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Antecedents of Pro-Environmental Behaviors:
A Study on Green Consumption in an Emerging Market

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ABSTRACT

Green consumption such as buying green food, purchasing eco-label products, purchasing recycled products, or zero-wasted shopping is becoming more common in developing countries. The paper, using value theory, identity theory, and self-regulation theory, aims to develop and validate an integrative theoretical model that explain consumer willingness to pay and purchase behavior. A cross-sectional survey with PLS-SEM analysis of 279 individual consumers in green consumption in Dalat, Vietnam reports that 14 of 15 hypotheses are empirically supported. The findings affirm the influence of value orientation (egoistic, altruistic, and biospheric value), on self-regulation (self-efficacy and outcome expectation) through environmental identity. This is also one of the first, with the mediating role of self-regulation between identity and behavior, to provide a new lens of value-identity-self-regulation as an insightful alternative to both the traditional perspective of value-belief-norm and the emerging perspective of value-identity-norm in determining pro-environmental behavior.

KEYWORDS

Environmental Identity, Green Consumption, Pro-Environmental Behaviors, Self-Regulation, Value Orientations

1. INTRODUCTION

Climate change and environment pollution are among the most serious global challenges nowadays (Environmental Technology, 2018). To prevent and mitigate the effects of such problems, green consumption has been and will play an increasingly important role in humanity's efforts towards a globally sustainable development (Sustainable Development, 2019). In fact, it was and is becoming a familiar shopping option that consumers adopt in not only developed nations but also an emerging country like Vietnam (Vietnam News, 2019). In Vietnam, for example, consumers, in comparison to the last ten years, have had much more knowledge about environmental issues and said no to dirty foods and to brands that may violate moral values (Vietnam News, 2019). When it comes to green consumerism, consumer behaviors are the decisive issue with the note that these behaviors are directly related to the environment and human depletion of natural resources, their patterns of waste in society, their use of public facilities, and even induce industries to develop green manufacturing

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methods, and so on. It is, therefore, necessary to discuss pro-environmental behaviors in consumer research in specific and business research in generic (Alzubaidi et al., 2021).

Many of the past studies have focused on explaining and predicting pro-environmental behaviors by exploiting value theory in which consumer values and beliefs as the main antecedents, as early framed in Stern (2000) and Stern et al.'s (1995) often-cited model. In another stream of research, which was much promoted by Stets and Biga (2003), have adopted identity theory as the base to have effects on consumer attitude and then on their buying behaviors. It should be noted that, many studies (e.g., Zeiske et al., 2020; Gatersleben et al., 2014) recently brought value theory and identity theory together to understand pro-environmental behaviors.

It is worthy that a more promising approach resides in Bandura's theory of self-regulation (1977) which is strongly advocated by Bagozzi (1992) as a powerful theoretical framework to investigate human behaviors, especially purposeful or intended behaviors. Numerous empirical studies across many fields over the past decade (for reviews, see Sheeran et al., 2016; Inzlicht et al., 2021) have integrated the substantial constructs (e.g., self-efficacy and personal outcome expectation) from self-regulation with individual psychological variables (like attitudes, norms, values, and beliefs) from attitude theories such as theory of reasoning action or theory of planned behaviors into some sort of comprehensive models to better understand human behaviors.

In the light of this integrative approach which has also been applied to understand pro-environmental behaviors (e.g., Ertz et al., 2016), drawing upon value theory (i.e., value orientations), identity theory (identity), and self-regulation theory (self-efficacy and personal outcome expectation), we investigate this research with desire to build and validate a model of green consumption, a typical case of pro-environmental behavior (Environmental Technology, 2018). Moreover, as both value orientations and pro-environmental behaviors are made up of several components, our second goal is to explore the structural relationships among these components in each construct mentioned.

The research setting chosen is the green consumption of customers in Dalat, a well-known hub of agriculture and tourism services in Vietnam. There were two reasons for our choice. Firstly, although past research has been widely conducted into explaining green consumption behavior in numerous developed countries, but to the best of our knowledge, it still has not been applied to some countries vulnerable to environment and climate change like Vietnam (Asia Development Bank, 2013). Secondly, as Dalat is the only city in Vietnam winning ASEAN environmentally sustainable city award in the year of 2018 (Vietnam News, 2017), and the one out of three cities in the country getting ASEAN clean tourist award in the 2018-2020 period (VietnamPlus News, 2018), the practice of green consumption of residents in the area might be effectively approached.

The structure of the paper is as follows. The next part is the theoretical basis to establish a research model in which theoretical frameworks and basic concepts such as value orientations, environmental identity, self-regulation, and pro-environmental behaviors are presented. The methods and the results of our model testing are then showed. Finally, theoretical contributions, managerial implications as well as limitations and further research directions are derived.

