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RESEARCH ARTICLE

Green Behavior and Generation: A Multi-Group Analysis Using Structural Equation Modeling

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Abstract: The purpose of this research is to investigate the difference between generations X and Y in terms of green behavior operationalized as an intention to buy green products (INT). The study was based on two cross-sectional samples—one for generation X (N=397) and one for generation Y (N=685). Model testing was conducted using structural equation modeling (PLS-SEM). At the overall model, results showed that all variables are significant (with p-values ≤ 0.05) predictors of INT. However, at the generation level, there is a significant difference in green values (GV) between generations where generation X registered a higher score. Furthermore, t-test of the path coefficients from GV to attitude toward green product (ATT), perceived behavioral control (PBC), and subjective norm (SN) are all statistically significant. The study suggests that marketers should consider a unique selling approach to each of the generations. For instance, as generation X has a higher score in GV, when targeting this group, marketing campaigns should highlight that their actions have a direct effect on the environment whether positive or negative.

Keywords: Green values, generational multi-group analysis, structural equation modeling, theory of planned behavior

Rapid economic growth in the last few decades has increased worldwide consumer consumption, causing environmental deterioration through overconsumption and overutilization of natural resources (Chen & Chai, 2010). The degradation of the environment will inevitably worsen if the people continue to be irresponsible in their current consumption patterns and if economic growth trends continue as it is. Environmental degradation will result in the increase of global warming, depletion of the ozone layer, water pollution, noise and light pollution, acid rain, and the growth of arid lands. Due to the increase in the awareness of global climate change and environmental

problems, environmental protection and sustainable development have become relevant issues in business and consumerism.

Today, businesses and consumers confront the biggest challenge: protect and preserve the earth's resources and the environment. Both businesses and consumers have become more concerned with the natural environment and are realizing that their production and consumption choices directly impact the environment (Laroche, Bergeron, & Barbaro-Forleo, 2001). Businesses have begun to modify their activities in an attempt to integrate environmental attributes into their marketing strategies. This has

made "greening" an important issue for managers and marketers. During the past decade, much evidence has suggested that a growing number of consumers in the United States and Western Europe are becoming more environmentally responsible in terms of their personal habits and lifestyles (Shamdasani, Chon-Lin, & Richmond, 1993; Ottman, 1993).

According to McCarty and Shrum (2001), people engage in environmental behavior to satisfy their desire to solve environmental problems, become role models, and feel they are helping to preserve the environment. The rising number of consumers who prefer and are willing to engage in environmental or green consumption are creating opportunities for businesses who use "green" as a component of their value proposition (Ishaswini & Datta, 2011).

Green consumerism includes environment preservation, curtailment of pollution, responsible use of non-renewable resources, and the welfare and preservation of animal species (McEachern & McClean, 2002). Environmentally friendly products, also known as green products, have been defined as products that can be recycled and processed, and cannot pollute the earth or depreciate natural resources (Shamdasani et al., 1993). A few examples of green products are household items that are made with recycled materials, energy-efficient light bulbs, and products that are made with biodegradable materials.

Theoretical Framework: Theory of Planned Behavior

According to the theory of planned behavior, the intention to behave in a certain manner is affected by three belief-based judgments: the belief about the possible outcomes of the behavior (behavioral beliefs), beliefs about the perception of others regarding the behavior (normative beliefs), and the belief of the individual about the factors that may help or block the performance of the behavior (control beliefs). Behavioral beliefs produce a positive or negative attitude towards the behavior. Normative beliefs result in subjective norm while perceived behavioral control ensues from control beliefs. Putting all those factors together, it all leads to the formation of the intention to perform the behavior. If the attitude and subjective norms are positive regarding the performance of the behavior and if the perceived behavioral control

is large, then there is a higher probability that the individual would have stronger intentions to perform the behavior. Furthermore, if an individual has enough actual control over the behavior, then there is a higher possibility that the individual will perform the behavior when there is an opportunity to do so (Ajzen, 1991).

Therefore, it can be assumed that intention is the antecedent of behavior. However, possible obstacles in performing the behavior can hinder volitional control; hence it is useful to take note of perceived behavioral control in addition to intention as antecedents of behavior. Figure 1 features a schematic representation of the theory (Ajzen, 1991)

Consumer Behavior-Specific Beliefs

Beliefs are usually used in researches regarding green behavior because most models adopt or expand on the theory of reasoned action by Fishbein and Ajzen (1975) or the theory of planned behavior (Ajzen, 1991; Ajzen & Driver, 1992; Ajzen & Fishbein, 1980). Previous researches used beliefs as a significant influence of consumer attitudes and intention to use or purchase green products (De Groot & Steg, 2007; Kalafatis, Pollard, East, & Tsogas, 1999; Mostafa, 2007). Beliefs may either be about the purchase of specific products, specific environmentally friendly action, or be about green consumption. Therefore, it is important to study the relationship between beliefs and green consumer behavior because beliefs affect a lot of green behaviors and it can help the further understanding of the variables that are important, while also providing a stable foundation in defining distinct target groups (De Groot & Steg, 2007).

