giang Nu To Truong, University of Economics, Ho Chi Minh City, Vietnam*

 <https://orcid.org/0000-0003-2223-6404>

Phuong Minh Binh Nguyen, University of Economics, Ho Chi Minh City, Vietnam

Wann-Yih Wu, Nanhua University, Taiwan

ABSTRACT

Resource depletion and environmental degradation are moving society toward a hierarchical model of environmental concerns and green purchase intention. Companies and individuals have not only been awakened to these issues but have also begun taking action. This study is designed to evaluate the role of personality traits on green purchases. Based on Mowen's 3M model, this study identifies environmental concern, perceived value, and green purchase attitude as three of the mediating variables that mediate the influence of personality traits on green purchase intention. Results indicated that the big-five traits significantly influence environmental concern, perceived value, and green purchase attitudes, further influencing consumers' green purchase intention. Since previous studies rarely identify the influences of personality traits and other mediation variables on green purchases, the findings presented in this study provide new insight into the determinants of green purchase intention and provides a springboard for future exploration of this subject.

KEYWORDS

3M Model, Big-Five Traits, Environmental Concern, Green Marketing, Green Purchase Attitudes, Green Purchase Intention, Perceived Values

INTRODUCTION

Advancing technologies and their use in various applications and products is a significant source of resource depletion and environmental degradation. Consumers have become increasingly aware of the direct and indirect impacts of their purchasing behaviors on the ecology (Sharma et al., 2020). For example, the Nielsen Company (2019) has investigated what their customers pay attention to and report most of consumers willing to change their consumption habit to reduce negative impact on the environment. Especially, about 40% of consumers agree to pay more for the product with green/ environmental-friendly statements. Moreover, they found the useful statements of product sustainability purchase drivers can be concluded as: (1) a company being environmentally friendly; (2) a company being known for its corporate social responsibility; and (3) a company with natural and organic products. It also found that most of sales products categories such as Baby food, Coffee,

DOI: 10.4018/IJSSMET.298675

*Corresponding Author

This article published as an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and production in any medium, provided the author of the original work and original publication source are properly credited.

Tea and Snacks, many brands adopt the sustainability and friendly environment marketing approach. Moreover, this kind of marketing promotions is much higher in developed market than in developing countries. Ragazzi and Ghidini (2017) also have similar results show that consumers are much more aware of the importance of environmental sustainability for the earth, and they are willing to pay more for green products.

Green marketing embodies the efforts made by an organization to design, promote, price, and distribute products that do not harm the environment (Lim et al., 2020). According to Crane (2000) green marketing, encompasses “green consumerism”, “ecological marketing,” and “substantial marketing,” in order to incorporate environmental dimensions into marketing activities. Green marketing activities enable companies to create competitive advantages while benefitting shareholders, consumers, and the environment simultaneously. Consumers are exposed to the idea of “saving the earth” through the use of green products, and marketers hope that these consumers will translate concern for the environment into desired purchase behaviors (Pennybacker, 2014).

Based on a summary from previous studies, Kim (2017) argued that “a majority of research concluded that demographic and psychographic factors have only limited usefulness in predicting and explaining consumer’s pro-environmental behaviors and eco-friendly product purchases.” Tan et al. (2016) further contended that consumer characteristics alone do not determine green purchase behavior. Instead, more and more researchers set to explore the effects of consumer’s motivational drivers such as environmental concerns, perceived values, personal norms, ethical beliefs, and attitudes on green purchase (Bamberg, 2003, Sharma et al., 2020). However, an attempt is yet to be developed to incorporate the influence of personality traits through motivational drivers on green purchase intention.

Despite numerous studies and attempts have used personality traits and individual differences to explain consumer behavior, an integrated picture of “consumer personality” has appeared on Mowen’s 3M model (Mowen & Sujan, 2005; Kang & Johnson, 2015). This study extends the 3M model to develop a hierarchical model of purchase intention and to identify the influences of general antecedents of green purchase intention. The purpose of this study is to explore whether and how consumer’s personality traits influence their green purchase decision. This study focuses on green purchase intention for several important reasons. First, there has been a progressive increase in consumer environmental consciousness during the last three decades that can be explained in this study. Second, as noted by Dennis et al. (2005), the question of how to raise purchase intention toward green products has not yet been properly answered. Third, this study can examine how consumers perceive and react to ecological issues serves as a starting point for elucidating the consumer environmental movement in a nation (Mowen, 2000).

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

3M Model in Green Purchase Setting

According to Mowen (2005), the 3M Model was abbreviated from the Meta-Theoretic Model of Motivation and Personality. The model displays how the interaction between personality traits and a particular situation can influence consumer behaviors (Mowen & Sujan, 2005). These personality traits can be described from the most abstract to the most concrete, the levels in the 3M model are: elemental traits, compound traits, situational traits, and surface traits.

Elemental traits, inherited from genetics and the early learning history of the individual are the most abstract and general of the four levels (Mowen & Sujan, 2005). Based on Mowen (2005), this study adopted personality as the elemental trait that resides at the highest level in the hierarchy, as stable personality underpins consistent behavior across various situations [20]. Five elemental traits were derived from the Saucier’s version of the Five-Factor Model of Personality (Saucier, 1994), which are: extraversion (measured as introversion), conscientiousness, emotional instability, openness to experience, and agreeableness. The next level down from elemental traits in the hierarchy

is compound traits, which are assumed to result from the effects of elemental traits as well as from culture and subcultural influences (Mowen & Sujan, 2005). These traits are also cross-situational, enduring dispositions that emerge from the interplay of elemental traits (Mowen & Harris, 2003). Mowen (2000) proposed that, while compound traits result in part from elemental traits, they afford greater predictive power than elemental traits and represent different constructs.