2. LITERATURE REVIEW AND RESEARCH MODEL

Pro-Environmental Behaviors

There are some concepts that could be equivalent to pro-environmental behavior, namely environmentally responsible behavior (Kaiser et al., 1999), ecological behavior (Axelrod & Lehman, 1993), or sustainable behavior (Clayton & Myers, 2009). For this paper, pro-environmental behavior is generally defined as intentionally reducing the negative impact that a human action can have on the environment (Kollmuss & Agyeman, 2002). By this definition, pro-environmental behaviors can refer to some related activities such as sustainable consumption behaviors (Vermeir & Verbeke, 2006), or conservation behaviors (Monroe, 2003). In many consumption settings, pro-environmental behaviors

can be operationalized as two dimensions, including *consumer purchase behavior* and *willingness to pay* (Stern et al., 1995). From a consumer's view, while the two different types share the same feature of environmentally responsible consumption, they are distinct in terms of the psychological nature of human behaviors. Drawing on the well-known theory of planned behavior (Ajzen, 2011; 1985), given a typical consumption setting, we argue that while *consumer purchase behavior* could be considered as a sort of actual behavior, *willingness to pay* turns out a type of behavioral intention. Thus, these both constructs, consumer purchase behavior and willingness to pay, were often investigated in recent consumer research of environmental-friendly products (e.g., Talwar et al., 2021).

Value Orientations

Values represent an individual's judgments as to what is important, desirable or even ideal in life, and, hence, are psychologically abstract and global constructs to influence oneself's behaviors (Rickaby et al., 2020). Values are defined as "desirable, trans-situational goals, varying in importance, that serve as guiding principles in people's lives" (Schwartz, 1996, p.2).

According to Schwartz's, there are many types of values, which could be mainly classified into two opposite groups: self-transcendence versus self-enhancement (e.g., de Groot & Steg, 2008). While the former group aims to serve collective interests, the latter reflects individual concerns. From psychological view, there are the three distinct value orientations to shape human beliefs and behaviors, including egoistic, altruistic, and biospheric values (Stern, 2000; Steg et al., 2011). *Egoistic values* indicate individual ultimate outcomes, *altruistic* values involve concern for the good of others; and *biospheric values*, a more recent category, mention concern for the environment and the earth's biological system (de Groot & Steg, 2008; 2009).

People with an *egoistic value orientation* tend to behave personally to maximize outcomes for themselves, like personal wealth or well-being. In contrast, *altruistic value orientation* leads a person to behave in ways to benefit other people but not for direct reward of oneself, like focusing on the social welfare. *Biospheric* concern is based on the idea that all things in the ecosystem have intrinsic value and deserve moral consideration. *Biospheric value orientation* leads to moral principles and activities that incorporate concerns with other species and with environments (Sargisson et al., 2020).

Although it is widely recognized that the three value orientations exist (Stern et al., 1995), the structural relationships among them seem to be unclear (see e.g. Sargisson et al., 2020). According to the affective-behavior-cognition model of attitude formation (Svenningsson et al., 2021), attitude comprise three components of response, which are cognitive, affective, and behavioral ones. In details, cognitive response is more of belief and evaluation, affective one is more of feeling and emotion, and behavior is more to response and action, and further, cognitive response may influence affective one, which in turn may impact behavioral response. Thereby, we argue that egoistic value refers to the cognitive dimension of value orientation, altruistic to the affective dimension and biosphere to the behavioral dimension of value orientation. From this, the following hypotheses are recommended:

H1a: *Egoistic value orientation* negatively influences *altruistic value orientation*.
H1b: *Altruistic value orientation* positively influences *biospheric value orientation*.

Identity Theory and Environmental Identity

Self-identity refers to the way a person sees oneself, encompassing physical attributes, preferences, values, personal goals, habitual behavior, personality traits and personal narratives (McAdams, 1995). A person tends to present the ways that are congruent with their self-identity (Burke & Reitzes, 1991), and this extends to behavior (Sparks & Shepherd, 1992) including consumption (Oyserman et al., 2007; Dittmar, 2010). Although identity represents an individual's subjective perspective on the self, identities are formed through social interaction (McAdams, 1995). For example, theorists in the symbolic interactionist tradition proposed the development of the self through reflection from

others in social exchanges (Mead, 1934; Stets & Burke, 2000) also proposed that identities develop through processes of self-categorization and identification. Using the narrative, MacAdam (1995) suggested that identity is a person's long story resulting from his/her life-long development that is in turn based on his/her value or beliefs.