The positive beliefs of consumers about the use of renewable energy show that it is highly possible for consumers to be more willing to pay more for the use of sustainable energy (Bang et al., 2000). In addition, according to De Groot and Steg (2007), the intention to use green transportation is positively influenced by behavior-specific beliefs.

Green Values

Environmentally friendly marketing, since the early 1990s, has gained prominence in the world. In the 1970s and 1980s, multiple discussions have been conducted in the subject of green consumers and green consumerism. According to Henion and Kinnear (1976), green consumers are environmentally conscious consumers. Green consumerism was a
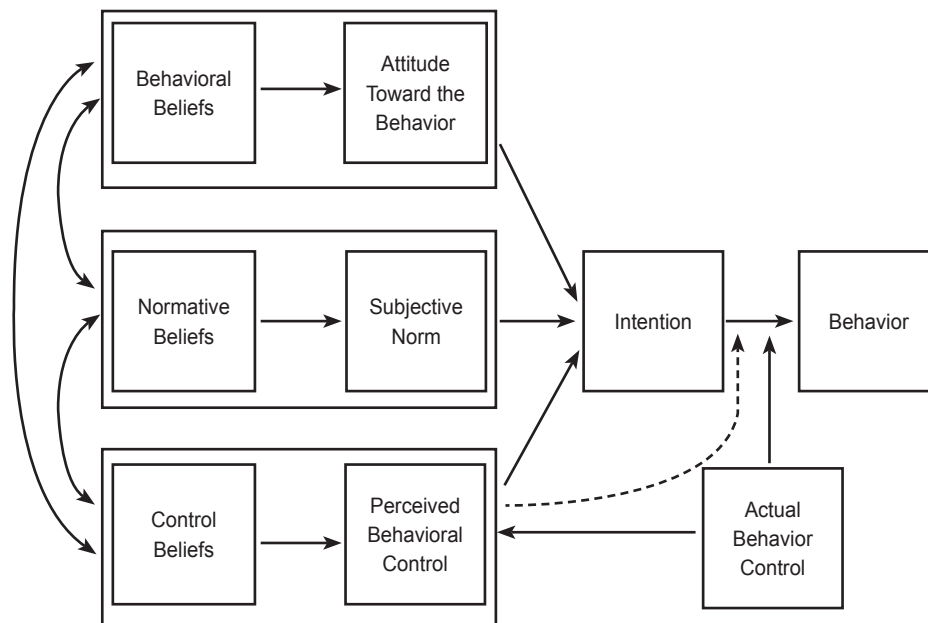
Figure 1. Schematic representation of the theory of planned behavior (Ajzen, 2006).

specific type of socially conscious consumer behavior that is primarily focused on protecting the environment (Antil, 1984). Weiner and Doescher (1991) described green consumerism as a form of "pro-social" consumer behavior. Michael Polonsky (1994) defined "green marketing as the marketing that consists of all activities designed to generate and facilitate any exchanges intended to satisfy human needs or wants, such that the satisfaction of these needs and wants occurs, with minimal detrimental impact on the natural environment" (p. 2). In the succeeding discussion, green values are represented as GV.

Generation X

This generation was born between 1965 and 1979 (Alsop, 2008), growing up in the era of economic turmoil, instability, recession, and unemployment. Sandwiched between two large generational groups, Generation X (Gen Xers) are often overlooked (Zemke, Raines & Filipczak 2000).

Gen Xers are often described as independent kids who come into an empty home after school because their single parents are at work (Zemke et al., 2000). Witnessing their parent's employment situations have been thought to affect their preference toward work-life balance. Gen Xers have a sense of being independent and capable possibly because they have been formed

by the times that they were forced to take care of themselves for long periods of time. The mantra of this generation could be "work to live."

Zemke et al. (2000) believed that Gen Xers currently look for a better balance of work and personal lives to have more time with their own families because this generation spent a lot of alone time when they were children. Gen Xers have often been called slackers in the popular media (e.g., Johnson & Johnson, 2010; Zemke et al., 2000), but this has been more articulately described as seeking a harmonious life, a dislike for micro-management, and they prefer to work autonomously (Tulgan, 2000; Zemke et al., 2000). Gen Xers also want regular feedback from their managers (Tulgan, 2000).

Generation Y (Gen Y)

Millennials were born from 1980 (Cennamo & Gardner, 2008; Lyons, Ng & Schweitzer, 2005) to years that varies in between 1992 to 2002 (e.g., Alsop, 2008; Arsenault, 2004; Howe & Strauss, 2000; Zemke et al., 2000).

There is often confusion because of the many names used to refer to this generation. Some of the other names that are commonly used for this group include: Gen Y, Generation Next, Nexters, Echo Boomers, and Net Gen (Zemke et al., 2000). They number approximately

75 million and make up about 25% of the population, rivaling the Boomers in size (Mitchell, McLean & Turner, 2005). They are considered a diverse group that has fewer stereotypes about gender and ethnicity than their predecessors (Raines, 1997).