In the green purchase setting, this study identifies environmental concerns as the compound trait. Situational traits occupy the third level in the hierarchy which reflects enduring dispositions to behave in general situational contexts (Mowen & Sujan, 2005) and usually include traits such as frugality and value consciousness (Mowen & Harris, 2003). Situational traits are different from the effects of elemental traits, compound traits, as they operate within the pressure of the general situational contexts in which behavior occurs (Bone & Mowen, 2006). In this study, perceived value and attitude toward green purchase are identified as the situation traits. The final and most-concrete level in the hierarchy is surface traits, which reflect the dispositions that occur in narrower contexts (Mowen & Sujan, 2005), are the immediate determinants of behavior, and are closely related to the concept of behavioral intentions (Bosnjak et al., 2007) that result from the effects of those lower-level traits as well as from perceived pressures from the context-specific environment. Based on their specificity, surface traits are believed to have the strongest influence on consumer behaviors (Bosnjak et al., 2007; Mowen et al., 2007). Applying in green concept, green purchase intention is expected to be influenced by elemental traits (i.e., personality traits), compound traits (i.e., environmental concerns), and situational traits (i.e., perceived values and attitudes toward green purchasing).

Hypothesis Development

Emekci (2019) agreed that personality variables predict ecologically concerned consumers better than socioeconomic variables. In terms of the relationship between personal characteristics and ecological concern, Fraj and Matinez (2006) argued that individuals with more tolerant and comprehensive personality and seeking security would perform higher ecological concern. Feeling alienated from one's community, society, and/or culture has produced conflicting results in identifying ecologically concerned consumers (Hindmarsh & Alidoust, 2019). It may be said that alienated individuals pay less attention to their community or society and may make less motivation to purchase ecologically safe products. Thus, we may assume that individuals who are shy away from society due to feeling alienated or introverted are less concerned about the environment. The socially conscious consumers who are more active and socially involved engages in consumption behaviors that are coherent with their responsibility standard (Schwepker & Cornwell, 1991). Hence, they may formulate displeasures with environmentally harmful activities and be more encouraged to purchase ecologically products. Hirsh and Dolderman (2007) argued that agreeableness is associated with higher levels of empathy, and empathetic individuals are more likely to display higher levels of environmentalism. The relationship between environmentalism and a broader self-concept suggests the potential for a positive correlation with openness to experiences (Chen et al., 2019). The aesthetic sensibility of individuals with high levels of openness may help to increase their experiences of nature, thereby increasing their perceived value of nature and the environment (Hirsh & Dolderman, 2007). Thus, experience of nature is a strong predictor of environmental attitudes and behaviors (Kil, 2016). The above led this study to propose the following hypotheses:

H1: Personality traits significantly impact environmental concern.

H2: Personality traits significantly impact perceived value toward green purchasing.

H3: Personality traits significantly impact green purchase attitudes.

Whereas the general public use “environmental concern” to refer to a wide range of environment-related perceptions, emotions, knowledge, attitudes, values, and behaviors (Bamberg, 2003), researchers treat environmental concern as a subset of morally tinged human concerns that are rooted

in universal values (Hirsh, 2010). This value system is grounded in or predicated upon a genuine concern for the natural environment. The sustainability of the natural environment results in attitudes and behaviors that serve the interests of the environment and all of its stakeholders (Jang et al., 2017). Dunlap et al. (2000) argued that environmental concern could be evaluated from the aspect of (1) natural resources limitation, and (2) human dominant over natural. Studies have found a positive relationship between environmental concern and ecologically responsible attitudes and behaviors (Dagher et al., 2015). Bamberg (2003) found that highly environmentally-concerned students not only reported a significantly more positive attitude but also a stronger intention to use the brochure. Koustova (2017) proposed a model of environmental orientation that integrates the interrelationships among environmental sensitivity and respect, values, attitudes, and behaviors in their investigation of the shift of orientation from anthropocentrism to egocentrism in individuals. This shift manifests in individual attitudes and behaviors and results from self-perceived values. Based on the above discussions, it is hypothesized that:

H4: Environmental concern is positively associated with the perceived value of green purchasing.

H5: Environmental concern is positively associated with positive attitudes toward green purchasing.

Rising environmentalism among consumers worldwide increases consumer willingness to choose green products and pay higher prices for environmentally-friendly products (Arli et al., 2018). Kim et al. (2016) argued that environmental concern may significantly impact the degree to which individuals are motivated to change behavioral practices in order to ameliorate environmental problems. Sundt and Rehdanz (2015) found that consumers who are more concerned about the environment expressed greater willingness to pay more for renewable energy than those who were less concerned about the environment. Hanson (2013) has investigated the Canadian consumers' perception on green products and confirmed that environmental concern directly affects recycling and green product's purchasing intention. Similarly, Choi and Johnson (2019) argued that consumers with environmental concern believe that their green purchasing decision will greatly impact the environment, thus likely purchasing green products. Moreover, Wei et al. (2018) commented that those who were more concerned about environmental issues were more motivated to purchase green products. Thus, it is hypothesized that:

H6: Environmental concern is positively associated with consumers' intention to purchase green products.

Past researchers have attempted to explain why consumers make particular choices and sought to find the relationships among the values, attitudes, and behaviors, behavioral intentions of consumers. Sweeney and Soutar (2001) claimed that the four perceived-value dimensions of quality/performance, price/value for money, emotional value, and social value significantly explain purchasing attitudes and behaviors. Several studies show that values influence environmental behavior directly or indirectly via behavior-specific beliefs, attitudes, and norms (Kim & Seock, 2019). Avey et al. (2010) further explain that values should be referred as foundation of attitudes and behaviors of one individual. In other words, attitudes impact thoughts (the cognitive function) and feelings (the affective function) and thus affect purchasing behavior. Ajzen & Fishbein (1980) identified attitudes as predictors of behavior and behavioral intentions. Attitudes towards a product can exclusively determine the purchasing intention toward that product (Albloushy & Connell, 2019). Attitudes have served as predictors of energy-conservation behavior, product usage and recycling, and ecologically-conscious purchasing behavior (Schneider & Vogt, 2012). The association between attitude and intentional behavior is widely accepted based on Ajzen & Fishbein's (1980) theory of reasoned action (TRA) and its subsequent extension (Hardgrave & Johnson, 2003). In these models, attitudes toward a behavior are recognized as an individual's evaluation of a relevant behavior and his/her beliefs about the perceived outcomes

of performing that behavior (Hardgrave & Johnson, 2003). These theories imply that individuals who develop favorable or positive attitudes will engage in related behaviors. Thus, by merging the above views on the interrelationships among values, attitudes, and behaviors, it is hypothesized that,

H7: Perceived value toward green purchasing is related positively with attitudes toward green purchasing.