Value Orientations and Environmental Identity

In this study, we consider person's identity in environment protection context as *environmental identity*. Thus, according to Confente et al. (2020), environmental identity is considered as to be useful to both differentiate a person from others and to attach to the values of the group of people to which that person wants to or feels like he/she does belong. It should be noted that, the value of concern herein is just environmental values, including egoistic, altruistic and biospheric value (Sargisson et al., 2020). And because value orientations are general and abstract in nature, they increase person engagement in pro-environmental actions just through environmental identity (Zeiske et al., 2020). Balunde et al. (2020), in a waste prevention study, empirically found a relationship between value orientations and environmental identity. On these bases, we, in the context of green consumption, propose the following hypotheses with an individual environmental identity and the three respective value orientations:

H2a: *Egoistic value orientation* negatively influences *environmental identity.*
H2b: *Altruistic value orientation* positively influences *environmental identity.*
H2c: *Biospheric value orientation* positively influences *environmental identity.*

Environmental Identity and Pro-Environmental Behaviors

In line with Zeiske et al. (2020)'s argument of value-identity route in shaping range of pro-environmental behaviors, Bouman et al. (2021) indicated that while value has the indirect role, environmental identity takes the direct role to guide environmentally-friendly actions. Empirically, Wang et al. (2021) very recently reported the influence of environmental identity on climate actions. Thus, for the relationships between *environmental identity and pro-environmental behaviors,* we suggest the following hypotheses:

H3a: *Environmental identity* positively influences *consumer purchase behavior*.
H3b: *Environmental identity* positively influences *willingness to pay*.

Self-Regulation

According to Bandura's framework of self-regulation, human action is a self-regulatory system and self-regulation is defined as self-directed change influenced by the environment. Bandura (1977, 1997) stated that behavior and *self-regulation* process are best predicted by the combined influence of one's belief in the ability to perform a task, also called *self-efficacy*, and *personal outcome expectation* which is the results one anticipates from doing these tasks. In his class work, Bandura (1977, 1997) emphasized that expectations of self-efficacy determine whether an individual will be able to exhibit coping behavior and how long effort will be sustained in the face of obstacles. Individuals who have high self-efficacy will exert sufficient effort that, if well executed, leads to successful outcomes, whereas those with low self-efficacy are likely to cease effort early and fail. On the other hand, outcome expectation refers to the belief that if a person engages in some certain behavior, an outcome will follow that behavior, or alternatively, that is the expectation of an outcome following a given behavior (Collado & Evans, 2019). Outcome expectation is important because one is motivated by a belief that one's respective actions will result in successful results. Expectancy of positive outcomes motivates one to put effort into one's goals even when obstacles or difficulties

arise. By this, outcome expectation would be considered as goal-setting indicator (Lehmann et al., 2019). It should be noted that both self-efficacy and outcome expectation are part of cognitive process prior to one's action (Bandura, 2003).

Environmental Identity and Self-Regulation

Given a general notion of identity as a set of meanings attached to the self that serves as a standard that shapes people cognition, attitude, and behavior (Stets & Biga, 2003), we believe that environmental identity is a reliable reference to guide a variety of responses of environment related issues such as self-evaluation of own capability to do some relevant activities. We propose the following hypotheses to study the relationships between *environmental identity and self-regulation*:

H4a: *Environmental identity* positively influences *self-efficacy*.
H4b: *Environmental identity* positively influences *personal outcome expectation.*

To study on *self-efficacy and personal outcome expectation*, we started from Bandura's self-regulation framework that indicated that although these two constructs are distinct, they are obviously related. Working with this framework, some scholars have recently raised a challenge, or emphatically an unresolved contradiction (Williams, 2010). That is a question about which direction of the causal link between self-efficacy and outcome expectation. While Bandura (1997) affirmed the influence of self-efficacy on outcome expectation but not vice versa, some works have suggested the reverse link between the two. Therefore, it is an opportunity for us to propose and validate the following hypothesis in the context of green consumption:

H5: *Self-efficacy* positively influences *personal outcome expectation.*

Self-Regulation and Pro-Environmental Behaviors

In his conceptual frame of self-regulation, Bandura (1977) generally indicated on how self-efficacy can initialize and make changes on human behaviors. As a belief in one's own capacity to arrange and guide the courses of action required, self-efficacy is believed to play the the central role in explaining human behavior (Tabernero & Hernandez, 2011). In this paper, with the definition of self-efficacy of green consumption as ones' confidence in their own capabilities to follow green consumption via either their purchase behavior or willingness to pay more to gain benefits from their participation of environment protection. Recently, Shafifiei and Maleksaeidi (2020) empirically examined the influence of self-efficacy on pro-environmental behaviors of university students. On these bases, we naturally come to the two following hypotheses:

H7a: *Self-efficacy* positively influences *consumer purchase behavior.*
H7b: *Self-efficacy* positively influences *willingness to pay*.