Millennials have also been portrayed as civic-minded. They are described as taking collective action and making efforts to better the community. Schools and colleges look for community service and involvement from this generation, hence, they gravitate to being volunteers. The mantra of this generation could be "live to contribute something meaningful."

Predictors of Green Behavior

Numerous researches have been done to determine the characteristics of a green consumer, and a significant amount of evidence suggests that a wide variety of factors influence green purchase behavior. Previous studies have focused on examining the factors affecting environmental purchasing behavior such as culture, behavior, gender, environmental knowledge, attitudes, personal norms and green marketing. These factors have been acknowledged as important determinants of green purchase behavior (Sreen, Purbey & Sadarangani, 2018; Nguyen, Lobo, & Nguyen, 2018; Juwaheer, Pudaruth, Noyaux, 2012)

Prior research on the demographic profiles of environmentally conscious consumers has indicated significant correlations between certain demographics and environmentally conscious behaviors (Anderson & Cunningham, 1972; Kinnear, Taylor, & Ahmed, 1974; Van Liere & Dunlap, 1980). These demographic variables include gender, age, education, income, and region of residence (Goldsmith & Flynn, 1992). Based on a great number of studies, it has been found that green consumers tend to be young, affluent females who are intellectuals with high occupational status (Hines, Hungerford, & Tomera, 1987).

Pro-environmental behavior has been found to be affected by gender. It has been discovered that even though males have more knowledge about environmental issues, it was the females that had more concern about environmental issues and they tend to participate more frequently in environmentally protective behaviors like recycling or energy conservation (Davidson & Freudenburg, 1996). According to Steele (1996), it was the females that are more likely to participate in environmental policy

issues. Furthermore, he also found that the differences between the gender were wider among older adults than young adults. The gender difference was believed to be because of the difference in the socialization patterns of boys and girls (Schahn & Holzer, 1990). Gilg, Barr, and Ford (2005) confirmed the findings that women are more environmentally active than men. Furthermore, females have been known to perceive risks more than men, which is why they are more worried about the direct effects of the environmental problems (Bord & O'Connor, 1997).

Married people are more likely to have positive attitudes toward the environment, and they tend to participate more in green behavior practices (Grunert & Juhl, 1995). According to Diamantopoulos, Schlegelmilch, Sinkovics, and Bohlen (2003), this may be due to the influence of the other partner in provoking awareness for the environment or the effects of the support of the spouse in participating in pro-environmental endeavors. Further, Grunert (1995) found that families with more children both know and care more about the environment than families with fewer children. This is because a greater number of individuals at home create a larger opportunity for the family to be educated about various current environmental issues.

Based on age, there have been mixed results regarding its effects on green behavior (Gilg et al., 2005). Grunert and Kristensen (1992) found that individuals who were younger tend to have more knowledge and awareness about the environment compared to older individuals in the population. Consistent in many research, the relationship between age and attitudes shows it to be a negative one; the younger the population, the more positive their attitudes are toward pro-environmental behavior. This is probably because the younger population are not as focused on tradition and are more open in adapting to changing lifestyles when finding solutions to problems in the environment. On the contrary, when the actual behavior is measured, many studies have found that the older population tends to engage more in environmentally friendly behavior (Van Liere & Dunlap, 1980; Schahn & Holzer, 1990; Vining & Ebreo, 1990; Scott & Willits, 1994). This contradiction could be a result of younger generations not being able to financially support pro-environmental initiatives, although, they believe in the cause (Diamantopoulos et al., 2003). Thus, the following hypotheses:

H0a: Statistically significant differences between generations X and Y exist in the scores of antecedents of intentions to purchase green products and intention itself.

H0b: Statistically significant differences between generations X and Y exist in the relationships among variables of intentions to purchase green products.

H1: There is a positive relationship between beliefs in green products and attitude toward green behavior.

H2: There is a positive relationship between beliefs in green products and subjective norm.

H3: There is a positive relationship between beliefs in green products and perceived behavioral control.

H4: There is a positive relationship between green values and attitude toward green behavior.

H5: There is a positive relationship between green values and subjective norm.

H6: There is a positive relationship between green values and perceived behavioral control.

H7: There is a positive relationship in attitude toward green behavior and intention to purchase green products.

H8: There is a positive relationship between subjective norm and intention to purchase green products.

H9: There is a positive relationship between perceived behavioral control and intention to purchase green products.

The contribution of this paper is the addition of green consumer values as an antecedent to the intention to purchase green products. Furthermore, the study compares the green purchase intentions of generations X and Y (millennials) using structural equation modeling and contribute to the debate on which generation has higher regard in protecting the environment. The research framework of the study is shown in Figure 2.

Methods

The purpose of the study is to determine whether there are generational differences in the antecedents of green purchase intention. To test the proposed model, I employed a survey method and analyzed the hypotheses using partial least squares structural equation modeling (PLS-SEM). T-tests of the variables comparing Gen X and Y and Pearson correlations among variables were also conducted as preliminary analyses.