H8: Perceived value toward green purchasing is related positively with intentions to purchase green products.

H9: Attitudes toward green purchasing is related positively with intentions to purchase green products.

METHOD

Measurement

A survey questionnaire was developed to collect responses from the general public on the various research constructs. Six constructs were identified in this study. Personality traits include three items for introversion, three items for conscientiousness, four items for emotional in stability, three items for openness to experience and three items for agreeableness, which were adopted from Mowen (2000) and Saucier (1994). Environmental concern includes five items for the concern of natural resource limitation and six items for human dominant over nature which were adopted from Dunlap et al. (2000). Perceived value toward green purchasing includes three items for quality/performance, three items for price/value for money, four items for emotional value and four items for social value which were adopted from Sweeney and Soutar (2001). Attitudes toward green purchasing four items and green purchase intention five items were adopted from Chan (2001) and Mostafa (2007). Personal demographic information five items, which includes gender, age, income, education and green purchase experience.

Sampling

The questionnaire was pretested in a pilot study that included 47 Marketing master students from a major National University in Taiwan as participants. In the pilot study, reliability analysis was employed to make sure that the questions were reliable. A coefficient alpha (α) of 0.7 was used as the cutoff criterion to indicate a good reliability. The cutoff point for item-to-total value was set at greater than 0.5. Questionnaire items were revised and rephrased to better reflect the results of the pilot study before inclusion in the final version of the questionnaire. In the official test, data were collected from a convenience sample of employed individual from the Top 100 companies in Taiwan. Over a three-month period, the respondents were contacted via an email and text-based messenger invitation and a web-based questionnaire. Of the 325 questionnaires returned, 23 were eliminated due to missing data and 71 were eliminated due to the respondents never participate in green product purchasing. More than 44.16% were female; about 72.3% were less than 34 years of age; and more than half reported earning less than 650USD per month. Most of the respondents were College and University graduates with 83.12%. About 26.4% of them served in the service sector in Taiwan. The characteristics of the respondents are shown in Table 1.

RESULTS AND FINDING

Factor loadings, item-to-total correlation, and Cronbach's alpha were obtained to confirm the dimension and reliability of the research constructs. Following Hair et al. (1998), the factor loading of each variable should be greater than the criterion of 0.6, eigenvalue > 1 , Cronbach's alpha > 0.7 and the item-to-total correlation > 0.5 . All the research items should pass the requirement to be used for further analysis. Table 2 shows that the factor loadings on all of the questionnaire items were higher than 0.64 (0.64 ~ 0.93). All item-to-total correlation coefficients were higher than 0.5 (0.57 – 0.85),

and the Cronbach's alphas for all factors were higher than 0.77 (0.77 - 0.90), which exceeded the generally accepted guidelines. Thus, all of the questionnaire items showed a high degree of internal consistency and their factors are appropriate for use in analysis.

Table 1 Characteristics of the Respondents

Items	Description	Frequency	Percentages (%)
Gender	Male	102	44.16
	Female	129	55.84
Age	Under 25	89	38.53
	25 to 34 Years Old	78	33.77
	35 to 49 Years Old	51	22.08
	50 to 54 Years Old	9	3.90
	55 to 64 Years Old	2	0.86
	More than 65 Years Old	2	0.86
Education	High school or less	13	5.63
	College and University	192	83.12
	Master	23	9.95
	Doctorate	3	1.30
Monthly Disposable Income (USD)	Less than 650	168	72.73
	651-1000	23	9.96
	1001-2000	19	8.23
	2001-3000	15	6.49
	More than 3000	6	2.59
Occupation (or Sectors Belonged)	Primary Industry	38	16.50
	High-Tech Industry	35	15.14
	Service Sector	61	26.40
	Self-employed	45	19.46
	Others	52	22.50
	Total	231	100

This study first ran an exploratory factor analysis for personality, which derived five factors. After that, an additional Structural Equation Model (SEM) was performed to link, personality to perceived value toward green purchasing and personality to green purchase attitude in order to test whether elemental traits influenced situational traits independent of the mediating effect of compound traits. In addition to see how the other relationships are affected by it. Figure 1 shows the interrelationships among the constructs of the model. Here, the value of chi-square/df. was 3.19. The GFI (0.90) and CFI (0.92) were close to the criteria of 0.9, accompanied by a slightly lower AGFI of 0.87. These numbers indicate that the model fit moderately with the actual data.

Table 2 Factor Analysis and Reliability Test

Constructs / Factors		No. of Items	Factor Loading	Item to total Correlation	Cronbach's Alpha
Personality	Introversion (INTRO)	3	0.89-0.91	0.75-0.80	0.89
	Conscientiousness (CONS)	3	0.90-0.93	0.77-0.83	0.90
	Emotional Instability (EMO)	4	0.76-0.92	0.62-0.85	0.90
	Openness to Experience (OPEN)	3	0.81-0.83	0.58-0.61	0.77
	Agreeableness (AGREE)	3	0.79-0.89	0.57-0.67	0.79
Environmental Concern (ECF)	Natural Resource Limitation (ECF1)	5	0.67-0.78	0.57-0.68	0.83
	Human Dominant Over Nature (ECF2)	6	0.64-0.73	0.57-0.64	0.82
Perceived Value toward Green Purchase	Quality / Performance (PVF1)	3	0.69-0.83	0.59-0.71	0.80
	Price / Value for Money (PVF2)	3	0.79-0.83	0.76-0.81	0.89
	Emotional Value (PVF3)	4	0.70-0.85	0.73-0.81	0.90
	Social Value (PVF4)	4	0.71-0.88	0.70-0.80	0.89
	Green Purchase Attitude	4	0.85-0.88	0.73-0.78	0.89
	Green Purchase Intention	5	0.76-0.85	0.63-0.74	0.89