The other key concept in Bandura's framework is personal outcome expectation which is understood as individual's estimate that a given behavior will lead to a certain outcome. According to the well-known theory of motivation (Deci & Ryan, 1985), when an individual perceives potentially positive benefit, one possibly increases incentive motivation and willingness to practice the relevant behaviors that, in the context of green consumption, turn to purchase behavior and willingness to pay more in green products and services. Janmaimool (2017) reported an empirical evidence of the impact of outcome expectation on pro-environment behavior of well-educated people. This leads us to provide the following hypotheses:

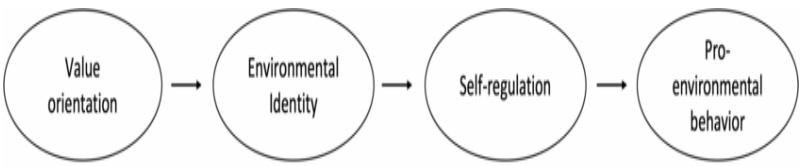
H6a: *Personal outcome expectation* positively influences *consumer purchase behavior.*
H6b: *Personal outcome expectation* positively influences *willingness to pay*.

Finally, referring to the planned behavior theory (Ajzen, 2011; 1985), we recognize that, within the pro-environmental behavior, the dimension of willingness to pay expresses a type of behavioral intention while the one of purchase behavior centers on actual behavioral response. Thus, we propose the following hypothesis:

H8: *Willingness to pay* positively influences *consumer purchase behavior*.

A conceptual framework (Figure 1) is proposed and all hypotheses of this study are showed in the research model (Figure 2).

Figure 1. Conceptual framework



3. METHODS

Sample Design

The survey respondents targeted were individual consumers who had prior experiences of green consumption. There were four green consumption practices examined in this study: buying green food, zero-wasted shopping (customers use their own bag/cup/food container to go shopping), purchasing products of green packaging, and purchasing recycled products (buying products made from recycled materials). Data was gathered through the convenience sampling with questionnaires delivered directly to Vietnamese consumers those who have just left from or are visiting the supermarket, shopping malls, local market, shops, and stores in Dalat city, a growing hub of tourism services and agriculture in Vietnam economy.

Our adoption of convenience sampling is satisfactory for two main reasons. First, because the shops and stores in the area were unable to disclose their customer information, the number of shopping customers and the respective customer demographics are unavailable to us, and hence, make our probability sampling to be infeasible. In the same reason as prior studies (e.g., Nguyen, 2021), which is the willingness and accessibility of the informants, convenience sampling is an acceptable option in this paper. Second, in a more fundamental way, convenience sample can produce the outcomes that are suitable within the domain of theory application research (Calder et al., 1981). Sarstedt et al. (2018) explained more that theory application research refers to the studies that examines a specific theory about certain events beyond a single research context, or, in words from Calder et al.'s (1981) classic work, it mentions the studies use only scientific theory to explain events beyond the research setting. Alternatively, Hulland et al. (2018, p. 95) suggested that 'when the primary aim of the research is to test the veracity of proposed theoretical effects, the use of a convenience sample may suffice'. Finally, convenience sampling is also a dominant sampling technique in many fields like marketing or advertising (Sarstedt et al., 2018).

The total response of over 500 was received over 2 months of questionnaire distribution. Finally, after removing the responses of excessive missing information, 279 valid responses were ready for further analysis. From the entire valid samples, 49.72% involved in buying green food, 17.32% in zero waste shopping, 10.06% in purchasing recycled products, and 20.9% in purchasing green packaging products. Demographic statistics showed that the proportion of male respondents was 26.2%, female 73.8%. Moreover, of the entire sample, 33.1% were under 25 years old, 33.5% between 25 and 30, and the rest from 31 years old; 31.2% were under 5 million VND/month, 41.8% from 5 to 9 million VND/month, 16.7% from 10 to 20 million VND/month and the rest from over 20 million VND/month. In terms of education status, the sample had 23.2% in the level of high school, and 76.8% in undergraduate and beyond.

Measures

All measurement items of theoretical constructs were adapted from previous studies and pretested using three specialists in consumer behavior and marketing field to check questionnaire contextual relevance and ease of understanding. Originally prepared in English, the questionnaire was first translated into Vietnamese and then back translated into English, using the back-translation method (Brislin, 1970).

The scales of value orientation were adapted from de Groot and Steg (2008), and of environmental identity from Sparks and Shepherd (1992) and Cook et al. (2002). Self-efficacy and personal outcome expectation were assessed with items based on Lin and Hsu (2015), and finally, the two dimensions of pro-environmental behavior were derived from Gatersleben et al. (2014). Instruments for all the constructs were phrased on a five-point Likert-type scale, anchored from "1=strongly disagree" and "5=strongly agree".

Data Analysis

The paper employs the variance-based SEM technique, using the software package ADANCO 2.0.1 (Henseler & Dijkstra 2014). The PLS approach is adopted for the two following reasons (see more in Hair et al., 2016). First, it is distribution free and of less restrictive assumptions of sample size and can work well for exploratory and confirmatory studies. In specific, our sample size (i.e. 279 cases) is deemed to be satisfactory because it was greater than 10 times the largest number of structural paths pointed at any endogenous construct in the PLS model (i.e. 10 multiplying by 3) (Hair et al., 2016). Second, PLS is a well-established technique in various literatures including marketing, management, information systems and more (Henseler et al. 2016). To estimate the measurement (inner) and structural (outer) model, this study did run the bootstrapping with 5000 resamples (Hair et al., 2016).