Data Collection

This study employed quota sampling wherein the population is divided into different subpopulations just as in stratified random sampling, but with one important difference: probability sampling is not used to choose individuals in the subpopulation for the sample. In quota sampling, specified numbers (quotas)
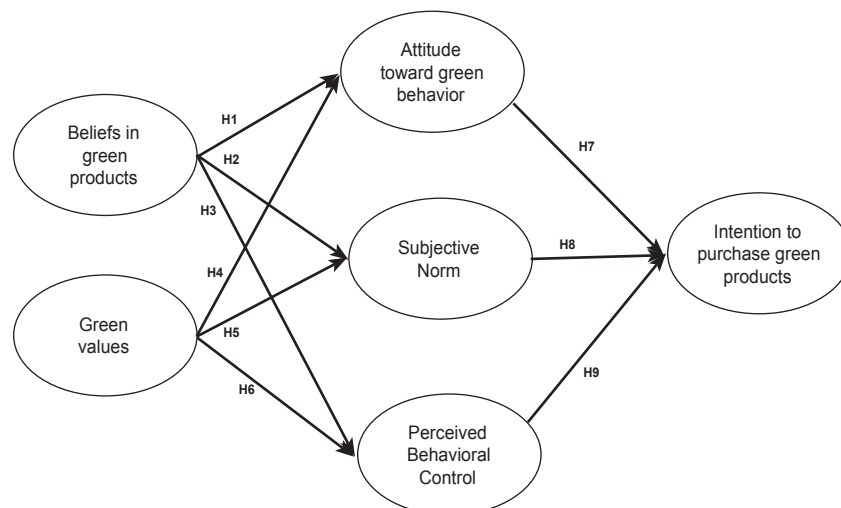

Figure 2. Conceptual framework for the study.

of particular types of population units are required in the final sample. The generational classification for this study is based on year of birth in accordance with the Howe and Strauss (2000) and Life Course Associates (2014) classification—that is, Gen Xers born 1961–1981 and millennials born 1982–2004.

Based on power analysis generated by the software G*Power (Faul, Erdfelder, Lang, & Buchner, 2009), at suggested effect size of 0.5 and power of .95, the required sample size for both groups is 210 (n = 105 for each group). Recognizing that there could be invalid questionnaires and type II error is minimized as the population size increases, I sent more questionnaires and was able to collect 397 and 685 for Gen X and Gen Y, respectively. The mode of data collection is predominantly face-to-face surveys. For generation Y, the respondents are both graduate and undergraduate students of a local university. On the other hand, generation X respondents are employees of various private companies.

Shown in Table 1 is the demographic information of the sample. As shown in Table 1, 397 (37%) is Gen X, and 685 (63%) is Gen Y. The average age (in years) for Gen X is 45.9 while, for Gen Y, is 21.8. Data show that Gen X is more educated than Gen Y. In fact, for Gen X, 268 have completed bachelor's degree (67.5%), 38 have finished master's degree (9.6%), and nine completed doctorate degree (2.3%). On the other hand, for Gen Y, 191 have a bachelor's degree (27.9%) and nine have completed either master's or doctorate degrees (1.3%). Moreover, majority (72.8%) of Gen X are married while most (96.9%) of Gen Y is single. Finally, in terms of spending power, Gen X is better with 84.4% of them have more than Php10,000 to spend while for Gen Y, most (87.4%) of them have less than P10,000 to spend.

Measurement

This research analyzes green purchase intentions of generations X and Y. I adapted the instrument

Table 1
Demographic Characteristics

	Generation X			Generation Y		
	Count	%	Mean	Count	%	Mean
Age (years)			45.9			21.8
Gender						
Male	158	39.8		275	40.1	
Female	239	60.2		410	59.9	
Educational level						
Elementary	10	2.5		1	0.1	
High school	72	18.1		484	70.7	
College	268	67.5		191	27.9	
Masters	38	9.6		8	1.2	
Doctorate	9	2.3		1	0.1	
Civil Status						
Single	105	26.4		21	3.1	
Married	289	72.8		664	96.9	
Others						
Income/allowance						
Less than 10,000	62	15.6		401	58.5	
10,000- 30,000	125	31.5		198	28.9	
30,001 - 50,000	93	23.4		51	7.4	
50,001 and above	117	29.5		35	5.1	

developed by Ryan (2014) which was tested for reliability and validity to measure green buying intention. On the other hand, Green Consumer Value Scale (Haws, Winterich & Naylor, 2010) was utilized to gauge green values.

Theory of planned behavior (TPB) variables were measured using prior studies (Ajzen, 1991). Belief questions asserting that purchasing EFPs (Environmentally Friendly Products) would be "encouraged by people and groups that are important to me" were measured on 5-point scales.