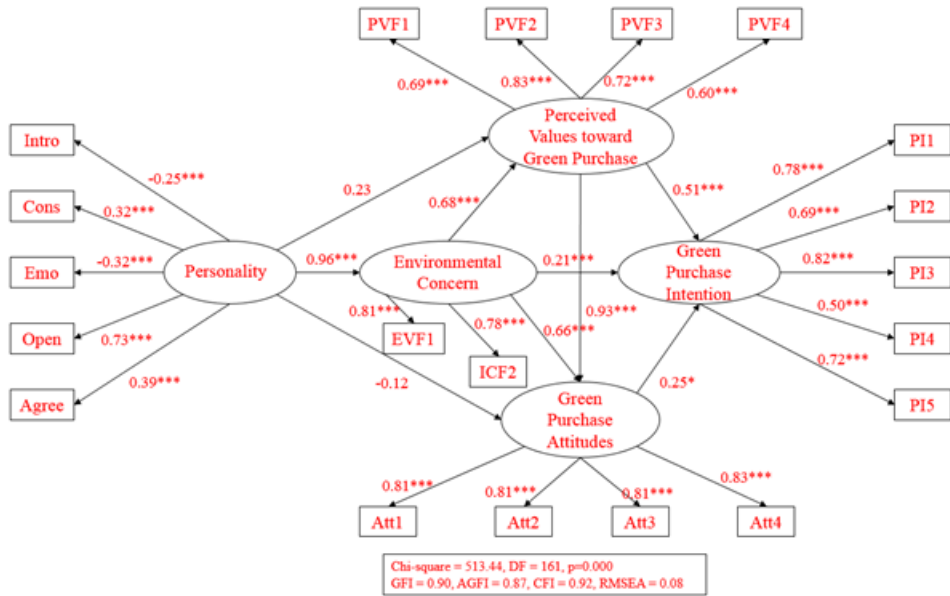
To evaluate the structural model as shown in Figure 1, first in treating the big five personality traits as the five factors within the construct of personality, a significantly positive relationship was unexpectedly found between personality and environmental concern, with $\beta = 0.96$, CR value= 5.86, and $p < 0.001$. However, within the personality construct, all of the factors with the exception of “openness to experience” had significantly lower internal coefficients, and inversion and emotional instability correlated negatively with the personality construct.

Secondly, in terms of the relationship between personality and perceived value toward green purchasing, the β was equal to 0.23, suggesting a high degree of multi-collinearity in the data. In addition, this relationship had a low CR value (0.90), suggesting that the relationship for this path was insignificant and questionable, perhaps due to a weak or absent direct relationship between these two constructs. Consequently, the SEM research model confirmed that personality requires a mediator (i.e., environmental concern) in order to form a perceived value toward green purchasing.

Thirdly, Figure 1 and Table 3 showed a negative-but-insignificant relationship between personality and green purchase attitudes ($\beta = -0.12$, CR value= -0.25, $p > 0.05$); a positive-but-insignificant relationship between personality and perceived value toward green purchasing ($\beta = 0.23$, CR value – 0.90, $p > 0.05$); and a positive-and-significant relationship between environmental concern and perceived value toward green purchasing ($\beta = 0.67$, CR value= 6.54, $p < 0.001$) and green purchase attitudes ($\beta = 0.66$, CR value= 5.43, $p < 0.001$).

Finally, the antecedents of green purchase intention were all positive and significant, including environmental concern ($\beta = 0.21$, CR value= 3.43, $p < 0.001$), perceived value toward green purchasing ($\beta = 0.50$, CR value= 3.55, $p < 0.001$), and green purchase attitude ($\beta = 0.25$, CR value= 2.22, $p < 0.05$). Moreover, perceived value toward green products was found to significantly influence green purchase attitude ($\beta = 0.93$, CR value= 11.36, $p < 0.001$). These results suggest that personality has a significant influence on environmental concerns and an insignificant influence on perceived value toward green purchasing and green purchase attitude, which in turn suggests that environmental concerns play a critical mediating role. Thus, promoting perceived value and green purchase attitude to consumers without eliciting environmental concerns may deliver suboptimal results. In summary, all of the hypotheses with the exception H2 and H3 were supported.

Figure 1 Research Model and Empirical Results



DISCUSSION AND CONCLUSION

After extending the 3M model of Mowen (2000), this study investigated the general trait antecedents of green purchase intention and explored the interrelationships among the antecedents, including the big five personality traits, environmental concerns, perceived value toward green purchasing, green purchase attitudes, and green purchase intention. The rapid commercialization of technologies has led to resource depletion and negative impacts on the natural environment, which has raised public and corporation awareness of the extent of environmental deterioration and the importance of environmental protection. Consumers increasingly appreciate the direct and indirect impacts of their purchasing behavior on ecological problems. Mostafa (2007) pointed out that environmental consciousness is an issue of “market competition” that influences consumer behavior. Researchers such as Adnan et al. (2017) claim that “green vision” is a reality that must be understood functionally in order to allow marketers to develop strategies to meet green-consumer needs.

