Environmental social influence, pro-environmental personal norms and environmental self-identity as determinants of ecological buying behavior in Peruvian consumers

Abstract

The relation of environmental social influence (ESIN), pro-environmental personal norms (PEPN) and environmental self-identity (ESID) as determinants of ecological buying behavior (EBB) in Peruvian consumers are explored. The constructs were measured using standardized scales in 2485 respondents. It was done a confirmatory factor analysis. The ESIN explains 34% of the PEPN. PEPN explains 57% of ESID, while ESIN explains 22% of ESID, and ESID explains 19% of EBB. Also, PEPN explains 28% of EBB and ESIN explains 44% of EBB. Future studies to understand consumers' ecological buying behavior for different product categories would be useful for furthering understanding.

Keywords: Environmental social influence, pro-environmental personal norms, environmental self-identity, ecological buying behavior, Peruvian consumers.

Introduction

In last twenty-five years, environmentalism has increased customer engagement as well as the desire to buy green products (Roy et al., 2015; Bodur et al., 2015) and to contribute to the creation of a sustainable world. Many have recognized that global sustainability requires shifts in human values, attitudes and behaviors toward environmental stewardship (Dunlap et al., 2000; Vermeir & Verbeke, 2006; Leiserowitz et al., 2010; Lozano et al., 2013; Zhu et al., 2013; Sidiropoulus, 2014). Environmental concerns receive increased attention when the deleterious impact of unsustainable management of natural resources is pointed out (Groe, 1995; Alibeli & Johnson, 2009; Dong et al., 2014). Also, recent studies have demonstrated the weak environmental attitudes of people (Bergstra et al., 2016) and companies (Nyilasy et al., 2014). Increasing interest in sustainable goals is expected affect ecological buying behavior (Nguyen et al, 2016), while pressure is increasing on companies to develop environmental measures (Bey et al., 2013). Efforts at selling green products need to consider ecological behavior, and ecological buying decisions are affected by the following determinants: environmental social

influence, pro-environmental personal norms and environmental self-identity. It is difficult to change the ecological behavior of citizens, so an important first step is to change their attitudes towards the environment. That requires strategies that extend across numerous years, since such change is a development process.

Given the importance of social environmental influence, pro-environmental personal norms and environmental self-identity, these factors must be measured to understand the current status and their roles as determinants of ecological behavior and ecological buying. Note that these three components vary from society to society, and even within the same country and within regions (Singh & Gupta, 2013). Specific studies about social environmental influence, pro-environmental personal norms and environmental self-identity have not been reported in the literature for Peruvian consumers. Peru's demography reflects its varied topography: an arid lowland coastal region, the central high sierra of the Andes and the dense forest of the Amazon. Empirically, consumers from developed countries are more concerned about the environment than those from developing countries. The current analysis focuses on evaluating social environmental influence, pro-environmental personal norms and environmental self-identity as determinant of ecological behavior and ecological buying in Peruvian consumers who buy products in malls in Lima, the capital of Perú.

The objective of this article is evaluating social environmental influence, pro-environmental personal norms and environmental self-identity as determinant of ecological behavior and ecological buying in Peruvian consumers who buy products in malls in Lima, the capital of Perú.

Literature review and background

Social and altruistic behavior

The steps by which personal and social norms pass into individuals is described by the model of altruistic behavior (Schwartz, 1973). The process starts with social norms, which are expected to be adopted individually and then to become part of personal norms. Subsequently, these personal norms would be translated into behavior. Social norms are defined as norms that represent the values and attitudes of significant number of other people in society. However, these social norms typically do not have enough power to govern behavior, in part because they exist on the social structural dimension or level and are not significant enough to modify behavior. Social norms must be adopted by an individual to have an influence on behavior (Hopper & Nielsen, 1991).

Environmental and social influences on ecological buying

Studies focusing on ecological buying behavior have shown that social influence expressed as values and lifestyle are important in explaining consumers' preferences for ecological buying behavior. For instance, Thogersen & Olander (2003) found that the ecological behavior of Danish consumers was affected by personal norms. These studies discuss the influence of consumer values and concern for the environment as important for predicting consumers' willingness to buy green products. Haanppa (2007) found that Finnish consumers' lifestyles are a significant predictor of ecological buying behavior, while Lee (2008) found that social influence was the most significant predictor affecting customer ecological buying behavior. Jansson (2011) found differences between Swedish consumers who exhibit ecological behavior.