Likert scale was employed to measure subjective norm. The questions include "My family thinks that I should purchase environmentally friendly products in the next 12 months" and "My friends and/or partner think that I should purchase environmentally friendly products in the next 12 months," as well as belief reflection, "I believe that my purchasing environmentally friendly products in the next 12 months would be encouraged by people and groups that are important to me."

On the other hand, attitude questions used semantic differential to evaluate statements such as "My purchasing environmentally friendly products in the next 12 months is…" ranging from extremely negative to extremely positive. "I find purchasing environmentally friendly products…" evaluated extremely pleasant to extremely unpleasant.

Perceived behavior control ("My purchasing environmentally friendly products in the next 12 months is…" and "If I wanted to, I could purchase environmentally friendly products in the next 12 months") were assessed using Likert scale. The question "I believe that my purchasing environmentally friendly products in the next 12 months will require me to spend more money than if I were to purchase other non-environmentally friendly products" will be part of the measures of perceived behavior control.

Likewise, Likert scales were used for both behavioral intent and green consumer values where "I will most likely buy green products in my next shopping trip" and "It is important to me that the products I use do not harm the environment" are the sample questions, respectively.

Results

To test the model of green purchase intention for generations X and Y, t-tests, correlation, and path analysis were conducted using SMARTPLS 3.0 (Ringle, Wende, & Becker, 2015).

Reliability and Validity of Research Constructs

The questionnaire was pretested with 27 tertiary students with age range from 18 and 22 years old and eight working professionals between the ages 35 to 57. Pretest results were used as the bases for improving the questionnaires (Churchill & Iacobucci, 2002).

Cronbach's alpha was applied to ensure scale reliability and internal consistency (Cronbach, 1951). Adequate Cronbach's alpha value is at least .70 (Peterson, 1994), while at least .60 is desirable in social psychology research (Robinson, Shaver, & Wrightsman, 1991).

In this paper, INT and GV are measured using TPB's perceptual variables. The constructs for all these are considered reflective because the composite reliability is all mutually interchangeable (Ketchen, 2013). It can be seen in Table 2 that the constructs exhibit internal consistency reliability because they are all higher than the set target of >0.7 (Ketchen, 2013).

The average variance extracted (AVE) is the proportion of variance in the items that are explained by the construct. According to Fornell and Larker (1981), the recommended AVE threshold for validity is 0.50 (Kock, 2015). An AVE of 0.50 signifies that a construct can explain about 50% of the variance of its indicators on average.

On the other hand, item loading is the relationship between the item (question-statement) and the construct. The item loadings should be equal to or greater than 0.50 (Hair et al., 1987 & 2009, as cited in Kock, 2015). As all of the item loadings are above 0.50 (refer to Table 3), it serves as validation parameters of a confirmatory factor analysis (Kock, 2015).

As a prerequisite to performing multi-group analysis based on generations, convergent validity and discriminant validity for each of the generations were likewise tested. Tables 4 and 5 display that the criteria pertaining to AVE and CR are likewise satisfied.

Finally, to investigate model fit, the SRMR (standardized root mean square residual) were analyzed. An SRMR value of less than 0.10 (Hu & Bentler, 1999) is acceptable. For all the three models: overall model (SRMR = 0.083), Gen X model (0.079), and Gen Y model (0.085) the values of SRMR fall within the acceptable range.

Pearson's correlation coefficients were calculated to determine the potential relationships among the six study variables. As presented in Table 6, all correlation coefficients were significantly different from zero, indicating that all the relationships between each pair of the variables are significant. Finally, all correlation coefficients are positive, which suggests a positive association between all variables.

In the data analysis, the different constructs in the model were differentiated using two-sample t-test.

Table 2

Overall Convergent Reliabilities, Discriminant Validities, and Correlations Among Latent Constructs of the Measurement Model

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	ATT	BEL	GV	INT	PBC	SN
ATT	0.814	0.818	0.877	0.641	0.801					
BEL	0.712	0.715	0.762	0.602	0.577	0.669				
GV	0.843	0.847	0.884	0.561	0.614	0.479	0.749			
INT	0.718	0.731	0.834	0.717	0.524	0.485	0.557	0.847		
PBC	0.724	0.756	0.824	0.611	0.465	0.419	0.487	0.555	0.781	
SN	0.782	0.792	0.873	0.695	0.399	0.366	0.476	0.445	0.548	0.834

Table 3

Overall Convergent Validity

Constructs	Items	Loadings	Alpha	CR	AVE
Attitude toward green products	ATT1	0.772	0.814	0.877	0.641
	ATT2	0.787			
	ATT3	0.828			
	ATT4	0.815			
Beliefs about green products	BEL1	0.681	0.712	0.762	0.602
	BEL2	0.721			
	BEL3	0.692			
	BEL4	0.707			
Green Values	GV1	0.739	0.843	0.884	0.561
	GV2	0.703			
	GV3	0.744			
	GV4	0.809			
	GV5	0.726			
	GV6	0.768			
Intention to buy green products	INT1	0.921	0.718	0.834	0.717
	INT2	0.765			
Perceived Behavioral Control	PBC1	0.811	0.724	0.824	0.611
	PBC2	0.810			
	PBC3	0.720			
Subjective Norm	SN1	0.858	0.782	0.873	0.695
	SN2	0.835			
	SN3	0.809			

T-test is used to compare means and variances for determining whether two samples have equal means. Table 7 displays the descriptive statistics of Gen X and Gen Y, highlighting the mean and variances. Based on the table, it is shown that BEL, GV, PBC, and SN are significantly different between the two groups. For the other variables ATT and INT, while Gen X still has a higher mean, the difference between the two groups are statistically insignificant. Thus, H0a is partially supported.