Table 3 The Results of the Structural Equation Model

	Construct/ Factors	Standardized Coefficients	C. R. Value
Personality	Intro (Introversion)	-0.26 ***	-3.59
	Cons (Conscientiousness)	0.32 ***	4.21
	Emo (Emotional Instability)	-0.33 ***	-4.29
	Open (Openness to Experience)	0.74 ***	6.31
	Agree (Agreeableness)	0.39	A
Environmental Concern (ECF)	ECF1 (Natural Resources Limitation)	0.81	A
	ECF2 (Human Dominant Over Natural)	0.78 ***	12.73
Perceived Value toward Green Purchase (PVF)	PVF1 (Quality/Performance)	0.69	A
	PVF2 (Price/Value for Money)	0.83 ***	12.60
	PVF3 (Emotional Value)	0.72 ***	11.12
	PVF4 (Social Value)	0.61 ***	9.53
Green Purchase Attitudes (Att)	Att1	0.81 ***	16.17
	Att2	0.82 ***	16.41
	Att3	0.81 ***	16.14
	Att4	0.83	A
Green Purchase Intention (PI)	PI1	0.78	A
	PI2	0.69 ***	12.23
	PI3	0.82 ***	15.01
	PI4	0.78 ***	14.07
	PI5	0.72 ***	12.81
Paths			
Personality ® Environmental Concern		0.96 ***	5.87
Personality ® Perceived Value toward green purchasing		0.23	0.90
Personality ® Green Purchase Attitudes		-0.12	-0.25
Environmental Concern ® Perceived Value toward green purchasing		0.67**	6.54
Environmental Concern ® Green Purchase Attitudes		0.66***	5.43
Environmental Concern ® Green Purchase Intention		0.21 ***	3.43
Perceived Value toward green purchasing ® Green Purchase Attitudes		0.93***	11.36
Perceived Value toward green purchasing ® Green Purchase Intention		0.50 ***	3.55
Green Purchase Attitudes ® Green Purchase Intention		0.25 *	2.22
Fit Indices			
Chi-Square		513.44 (p=0.000)	
Degree of freedom (d. f.)		161	
GFI		0.90	
AGFI		0.87	
CFI		0.92	
RMSEA		0.08	

Note

*: C. R. > 1.96; using a significance level of 0.05, critical ratios > 1.96 are considered significant.

** : C. R. > 1.96; using a significance level of 0.01, critical ratios > 1.96 are considered significant.

***: C. R. > 1.96; using a significance level of 0.001, critical ratios > 1.96 are considered significant.

A: the parameter being compared is set as 1. Therefore, there is no C.R. value as it is deemed significant.

The coefficients are standardized value.

Several conclusions may be drawn based on the above results. Firstly, these conclusions agree with the hypotheses that presume introversion and emotional instability are negatively associated with personality traits and environmental concern. This implies that individuals who are introverted and/or emotional unstable are likely to be less concerned about environmental issues than their peers. On the other hand, individuals who are conscientious, agreeable, and open to new experiences are likely to be more concerned about environmental issues than their peers. These results support a correlation between personality and environmental concern. However, the influences of personality traits on perceived value toward green purchases and green purchase attitude are not significant. This may imply that environmental concern is a critical variable for consumers' green purchase intention (Mowen, 2000; Mowen & Sujan, 2005). Environmental concern served as a mediating variable that not only facilitate the influence of personality traits on green purchase intention, but also served as a motivational driver that facilitate the mediation role of perceived values toward green purchases and green purchase attitude on green purchase intention (Carmi et al., 2015). Secondly, as predicted, environmental concern was found to relate positively to perceived value toward green purchasing, green purchase attitudes, and green purchase intention (Yadav & Pathak, 2016). This means that concern for the environment may translate into an intent to purchase and may lead to actual purchasing behavior, which empirically supports the findings of past studies. Bamberg (2003) found that, among university student participants, those who were most concerned about the environment reported significantly more positive attitudes and stronger intention to obtain knowledge on environmentally-friendly electricity products. Following Arli et al. (2018), consumers who were more concerned about the environment were more willing to choose green products and even pay relatively high prices for environmentally-friendly products. Thirdly, the conclusions support that higher perceived value toward green purchasing leads to higher green purchase attitudes. Furthermore, the high level of perceived value toward green purchasing and green purchase attitudes produced a high level of green purchase intention. Several previous research supports the results of this study (Afshar & Jia, 2018; Ahamad & Ariffin, 2018). Perceived values were found to significantly explain purchasing attitudes and behaviors (Sweeney & Soutar, 2001). Consumer attitudes have also been used to predict ecologically-conscious purchase behavior and use of products (Mostafa, 2007). These results are in agreement with the view of Nguyen et al. (2017) on how values impact attitudes which, in turn, impact behavior. This study attempted to integrate the relevant constructs mentioned above into a comprehensive research model. Thus, the model confirmed in this study may be useful for further academic evaluation and practical justification.

Several managerial implications may be drawn from the results and discussions in this study. First, as Milfont and Sibley (2012) reported, environmentally-friendly individuals care relatively strongly about their relationships with others, and their empathetic personalities translate caring into concern for the welfare of the others. Understanding the underlying characteristics of green consumers allows marketers to develop strategies that are targeted specifically at this segment. Furthermore, promoting beliefs about green products may be achieved by using related promotional materials and advertisements that appeal to consumer rationality and emotions. For instance, to promote environmentally-friendly consumption, marketers may use packaging and messages that stress social welfare, warm relations with nature, and the virtues of preserving resources for coming generations. Second, this study found a positive correlation between environmental concern and green purchase attitudes. Thus, an individual's insight on environmental issues may shape his or her attitudes toward green purchasing. By increasing consumers' awareness of environmental issues

and engaging consumers to environmental issues, companies may not only educate consumers but also improve their environmental image to public. Third, this study confirms that when consumers believe that others' perception of green purchasing is important, they will likely to purchase green products. Therefore, companies can focus on advertising "positive image" of green purchasers and how people highly appreciate green purchases. Finally, a critical finding of Berger (2019) suggests that environmental-friendly consumers are more likely to spend more on purchasing green products. Eighty percent of participants in their research stated that they would refuse to buy products from companies accused of being polluters. Thus, it is important for companies to be responsible for their actions and act on their commitments, as companies who break environmental regulations or increase sales by dishonestly green movement risk being exposed and suffering public boycott.

Overall, research in this field offers several points and concerns for managers and marketers to ponder. Kilbourne and Pickett (2008) report that "green" products have failed to attain levels of market success that match the self-reported environmental concerns of consumers. In other words, consumers' purchasing behavior with regard to environmentally-friendly products does not match their reported preference for this product category. Possible reasons for this include consumer distrust of environmentally-friendly claims, reluctance to change purchasing habits, economically-motivated changes in purchasing behavior, and perceptions that the price differentials between green and non-green products are unreasonably large. In order to reduce the gap between reported preferences for and actual purchases of green products, managers and marketers must better understand the ubiquitously low societal pressure to conform to environmental messaging and even lower pressure to conform to marketing messages. Marketers must consider both message content and delivery in order to achieve the greatest impact. The authors hope that this study inspires and encourages future researchers to analyze the reasons and motives underlying consumer purchasing and consumption behaviors.