Common Method Bias

Employing Harman's single factor test (Podsakoff et al., 2003), an unrotated principal axis factoring on all measurement indicators of our research model was implemented. The results presented that, with the emergence of 8 factors, which totally accounted for 67.26% of the variance and eigenvalues greater than 1, no dominant single factor was found with the first (largest) factor explaining only for 19.89% of the variance. Thus, common method bias was not a serious concern in this research if there is any.

4. FINDINGS

Measurement Model

Table 1 and Table 2 show that the measurement model exhibits an adequate fit with the gathered data.

The convergent validity of the instrument was assured with the fact that the factor loadings are statistically significant and all greater than 0.7 (except with one of 0.69), composite reliability (CR)

values are all greater than 0.7 and average variance extracted (AVE) values are all greater than 0.5. It should be noted that (i) there were three items deleted due to their low loadings (one egoistic value item, one biospheric value item and one self-efficacy item and (ii) the CRs shown here are Dijkstra-Henseler's rho (ρA), the more consistent measure of internal reliability as suggested by Henseler et al. (2016). The discriminant validity of the constructs is acceptable when the square roots of average variance extracted are greater than the correlation between two latent constructs (Hair et al., 2016).

Structural Model

Figure 2 shows that the model is fit with the gathered data, which is assessed on (i) path estimates have statistical significance and (ii) determined coefficient R^2 of explanatory power of the model is of high enough value (Hair et al., 2016).

The overall result indicates that 14 out of 15 hypothesized paths are empirically supported at significance level of 5%. Hypotheses H7a, H6a, and H8 that are supported shows the positive influence of consumer self-efficacy, personal outcome expectation and willingness to pay on their purchase behaviors. In specific, personal outcome expectation is the stronger determinant with the highest path estimate of 0.322. On the other hand, environmental identity has not any significantly direct impact on purchase behavior. As a result, hypothesis H3a is not supported.

Next, the positive influences of consumer self-efficacy, personal outcome expectation and environmental identity on willingness to pay are affirmed (H7b, H3b, H6b supported) with the interesting note that personal outcome expectation is also the strongest driver of willingness to pay (the highest beta value of 0.365).

Environmental identity shows the positive and significant influence on both self-efficacy and personal outcome expectation, which is that both hypotheses H4a and H4b are confirmed respectively. In addition, that hypothesis H5 is supported, which is well established on the classic self-efficacy theory (Bandura, 1977), also validates a strong link (path estimate of 0.305) between self-efficacy and personal outcome expectation.

That hypotheses H2a, H2b, H2c are supported clearly indicates the significant impacts of consumer value orientations on their environmental identity. It should be noted that, and it would also be expected that, in the context of green consumption, the dimension of biospheric value, in comparison to the two dimensions of egoistic and of altruistic value, exhibits the strongest strength of effect on environmental identity (0.505 against 0.168 and 0.220, respectively).

Then looking into value orientations, the findings demonstrate a negative link between egoistic and altruistic value (path estimate of -0.276), and a positive relationship between altruistic and biospheric value (path estimate of 0.288). In other words, the two hypotheses H1a and H1b are also supported.

Finally, all effects of hypothesized paths are illustrated in Table 3. The bootstrap results reveal that self-efficacy is the full mediator between environmental identity and consumer purchase behavior (total effect of this path is 0.4156 at $p<0.001$) while the other mediation relationships are partial.

Concerning the explanatory power via the determined coefficient R^2, self-regulation and environmental identity jointly account for 50.3% variance of willingness to pay which in turn, along with self-regulation, accounts for 45.5% variance of purchase behavior. In addition, the three dimensions of value orientations including egoistic, altruistic and biospheric values could explain up to 43.0% variance of environmental identity. These results demonstrate that the model has good explanatory power (Hair et al., 2016).