Pro–personal environmental norm on ecological buying

Nordlund & Garvill (2003) found for Swedish consumers that personal norms influence the willingness to reduce the use of the car as an ecological behavior. Harland, Staats & Wilke (2007) found for Dutch consumers that personal norms affect the desire to reduce car use as an environmental action and to conserve water. Nordfjærn, Jørgensen & Rundmo (2015) found for Norwegian consumers that personal norms influence the willingness to reduce the use of the car as an ecological behavior.

Environmental self-identity on ecological buying

Consumers' evaluations and perceptions about themselves affect their consumption patterns. A population tends to seek and buy products linked with their environmental identity (Belk, 1988). Chan (2000) classified consumers as heavy and light ecological consumers considering demographics, environmental knowledge, and perceptions about environment-friendly products, showing that heavy ecological consumers were highly educated and had high incomes and that they perceived themselves as green consumers and had strong green self-identity. Burris and Rempel (2004) mention that buying eco-friendly products could confer pro-environmental status on customers, enabling them to project their commitment towards the environment and differentiate themselves from others. Purchasing of green products allows customers' to fulfill individual and group motives of being ethical (Niinimaki, 2010). Van der Werff et al. (2014) found for Dutch consumers that a fuel-efficient driving style was a significant predictor of environmental self-identity.

In Figure 1, we show the model of current research based on the altruistic social model, initially proposed by Schwartz (1973). The model of altruistic behavior suggests that the process begins with social influence, which later is adopted by a person so as to become personal norms, impacting self-identity and eventually generating ecological buying behavior.

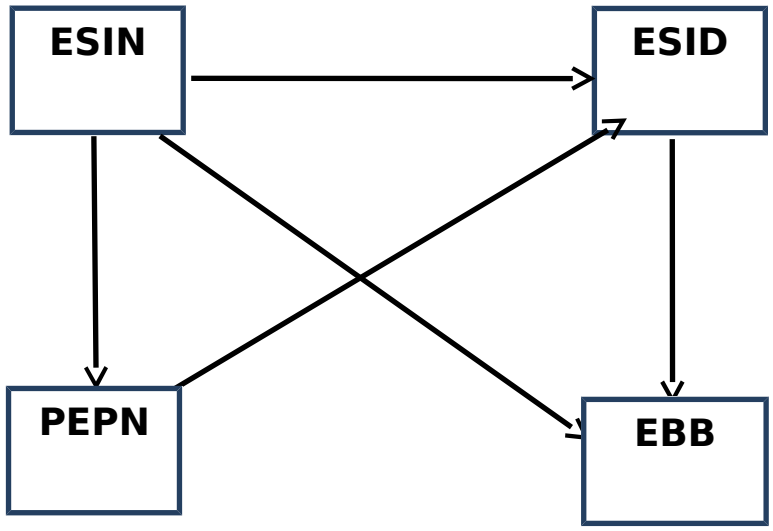

Figure 1. Research model

Legend:

ESIN: Environmental social influence PEPN: Pro-environmental personal norm

ESID: Environmental self-identity EBB: Ecological buying behavior

We propose in this study the following set of hypotheses:

H_1. Environmental social influence has a positive influence on pro-environmental personal norms

H_2. Pro-environmental personal norms have a positive influence on environmental self-identity

H_3. Environmental social influence has a positive influence on environmental self-identity

H_4. Environmental self-identity has a positive influence on ecological buying behavior

H_5. Environmental social influence has a positive influence on ecological buying behavior

Materials and methods

Measurement

Using previous literature, we adopt for the current research a questionnaire. All responses to each question were made using a five-point Likert-type scale, where strongly disagree is represented by number 1 and strongly agree by number 5, except

for certain demographics. Table 1 shows the questionnaire's constructs, the number of items in each construct and the pertinent sources.

Table 1. Constructs, numbers of items and sources for the questionnaire utilized

Variables	Construct	N° of ítems	Sources
Independent variables	Environmental social influence	5	Lee (2008)
Mediating variables	Pro-environmental personal norm	4	Ahn et al. (2012)
	Environmental self-identity	3	Lee (2009)
Dependent variables	Ecological buying behavior	3	Pickett-Baker & Ozaki (2008)

Sample and survey

We conducted the study in Lima, Peru, for approximately two weeks in June 2016. Consumers from six retail malls are included in the study. The sample constitutes 2485 customers. Table 2 shows the demographics of the respondents. Most of the interviewees were employed and between 20 and 30 years old.