This study has some limitations which are also opportunities for future research. A major limitation of this research is that the survey was conducted in Taiwan, which can't generalize the samples to other countries. Convenient sampling might be another problem because results can't represent all sample sizes. Sample size is 231 which is also a small number. Future researchers can conduct a survey with a larger size and apply for other countries. To enhance a better understanding of green product purchases, future studies also can investigate other factors such as families and friends, online communications, education background, and so on to have a more comprehensive view on this matter.

FUNDING AGENCY

The publisher has waived the Open Access Processing fee for this article.

REFERENCES

- Adnan, A., Ahmad, A., & Khan, M. N. (2017). Examining the role of consumer lifestyles on ecological behavior among young Indian consumers. *Young Consumers*, 18(4), 348–377. doi:10.1108/YC-05-2017-00699
- Afshar Jahanshahi, A., & Jia, J. (2018). Purchasing green products as a means of expressing consumers' uniqueness: Empirical evidence from Peru and Bangladesh. *Sustainability*, 10(11), 4062. doi:10.3390/su10114062
- Ahamad, N. R., & Ariffin, M. (2018). Assessment of knowledge, attitude and practice towards sustainable consumption among university students in Selangor, Malaysia. *Sustainable Production and Consumption*, 16, 88–98. doi:10.1016/j.spc.2018.06.006
- Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting*. Prentice Hall.
- Albloushy, H., & Hiller Connell, K. Y. (2019). Purchasing environmentally sustainable apparel: The attitudes and intentions of female Kuwaiti consumers. *International Journal of Consumer Studies*, 43(4), 390–401. doi:10.1111/ijcs.12518
- Arli, D., Tan, L. P., Tjipiono, F., & Yang, L. (2018). Exploring consumers' purchase intention towards green products in an emerging market: The role of consumers' perceived readiness. *International Journal of Consumer Studies*, 42(4), 389–401. doi:10.1111/ijcs.12432
- Avey, J. B., Luthans, F., & Youssef, C. M. (2010). The additive value of positive psychological capital in predicting work attitudes and behaviors. *Journal of Management*, 36(2), 430–452. doi:10.1177/0149206308329961
- Bamberg, S. (2003). How does environmental concern influence specific environmentally related behaviors? A new answer to an old question. *Journal of Environmental Psychology*, 23(1), 21–32. doi:10.1016/S0272-4944(02)00078-6
- Berger, J. (2019). Signaling can increase consumers' willingness to pay for green products. Theoretical model and experimental evidence. *Journal of Consumer Behaviour*, 18(3), 233–246. doi:10.1002/cb.1760
- Bone, S. A., & Mowen, J. C. (2006). Identifying the traits of aggressive and distracted drivers: A hierarchical trait model approach. *Journal of Consumer Behaviour: an International Research Review*, 5(5), 454–464. doi:10.1002/cb.193
- Bosnjak, M., Galesic, M., & Tuten, T. (2007). Personality determinants of online shopping: Explaining online purchase intentions using a hierarchical approach. *Journal of Business Research*, 60(6), 597–605. doi:10.1016/j.jbusres.2006.06.008
- Carmi, N., Arnon, S., & Orion, N. (2015). Transforming environmental knowledge into behavior: The mediating role of environmental emotions. *The Journal of Environmental Education*, 46(3), 183–201. doi:10.1080/00958964.2015.1028517
- Chan, R. Y. (2001). Determinants of Chinese consumers' green purchase behavior. *Psychology and Marketing*, 18(4), 389–413. doi:10.1002/mar.1013
- Chen, X., He, J., & Fan, X. (2019). Relationships between openness to experience, cognitive flexibility, self-esteem, and creativity among bilingual college students in the US. *International Journal of Bilingual Education and Bilingualism*, 1–13.
- Choi, D., & Johnson, K. K. (2019). Influences of environmental and hedonic motivations on intention to purchase green products: An extension of the theory of planned behavior. *Sustainable Production and Consumption*, 18, 145–155. doi:10.1016/j.spc.2019.02.001
- Crane, A. (2000). Facing the backlash: Green marketing and strategic reorientation in the 1990s. *Journal of Strategic Marketing*, 8(3), 277–296. doi:10.1080/09652540050110011
- Dagher, G., Itani, O., & Kassab, A. N. (2015). The impact of environment concern and attitude on green purchasing behavior: Gender as the moderator. *Contemporary Management Research*, 11(2), 179–206. doi:10.7903/cmr.13625
- Dennis, C., Harris, L., Peattie, K., & Crane, A. (2005). Green marketing: Legend, myth, farce or prophesy? *Qualitative Market Research*.

- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). New trends in measuring environmental attitudes: measuring endorsement of the new ecological paradigm: a revised NEP scale. *The Journal of Social Issues*, 56(3), 425–442. doi:10.1111/0022-4537.00176
- Emekci, S. (2019). Green consumption behaviours of consumers within the scope of TPB. *Journal of Consumer Marketing*, 36(3), 410–417. doi:10.1108/JCM-05-2018-2694
- Ertz, M., Karakas, F., & Sarigöllü, E. (2016). Exploring pro-environmental behaviors of consumers: An analysis of contextual factors, attitude, and behaviors. *Journal of Business Research*, 69(10), 3971–3980. doi:10.1016/j.jbusres.2016.06.010
- Fraj, E., & Martinez, E. (2006). Influence of personality on ecological consumer behaviour. *Journal of Consumer Behaviour: An International Research Review*, 5(3), 167–181. doi:10.1002/cb.169
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate Data Analysis*. Prentice Hall Upper Saddle River.
- Hanson, C. B. (2013). Environmental concern, attitude toward green corporate practices, and green consumer behavior in the United States and Canada. *ASBBS E-Journal*, 9(1), 62–70.
- Hardgrave, B. C., & Johnson, R. A. (2003). Toward an information systems development acceptance model: The case of object-oriented systems development. *IEEE Transactions on Engineering Management*, 50(3), 322–336. doi:10.1109/TEM.2003.817293
- Hindmarsh, R., & Alidoust, S. (2019). Rethinking Australian CSG transitions in participatory contexts of local social conflict, community engagement, and shifts towards cleaner energy. *Energy Policy*, 132, 272–282. doi:10.1016/j.enpol.2019.05.035
- Hirsh, J. B. (2010). Personality and environmental concern. *Journal of Environmental Psychology*, 30(2), 245–248. doi:10.1016/j.jenvp.2010.01.004
- Hirsh, J. B., & Dolderman, D. (2007). Personality predictors of consumerism and environmentalism: A preliminary study. *Personality and Individual Differences*, 43(6), 1583–1593. doi:10.1016/j.paid.2007.04.015
- Jang, Y. J., Zheng, T., & Bosselman, R. (2017). Top managers' environmental values, leadership, and stakeholder engagement in promoting environmental sustainability in the restaurant industry. *International Journal of Hospitality Management*, 63, 101–111. doi:10.1016/j.ijhm.2017.03.005
- Kang, J. Y. M., & Johnson, K. K. (2015). F-Commerce platform for apparel online social shopping: Testing a Mowen's 3M model. *International Journal of Information Management*, 35(6), 691–701. doi:10.1016/j.ijinfomgt.2015.07.004
- Kil, N. (2016). Effects of vicarious experiences of nature, environmental attitudes, and outdoor recreation benefits on support for increased funding allocations. *The Journal of Environmental Education*, 47(3), 222–236. doi:10.1080/00958964.2015.1111188
- Kilbourne, W., & Pickett, G. (2008). How materialism affects environmental beliefs, concern, and environmentally responsible behavior. *Journal of Business Research*, 61(9), 885–893. doi:10.1016/j.jbusres.2007.09.016
- Kim, J. (2017). An Empirical Comparison of Alternative Models of Consumer's Environmental Attitudes and Eco-friendly Product Purchase Intentions. *Seoul Journal of Business*, 23.
- Kim, S. H., Kim, M., Han, H. S., & Holland, S. (2016). The determinants of hospitality employees' pro-environmental behaviors: The moderating role of generational differences. *International Journal of Hospitality Management*, 52, 56–67. doi:10.1016/j.ijhm.2015.09.013
- Kim, S. H., & Seock, Y. K. (2019). The roles of values and social norm on personal norms and pro-environmentally friendly apparel product purchasing behavior: The mediating role of personal norms. *Journal of Retailing and Consumer Services*, 51, 83–90. doi:10.1016/j.jretconser.2019.05.023
- Koustova, N. (2017). Social Model of Environmental Action: The Influence of Values, Beliefs, and Norms on Individual, Public, and Collective pro-. *Environment and Behavior*.

- Lee, Y. K., Kim, M. S., Katz-Gerro, T., & Kim, Y. (2019). Personal values, perceived consumer effectiveness and demographic effects on green purchasing behavior of Korean consumers. *Environmental Engineering and Management Journal*, 18(2).
- Lim, D., Baek, T. H., Yoon, S., & Kim, Y. (2020). Colour effects in green advertising. *International Journal of Consumer Studies*, 44(6), 552–562. doi:10.1111/ijcs.12589
- Milfont, T. L., & Sibley, C. G. (2012). The big five personality traits and environmental engagement: Associations at the individual and societal level. *Journal of Environmental Psychology*, 32(2), 187–195. doi:10.1016/j.jenvp.2011.12.006
- Mostafa, M. M. (2007). A hierarchical analysis of the green consciousness of the Egyptian consumer. *Psychology and Marketing*, 24(5), 445–473. doi:10.1002/mar.20168
- Mowen, J. C. (2000). *The 3M model of motivation and personality: Theory and empirical applications to consumer behavior*. Springer Science & Business Media. doi:10.1007/978-1-4757-6708-7
- Mowen, J. C., & Harris, E. G. (2003). The MDPS method of message theme development: A new tool for managers. *Journal of Consumer Marketing*, 20(5), 428–445. doi:10.1108/07363760310489661
- Mowen, J. C., Park, S., & Zablah, A. (2007). Toward a theory of motivation and personality with application to word-of-mouth communications. *Journal of Business Research*, 60(6), 590–596. doi:10.1016/j.jbusres.2006.06.007
- Mowen, J. C., & Sujaan, H. (2005). Volunteer behavior: A hierarchical model approach for investigating its trait and functional motive antecedents. *Journal of Consumer Psychology*, 15(2), 170–182. doi:10.1207/s15327663jcp1502_9
- Nguyen, T. N., Lobo, A., & Greenland, S. (2017). Energy efficient household appliances in emerging markets: The influence of consumers' values and knowledge on their attitudes and purchase behaviour. *International Journal of Consumer Studies*, 41(2), 167–177. doi:10.1111/ijcs.12323
- Pennybacker, M. (2014). *Do One Green Thing: Saving the Earth Through Simple, Everyday Choices*. St. Martin's Griffin.
- Ragazzi, M., & Ghidini, F. (2017). Environmental sustainability of universities: Critical analysis of a green ranking. *Energy Procedia*, 119, 111–120. doi:10.1016/j.egypro.2017.07.054
- Saucier, G. (1994). Mini-Markers: A brief version of Goldberg's unipolar Big-Five markers. *Journal of Personality Assessment*, 63(3), 506–516. doi:10.1207/s15327752jpa6303_8 PMID:7844738
- Schneider, P. P., & Vogt, C. A. (2012). Applying the 3M model of personality and motivation to adventure travelers. *Journal of Travel Research*, 51(6), 704–716. doi:10.1177/0047287512451134
- Schweper, C. H. Jr, & Cornwell, T. B. (1991). An examination of ecologically concerned consumers and their intention to purchase ecologically packaged products. *Journal of Public Policy & Marketing*, 10(2), 77–101. doi:10.1177/074391569101000205
- Sharma, N., Lal, M., & Deshwal, P. (2020). Being Spiritually Green: Investigating the Impact of Spiritually Motivated Environmentalism on Green Purchasing Intentions. *International Journal of Service Science, Management, Engineering, and Technology*, 11(4), 101–121. doi:10.4018/IJSSMET.2020100107
- Sundt, S., & Rehdanz, K. (2015). Consumers' willingness to pay for green electricity: A meta-analysis of the literature. *Energy Economics*, 51, 1–8. doi:10.1016/j.eneco.2015.06.005
- Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77(2), 203–220. doi:10.1016/S0022-4359(01)00041-0
- Tan, L. P., Johnstone, M. L., & Yang, L. (2016). Barriers to green consumption behaviours: The roles of consumers' green perceptions. *Australasian Marketing Journal*, 24(4), 288–299. doi:10.1016/j.ausmj.2016.08.001
- Wei, S., Ang, T., & Jancencelle, V. E. (2018). Willingness to pay more for green products: The interplay of consumer characteristics and customer participation. *Journal of Retailing and Consumer Services*, 45, 230–238. doi:10.1016/j.jretconser.2018.08.015