5. DISCUSSION

Theoretical Contributions

This paper contributes to the literature of green consumerism in specific and consumer behavior in generic in several ways. First, our study extends the framework of value–identity–pro-environmental

Table 1. Items and factor loadings of constructs

	Measures	Factor loadings
	Egoistic value orientation	
EVO1	For me, having an impact on people and events is important	0.9048
EVO2	For me, ambitious is important	0.6979
	Altruistic value orientation	
AVO1	For me, equality (equal opportunity for all) is important	0.7408
AVO2	For me, a world at peace (free of war and conflict) is important	0.7618
AVO3	For me, social justice (correcting injustice, care for the weak) is important	0.8104
AVO4	For me, being helpful (working for the welfare of others) is important	0.7096
	Biospheric value orientation	
BVO1	For me, unity with nature (fitting into nature) is important	0.8859
BVO2	For me, protecting the environment (preserving nature) is important	0.8687
	Environmental identity	
EI1	I spend a lot of time in natural settings (mountains, lakes, etc)	0.7740
EI2	I think of myself as a part of nature, not separate from it.	0.8773
EI3	Behaving responsibly toward the Earth - living a sustainable lifestyle is part of my moral code	0.7468
	Green consumption self-efficacy	
SE1	I am conðdent in my ability to engage in waste utilization	0.8776
SE2	I am conðdent in my ability to show preference for products with green mark	0.9128
	Personal outcome expectation	
POE1	I think that if I keep on purchasing green products, I can gain self-satisfaction	0.8173
POE2	I think that if I keep on purchasing green products, I can have a hopeful and sustainable future	0.8677
POE3	I think that if I keep on purchasing green products, I can benefit my health	0.7766
	Consumer purchase behavior	
CPB1	I often make special effort to buy fruits and vegetables grown without pesticide	0.7852
CPB2	I often make a special effort to buy paper and plastic products (small things like notebooks, tissue papers... or bigger stuffs like furniture...) made from recycled materials.	0.8229
CPB3	I often do avoid product from a company that I know maybe harming the environment.	0.7931
	Willingness to pay	
WTP1	I would be willing to pay much higher taxes to protect the environment.	0.8554
WTP2	I would be willing to accept cuts in my standard of living to protect the environment.	0.8617
WTP3	I would be willing to pay much higher prices to protect the environment.	0.8907

behavior employed very recently by Wang et al. (2021) to the framework of value–identity–self-regulation-pro-environmental behavior as already indicated in our research model. Empirically, while Wang et al.'s (2021) examined only the biospheric value in the structure of personally environmental value and only the pro-environmental purchase in the structure of human behavior, ours investigated all three of value ingredients (i.e., biospheric, egoistic, altruistic) and both consumer purchase and willingness to pay for a more understanding of the linkage of personal value and human behavior in a

Table 2. Convergent validity and discriminant validity

Construct	CR	EI	EGO	ALT	BIO	POE	CPB	SE	WTP
EI	0.7205	**0.6422**							
EGO	0.7231	0.0713	**0.6529**						
ALT	0.7547	0.1701	0.0769	**0.5723**					
BIO	0.7036	0.3395	0.0064	0.0836	**0.7697**				
POE	0.7617	0.2648	0.0288	0.1632	0.2060	**0.6746**			
CPB	0.7203	0.1727	0.0578	0.0775	0.1482	0.3490	**0.6409**		
SE	0.7675	0.1138	0.0138	0.0081	0.0423	0.1969	0.2446	**0.8017**	
WTP	0.8417	0.2509	0.0402	0.0695	0.2216	0.3754	0.3385	0.3042	**0.7559**

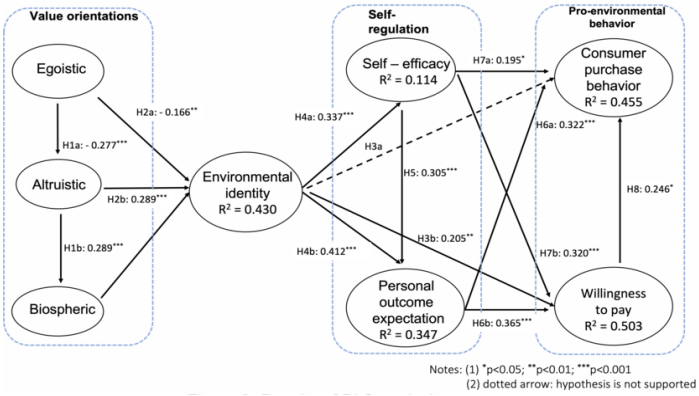
Note: squared correlations; CR: composite reliability; AVE (bold) in the diagonal; EI: environmental identity; EGO: egoistic; ALT: altruistic; BIO: biospheric; POE: personal outcome expectation; CPB: customer purchase behavior; SE: self-efficacy; WTP: willingness to pay.

Table 3. Total effect inference

Effects	Original coefficient		Total effect	Standard bootstrap results			
	Direct	Indirect		Mean value	Standard error	t-value	p-value
EI → POE	0.4117	0.1028	0.5146	0.5168	0.0572	9.0017	0.0000
EI →CPB	0.0606	0.3550	0.4156	0.4212	0.0643	6.4664	0.0000
EI → SE	0.3374		0.3374	0.3393	0.0647	5.2129	0.0000
EI →WTP	0.2050	0.2959	0.5009	0.5042	0.0587	8.5274	0.0000
POE →CPB	0.3219	0.0900	0.4119	0.4142	0.0842	4.8940	0.0000
POE →WTP	0.3650		0.3650	0.3663	0.0753	4.8471	0.0000
SE →POE	0.3048		0.3048	0.3055	0.0681	4.4775	0.0000
SE →CPB	0.1954	0.2045	0.3999	0.4006	0.0756	5.2879	0.0000
SE →WTP	0.3204	0.1113	0.4317	0.4330	0.0599	7.2087	0.0000
WTP → CPB	0.2464		0.2464	0.2486	0.0998	2.4681	0.0136

Note: EI: environmental identity; POE: personal outcome expectation; CPB: customer purchase behavior; SE: self-efficacy; WTP: willingness to pay.