Moreover, the hypothesized relationship among constructs was analyzed using SMARTPLS 3.0 using the PLS-SEM approach. Table 8 shows that all hypotheses of the study are supported. Results suggest that BEL and GV both positively affect ATT, SN, and PBC, which consequently positively affect INT.

Table 4
Convergent Validity by Generation

Generation	Constructs	Items	Alpha	CR	AVE
Generation X	Attitude toward green products (ATT)	4	0.865	0.908	0.711
	Beliefs about green products (BEL)	4	0.701	0.777	0.501
	Green Values (GV)	6	0.872	0.904	0.610
	Intention to buy green products (INT)	2	0.724	0.852	0.743
	Perceived Behavioral Control (PBC)	3	0.750	0.856	0.665
	Subjective Norm (SN)	3	0.830	0.897	0.744
Generation Y	Attitude toward green products (ATT)	4	0.780	0.857	0.601
	Beliefs about green products (BEL)	4	0.704	0.764	0.527
	Green Values (GV)	6	0.818	0.868	0.524
	Intention to buy green products (INT)	2	0.711	0.829	0.709
	Perceived Behavioral Control (PBC)	3	0.717	0.798	0.571
	Subjective Norm (SN)	3	0.740	0.851	0.656

Table 5
Discriminant Validity by Generation

Generation		ATT	BEL	GV	INT	PBC	SN
Generation X	ATT	**0.843**					
	BEL	0.651	**0.716**				
	GV	0.780	0.572	**0.781**			
	INT	0.584	0.558	0.567	**0.862**		
	PBC	0.590	0.533	0.587	0.592	**0.815**	
	SN	0.479	0.416	0.529	0.439	0.655	**0.863**
Generation Y	ATT	**0.775**					
	BEL	0.546	**0.703**				
	GV	0.518	0.458	**0.724**			
	INT	0.493	0.465	0.534	**0.842**		
	PBC	0.389	0.371	0.407	0.525	**0.755**	
	SN	0.357	0.361	0.409	0.425	0.466	**0.810**

Note: Diagonals represent the square root of the AVE while the off-diagonals represent the correlations

Table 6

Pearson's Correlation Coefficients Between Study Variables

	BEL	GV	ATT	SN	PBC	INT
BEL						
Gen X	—					
Gen Y	—					
GV						
Gen X	.557**	—				
Gen Y	.451**	—				
ATT						
Gen X	.649**	.780**	—			
Gen Y	.546**	.512**	—			
SN						
Gen X	.358**	.515**	.467**	—		
Gen Y	.332**	.399**	.336**	—		
PBC						
Gen X	.486**	.577**	.583**	.647**	—	
Gen Y	.329**	.377**	.352**	.457**	—	
INT						
Gen X	.486**	.493**	.538**	.202**	.401**	—
Gen Y	.465**	.450**	.485**	.273**	.320**	—

Table 7

Descriptive Statistics and T Tests

Factors	Gen X	Gen Y	|t|
ATT			
Mean	4.160	4.115	1.057
Std. dev.	0.718	0.642	
BEL			
Mean	3.958	4.054	-2.699**
Std. dev.	0.592	0.455	
GV			
Mean	4.082	3.819	6.672**
Std. dev.	0.648	0.609	
INT			
Mean	3.818	3.814	0.078
Std. dev.	0.739	0.688	
PBC			
Mean	3.610	3.364	4.899**
Std. dev.	0.790	0.795	
SN			
Mean	3.465	3.105	7.195**
Std. dev.	0.809	0.785	