Yadav, R., & Pathak, G. S. (2016). Intention to purchase organic food among young consumers: Evidences from a developing nation. *Appetite*, 96, 122–128. doi:10.1016/j.appet.2015.09.017 PMID:26386300

APPENDIX A - ADDITIONAL TABLES

Table A1. Questionnaire Items of This Study

Construct Measurement	Items		
Genetic Personalities Mowen (2000) Saucier (1994)	Introversion		
	1. Quite when with people 2. Prefer to be alone rather than in a large group 3. Introverted		
	Conscientiousness		
	1. Orderly	2. Precise and efficient	3. Organized
	Emotional Instability		
	1. Moody more than others		2. Temperamental
	3. Touchy		4. Emotions go way up and down
	Openness to Experience		
	1. Frequently feel high creative 2. Imaginative 3. More original than others		
	Agreeableness		
	1. Kind to others	2. Tender-hearted with others	3. Sympathetic
Environmental Concern Dunlap et al. (2000)	Natural Resources Limitation		
	1. We are approaching the limit of the number of people the earth can support		
	2. The earth is like a spaceship with only limited room and resources		
	3. The earth has plenty of natural resources if we just learn to develop them. (R)		
	4. Humans have the right to modify the natural environment suit their needs. (R)		
	5. Plants and animals have as much right as human to exist.		
	Human Dominant Over Nature		
	1. The balance of nature is very delicate and easily upset.		
	2. Human ingenuity will ensure that we do not make the earth unlivable. (R)		
	3. Human will eventually learn enough about how nature works to be able to control it. (R)		
	4. Human are severely abusing the environment.		
	5. The so-called ecological crisis facing humankind has been greatly exaggerated.		
	6. If things continue on their present course, we will soon experience a major ecological catastrophe.		

Table A1 continued on next page

Table A1 continued

Construct Measurement	Items				
Perceived Values Toward Green Purchase Soutar (2001)	(1) Quality/Performance				
	1. Has consistent quality		2. Has an acceptable standard of quality		
	3. Has poor workmanship (R)		4. Would not last a long time (R)		
	5. Would perform consistently				
	(2) Price/Value for money				
	1. Is reasonably priced		2. Offers value for money		
	3. Is a good product for the price		4. Would be economical		
	(3) Emotional				
	1. Is one that I would enjoy		2. Would make me feel good		
	3. Is one that I would feel relaxed about using		4. Would make me want to use it		
	(4) Social				
	1. Would help me to feel acceptable		2. Would make me feel good		
	3. Would make a good impression on other people 4. Would give its owner social approval				
	Green Purchase Attitudes Mostafa (2007)	1. I like the idea of purchasing green 2. Purchasing green is a good idea 3. Purchasing green product is a wise idea 4. I have a favorable attitude toward purchasing a green version of a product			
Green Purchase Intention Mostafa (2007)	1. I consider buying green product that are less polluting. 2. I intend to buy green product that are less polluting. 3. I consider switching to other brands that sell green products for environmental reasons 4. I intend to switch to other brands that sell green products for environmental reasons 5. I plan to switch to a green version of a product				
Personal Demographic Information	1. Gender	2. Age	3. 3. Education	4. Monthly disposable income	5. 5.Occupation

Vu Minh Quan is an official at Office of Research and Partnership Development, International School, Vietnam National University, Hanoi. He is also a Ph.D. student at Department of Business Administration, Nanhua University, Taiwan. His research interests is in Business Administration and Marketing.

Ying-Kai Liao is an Associate Professor of the Program of International Business at Nanhua University, Taiwan. Her teaching and research interest are in the areas of brand management, marketing strategy, and business research methods. Her research has been published in Management Review, Expert Systems with Applications, Industrial Management & Data System, and Journal of Vacation Marketing.

Ms Yen Thi Do is currently conducting her PhD degree at Nanhua University (Taiwan). Her research interests include Marketing, Consumer Behavior, and Management.

Giang Nu To Truong is a lecturer of School of Management, University of Economics Ho Chi Minh. She received her PhD in Business Administration at College of Management, Nanhua University, Taiwan. Her teaching and research interests are in the areas of tourism, hospitality, marketing, and human resource management.

Phuong Minh Binh Nguyen is currently studying the PhD program in Business Administration at University of Economics Ho Chi Minh City, Vietnam. His teaching and research interests are in areas of tourism, hospitality, and marketing.

Wann-Yih Wu is a Chair Professor in Nanhua University, Taiwan. His teaching and research interests are in the areas of brand management, marketing strategy, and management science. His research has been published in International Journal of Hospitality Management, Project Management Journal, International Journal of Consumer Studies, Industrial Management and Data Systems, and others.