Figure 2. Results of PLS analysis



green context. Furthermore, our findings improve the predictive power of the theoretical framework in determining pro-environmental behaviors through the substitute of self-regulation for personal norm that is inherently stable in both Stern's (2000) value-belief-norm theory and van de Werff and Steg's (2016) value-identity-norm theory. In specific, our model offered a little better explanatory power (0.50 for willingness to pay), while Stern's (2000) and van de Werff and Steg's (2016) indicated that the amount of variance (of interest in pro-environmental behavior as a sort of willingness to pay)) explained by their model is 0.44 and 0.41 in a respective way.

Second, our findings empirically support a jointly positive impact of environmental self-regulation, which includes both self-efficacy and personal outcome expectation, and environmental identity on pro-environmental behaviors. This outcome could provide a theoretical extension of, for example, Lin and Hsu's (2015) work where pro-environmental behaviors are explained only by self-regulation, or Gatersleben et al.'s (2014) study where environmental identity is the only predictor of pro-environmental behaviors. In more specific, although both Bradley et al. (2020)'s and our model reported that self-efficacy has both direct and indirect effects on pro-environmental purchase behavior, the partial mediator in the former work (i.e. Bradley et al., 2020) and in the latter (i.e., ours) were personal psychological adaptation and personal outcome expectation in a respective way. As a result, the relationship between self-efficacy and purchase behavior deserves more attention in consumer research.

To be much emphasized, with the strong links between environmental identity and self-regulation (path estimates of 0.337 and 0.412 for self-efficacy and personal outcome expectation respectively), this paper is one of the first studies that evidently demonstrate the integration between identity theory (Burke & Reitzes, 1991) and self-efficacy theory (Bandura, 1977; 1997) to explain and predict human behaviors.

Third, this paper is among the first studies to empirically identify the mediation role of environmental self-efficacy between environmental identity and consumer purchase behavior (see Table 3). As a significantly theoretical complement for, e.g. Quoquab et al. (2020) in which personal norm, a moral obligation to protect the environment, acts as the only determinant of green purchase behavior, or for Gatersleben et al.'s (2014) where environmental identity is only considered as a direct determinant of purchase behavior without the presence of self-efficacy, this finding reaffirms the important role of self-efficacy in specific and self-regulation in general in understanding human behavior, as Bandura's (1977) seminal theory indicated.

Fourth, our study may provide more understanding on the theoretical relationship between environmental identity and pro-environmental behavior. This new understanding has two implications. One, whilst Ates (2020) indicated this link is only partly mediated by consumer's personal norm, a sense of fulfillment of the criteria for any societal role, we revealed that consumer willingness to pay more is a full mediator of this relationship. Two, our model, by revealing a full mediation role of willingness to pay between environmental identity and pro-environmental behavior, offers a theoretical complement to Talwar et al. (2021)'s work where willingness to purchase acted only as a partial mediator in the relationship between ethical self-identity, a sort of environmental and animal identity (Qasim et al., 2019), and pro-environmental behaviors.

Fifth, this is one of the first studies to explore the relationships among the dimensions of environmental value orientation. With the links empirically identified among egoistic, altruistic and biospheric values, this paper could be a significant extension to Maricchiolo et al.'s (2021) value-based environmental concerns in which no connection was considered among the three value dimensions despite that the utmost importance of value orientations was insisted therein.

Sixth, in the same vein, although self-regulation mechanism was similarly employed as an important determinant for pro-environmental behaviors, our study differentiates from Kim et al.'s (2016) in that the theoretical structure of self-regulation. While we exploited the two dimensions of self-regulation, which are self-efficacy and personal outcome expectation, only the first dimension (i.e., self-efficacy) was used in Kim et al.'s (2016). Moreover, the hypothesized path from self-

efficacy to personal outcome expectation was also affirmed in ours, which may provide us with a more understanding of the self-regulation mechanism in, for example, green consumption.

Managerial Implications

This study may suggest several managerial implications. Firstly, according to the strong impact of self-regulation on pro-environmental behaviors (H6a, H6b, H7a, H7b), the business managers of companies should focus on identifying and building consumer self-efficacy and personal outcome expectation to encourage their pro-environmental behavior. The former suggestion refers to the business strategies to aim at consumers who have already had high self-regulation which represents itself as having enough confidence about their competence, for example, in waste utilization or knowledge of 'green' brand of products/services. This in turn requires companies to use market segmentation strategies to identify cohorts of customers who have, for instance, high status of education, or high level of income (i.e., be able to approach a well-known brand name).