**p ≤ .01

Table 8
T-Tests of Path Coefficients

Generation		Path Relationship	Beta Values	Std. Dev.	t-value	Decision
Overall	Direct effects	BEL -> ATT	0.367	0.030	12.376**	H1: Supported
		BEL -> PBC	0.241	0.032	7.593**	H2: Supported
		BEL -> SN	0.180	0.036	4.971**	H3: Supported
		GV -> ATT	0.439	0.028	15.886**	H4: Supported
		GV -> PBC	0.371	0.030	12.412**	H5: Supported
		GV -> SN	0.390	0.032	12.263**	H6: Supported
		SN -> INT	0.124	0.033	3.751**	H7: Supported
		ATT -> INT	0.339	0.033	10.394**	H8: Supported
		PBC -> INT	0.316	0.037	8.585**	H9: Supported
	Indirect effects	BEL -> INT	0.223	0.020	11.180**	
		GV -> INT	0.315	0.021	15.340**	
Generation X	Direct effects	BEL -> ATT	0.305	0.040	7.700**	
		BEL -> PBC	0.292	0.048	6.098**	
		BEL -> SN	0.168	0.059	2.862**	
		GV -> ATT	0.604	0.036	16.923**	
		GV -> PBC	0.419	0.046	9.077**	
		GV -> SN	0.434	0.055	7.844**	
		SN -> INT	0.026	0.054	0.474	
		ATT -> INT	0.372	0.056	6.695**	
		PBC -> INT	0.348	0.065	5.351**	
	Indirect effects	BEL -> INT	0.219	0.030	7.432**	
		GV -> INT	0.382	0.034	11.231**	
Generation Y	Direct effects	BEL -> ATT	0.390	0.041	9.485**	
		BEL -> PBC	0.235	0.043	5.517**	
		BEL -> SN	0.221	0.045	4.899**	
		GV -> ATT	0.342	0.038	9.017**	
		GV -> PBC	0.299	0.040	7.567**	
		GV -> SN	0.308	0.043	7.206**	
		SN -> INT	0.151	0.041	3.691**	
		ATT -> INT	0.328	0.039	8.330**	
		PBC -> INT	0.316	0.042	7.436**	
	Indirect effects	BEL -> INT	0.236	0.027	8.613**	
		GV -> INT	0.253	0.026	9.893**	

Note. * $p < 0.1$, ** $p < 0.05$

Given the parameters of PLS-SEM, a blindfolding procedure was conducted to assess the predictive capability of the model (Chin,1998). Cross-validated redundancy (Q^2) estimates latent construct; therefore, it is critical in this study. A Q^2 result that is higher than 0 indicates that there is a predictive relevance in overall and generation-based models (Fornell & Cha, 1994). R squared (R^2) values for attitude and intention are found to be substantial and moderate, respectively (Cohen, 1988). Summary of the models is shown in Table 9.

Finally, to rigorously compare the results between the two generations, t-statistics were calculated to evaluate the differences in path coefficients across models. Based on the results shown in Table 10, GV to ATT is significant at $\alpha = 0.05$ while GV to PBC, GV to SN, and SN to INT are significant at $\alpha = 0.1$. Therefore, H0b is partially supported.

Discussion

Results showed, both at the overall and generation level, that all predictors of intention to purchase green products—BEL, GV, ATT, SN, and PBC—are significant at α = 0.05. Figure 2 displays that all paths are significant. Thus, hypotheses 1 to 9 are all supported.

On the other hand, both H0a and H0b are only partially supported. For H0a, Gen X and Gen Y differs significantly in terms of BEL, GV, PBC, and SN while there is no significant difference between ATT and INT.

In terms of PBC, results imply that Gen X has more control to perform actual green behavior. This is consistent with the previous researches

(Diamantopoulos et al., 2003) and could stem from the fact that Gen Y is not yet financially stable to afford environmental products. This is also supported by the profile of the Gen Y respondents wherein most of them belong to the less than Php30,000 income or allowance bracket. One way to encourage Gen Y to promote and buy green products is to make them affordable and made of recycled materials as recommended by Smith (2010). Regarding ATT, there is no significant difference between the two groups. This finding is contrary to the earlier studies that younger individuals tend to know more and have a greater environmental awareness compared to older members of the population (Grunert & Kristensen, 1992). A possible reason for this is the level of exposure

Table 9

R² and Cross-Validated Redundancy

Generation	Constructs	R2	CV-Comm H2	CV-Red Q2
Overall	ATT	0.483	0.394	0.289
	INT	0.408	0.205	0.281
	PBC	0.282	0.247	0.159
	SN	0.251	0.375	0.163
Generation X	ATT	0.669	0.489	0.446
	INT	0.434	0.248	0.305
	PBC	0.401	0.331	0.251
	SN	0.299	0.447	0.205
Generation Y	ATT	0.392	0.339	0.218
	INT	0.392	0.188	0.264
	PBC	0.209	0.185	0.106
	SN	0.206	0.315	0.125

Table 10

T-Test of Path Coefficients Between Gen X and Y

|	Relationships	Generation X		Generation Y		t-value
		Beta	Std. Dev.	Beta	Std. Dev.	
Direct effects	BEL -> ATT	0.305	0.040	0.390	0.041	1.378
	BEL -> PBC	0.292	0.048	0.235	0.043	0.858
	BEL -> SN	0.168	0.059	0.221	0.045	0.714
	GV -> ATT	0.604	0.036	0.342	0.038	4.622**
	GV -> PBC	0.419	0.046	0.299	0.040	1.913*
	GV -> SN	0.434	0.055	0.308	0.043	1.790*
	SN -> INT	0.026	0.054	0.151	0.041	1.847*
	ATT -> INT	0.372	0.056	0.328	0.039	0.653
	PBC -> INT	0.348	0.065	0.316	0.042	0.430
Indirect effects	BEL -> INT	0.219	0.030	0.236	0.027	0.386
	GV -> INT	0.382	0.034	0.253	0.026	3.027**