The latter suggestion has mostly the same content of market segmentation for companies to implement in their marketing activities. However, the focal point herein is, for various customer groups, companies should increase marketing functions and communications activities for (i) creating targeted messages about what benefits of buying/using products/services and how easy for potential consumers to employ products/services, or even better, for (ii) using promotions such as product trials or free sample of products/services. All communications activities would help customers to enhance their confidence of practicing green consumption or their expectation of benefits of experiencing green consumption.

Second, the positive role of environmental identity in increasing environmental self-regulation (H4a and H4b) suggests that managers can do more marketing communications efforts to strengthen the bonds between customers and nature, which may lead to subsequent pro-environmental behaviors. For example, managers can run some identity campaign to lengthen, deepen and broaden customer's perception of green issues in both short term and long term, and then point out customer benefits of using green products/services of companies. Once consumer awareness of environment protection is improved, their links to the Earth would be also reinforced.

Finally, the significance of value orientations in our model, especially biospheric value (with the highest path estimate of 0.506), suggest that managers should increase the awareness of both potential and current customers through environmental education programs, and further promote environmental values among those customers. For instance, a content should be offered in the training program is how to assess the important position of nature in customer daily living and lifespan development.

It should be noted that, as our findings suggest that the three dimensions of value orientations positively lead to environmental identity, green marketers should design the courses in a comprehensive way to include the concerns of self (egoistic), of society (altruistic), and of course, of nature (biospheric). On the other hand, with the fact that value is relatively stable and may transcend specific situations (Karp, 1996), such programs should also be tailor-made for all societies or clubs including students (e.g., offering a youth scholarship or holding a contest about green marketing).

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The first limitation involves the generalizability of our findings. As the study was conducted with a convenient sampling in Dalat, Vietnam, a medium-sized town in a developing country, our results may not be suitable for big cities or megacities in developed nations where the attachment to natural environment of residents there may be at a lower level. Moreover, this limitation also relates to the size of our sample. Although the PLS approach facilitates empirical studies to produce estimates even for very small sample sizes, the accuracy of model estimates could be improved with larger sample (Henseler et al., 2016). Hence, future research can replicate our analysis in different cities and different countries with larger sample size to improve the external validity of our model.

The second concern is the explanatory power of the model in predicting behaviors. Although we included self-regulation as predictors for purchase behaviors, a lot of other determinants, for example, from social exchange theory (Blau, 1994) could deserve to participate into the research model. Future studies can exploit other sociological or psychological theories to gain more understanding on pro-environmental behaviors.

CONCLUSION

Drawing on value theory, identity theory and self-regulation theory, the current paper extends the literature of pro-environmental behaviors by simultaneously considering both the pathways from value orientations, environmental identity, self-regulation to pro-environmental behaviors and the structural relationships within value orientations, within self-regulation and within pro-environmental behaviors. With the note that almost hypothesized paths were empirically supported, the causal relationships between the theoretical constructs as proposed are evidently validated in the context of green consumption in Vietnam, a developing country.

It is interesting that, employing self-regulation rather than personal norm as in both Stern's (2000) value-belief-norm theory and van de Werff and Steg's (2016) value-identity-norm theory, our model presents an improvement of the predictive power for pro-environmental behaviors. Thereby, our chain of value-identity-self-regulation may be a worthy framework in the literature of general predictors of environmental behaviors.

Concerning self-regulation itself, the current research provides interesting understandings of both its internal structure and its total role in regulating consumer pro-environmental behaviors. For the former insight (i.e. internal structure), the positive impact of self-efficacy on outcome expectation provides one more empirical evidence, supporting Bandura's (1977) classic theory while the debate on the causal link between these two constructs has subsided recently (Williams, 2010; Gebauer et al., 2020). In regard to the latter insight (i.e. total role), the independent influence of each and the joint influence of both constructs (i.e. self-efficacy and outcome expectation) on pro-environmental behavior reveals evidently that self-regulation is both to subsume the regulation not only of behavior but also of cognitive and affective response and to be a complex process of determining and moving to a desired end-state and monitoring progress along the way as Inzlicht et al. (2021) recently reviewed.

Toward the structure of value, the present work provides a new insight on the formation of consumer value underlying consumer behavior in which the personal dimension (i.e., egoistic) has a negative effect on the social one (i.e., altruistic) that in turn has a positive impact on the environmental dimension (i.e., biospheric). As value is general and abstract, such analytical view of its structure helps to conduct an effective strategy to leverage value to its full extent, for explaining not only consumer environmental behaviors but also human behavior as a whole (Sepasi et al., 2020).

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