Note. * p < 0.10, ** p < 0.05
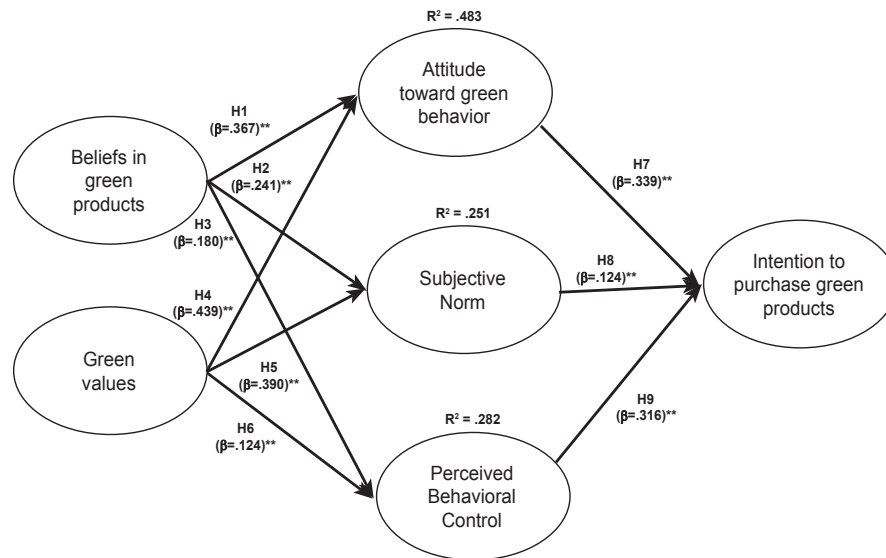
Figure 2. Path diagram and PLS estimations.

to environmental issues between the respondents of previous studies from this research. In a developing country like the Philippines, the younger generation has limited exposure to initiatives aimed at taking care of the environment.

Regarding SN, while there is a significant difference between the groups, Gen X has higher score compared to Gen Y. As cited in the work of Muralidharan, Rejon-Guardia, and Xue (2016), friends set standards for adolescents to emulate (Kotler, Armstrong, & Cunningham, 2005), and normative influence has been shown to promote pro-environmental attitudes toward nontoxic products (Werner, Sansone, & Brown, 2008). Moreover, peers have been found to be a mixed source of desirable and undesirable consumption behavior, leading to materialistic goals (Moschis & Churchill,1978), favorable attitudes toward product placement (De Gregorio & Sung, 2010), green purchase behavior (Lee, 2008), and consumption-oriented decision making (Singh, Chao, & Kwon, 2006). The findings of this research are incongruent with previous studies. It was found that Gen X face higher social pressure to support green products.

Concerning INT, results have shown that there is no significant difference between the two groups. That is, both generations have the same level of intention to purchase green products. Finally, on GV, Gen X registered higher index in terms of green values. It is interesting to note that the results of this study contradict the dominant literature that Gen Y care

more about the environment. This could be attributed to the different economic and cultural orientation of the respondents compared to preceding researches.

Conclusion

This research contributes to the overall understanding of the effect of generational differences to green values and intention to purchase green products. This study adds to the discussion as to whether Gen Y puts less value on green consumption using the theory of planned behavior. The result interestingly showed that contrary to previous researches, Gen X haS higher GV and SN, suggesting that the older generation face higher pressure from their cohorts.

TPB in many studies focuses mainly on intention to purchase green products. This study extended TPB to include GV as an additional antecedent to intention to purchase green products. Findings reveal that GV is an equally important variable in predicting intention to purchase green products. In fact, the coefficients of GV to ATT, SN, and PBC are higher compared to BEL, signifying that GV is a stronger predictor than BEL. For practitioners, this implies that if they want to improve the propensity of consumers to purchase products that are meant to protect the environment, early exposure of children on environmental awareness is imperative.

Finally, recognizing that the findings of the study contradict prior researches that Gen Y will support environmental products more compared to Gen X, this

calls for further research to determine the underlying reasons for the inconsistencies. Also, this is alarming to companies and marketing professionals alike that use green positioning. Gen Y, which is currently the dominant consumer in the market, has lower propensity to support green products. Initiatives to strengthen the green values of Gen Y should be undertaken and making green products affordable to them is critical.

A major limitation of the study is that it relies on the perception of the respondents regarding green behavior. The common potential problem in behavioral research that arises from using self-report measures (self-reported bias) or research sampling (sampling bias) might have influenced the results of the findings. Also, the survey only dealt with purchase intention and not actual purchase behavior which is an inherent weakness of TPB. Finally, the Gen Y respondents in the study are represented by the younger millennials; thus, the result may not reflect the insights of Gen Y as a whole.

Conflict of interest:

None.

Ethical clearance:

The study was approved by the institution.

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