Data Analysis

We used SPSS 23.0 to obtain descriptive statistics including frequencies, means, and standard deviations, to provide a first view of the data. Also, we used the Kaiser-Meyer-Olkin measurement of sampling adequacy and Bartlett's test of sphericity to determine whether the common variance shared by items is sufficient for factor analysis. Confirmatory factor analysis, by LISREL 9.2 software, was used, as it is a useful technique to confirm the unidimensionality of the main factors drawn from the literature cited earlier. Within factor analysis, items with a factor loading equal to or above 0.5 are considered significant. Factor loading shows the correlation between the elements and one dimension (Hair et al., 1992). Also, structural equation modeling (SEM) is used, a standard approach to studying latent variables (Hair et al., 2012). Also, fit indicators of CFA have suggested criterion value:

Absolute fit indicators

Root mean square error of approximation (RMSEA): The RMSEA indicates how well the model, with unknown but optimally chosen parameter value estimates, fits the population's covariance matrix (Byrne, 1998).

Goodness-of-fit statistic (GFI): The GFI calculates the proportion of variance that is accounted for by the estimated population covariance (Tabachnick & Fidell, 1998).

Root mean square residual (RMR): The RMR is the square root of the difference between the residuals of the sample covariance matrix and the hypothesized covariance model (Kline, 2005).

Absolute fit indicators goals: The absolute fit indicator goals for the three fit indicators just described are as follows:

RMSEA < 0.10 GFI > 0.90 RMR < 0.05

Incremental fit indicators goals

Normed-fit index (NFI): This statistic assesses the model by comparing the $\chi 2$ value of the model to the $\chi 2$ of the null model. The null/independence model is the worst case scenario as it specifies that all measured variables are uncorrelated (Bentler & Bonnet, 1980).

Comparative fit index (CFI): This statistic assumes that all latent variables are uncorrelated (null/independence model) and compares the sample covariance matrix with this null model (Bentler, 1990).

Incremental fix index (IFI): The difference between the chi square of the independence model – in which variables are uncorrelated – and the chi-square of the target model is calculated. Next, the difference between the chi-square of the target model and the df for the target model is calculated. The ratio of these values represents the IFI (Bentler & Bonnet, 1980).

Incremental fit indicators goals: The incremental fit indicator goals for the three fit indicators just described are as follows:

NFI > 0.90 CFI > 0.90 IFI > 0.90

Goodness-of-fit indexes

Parsimony goodness-of-fit index (PGFI): This statistic is based on the GFI, but adjusted for loss of degrees of freedom (Mulaik et al., 1989).

Parsimonious normed fit index (PNFI): This statistic also adjusts for degrees of freedom. However it is based on the NFI (Mulaik et al., 1989).

Goodness-of-fit indexes goals: The goodness-of-fit goals for the two fit indicators just described are as follows:

PNFI > 0.5 PGFI > 0.5

Results

Table 2 shows the demographic characteristics of the respondents to the survey.

Table 2. Demographic characteristics of the sample

Demographic	Subdivision	Proportion (%)
Gender	Female	50.1
	Male	49.9
Age (years)	Between 20 and less than 30	50.1
	Between 30 and less than 40	22.5
	Between 40 and less than 50	13.0
	Less than 20	7.7
	More than 50	6.7
Daily activity	Only work	54.0
	Study and work	31.3
	Only study	14.7
Salary (in Nuevos Soles, Peruvian currency)	Between 2000 to 5000	30.5
	Less than 2000	28.5
	Between 5000 to 7000	18.4
	Between 7000 to 10000	8.6
	More than 10000	2.7
	Other	11.3
Scholarly level	University	54.7
	Technical	22.1
	Secondary	21.4
	Primary	1.8

Source: 2,485 questionnaires to consumers in commercial malls in Lima. Self-prepared.

Both genders participated almost equally in this survey. The majority of participants was between 20 and 30 years old and only worked. Table 3 contains results of the descriptive and reliability analysis including the percentage of respondents who “agree” or “strongly agree” with an answer, the mean and standard deviation for each item and the Cronbach’s alpha for the related dimension. The standard deviation for all the elements proved to be below or equal to 1, and Cronbach’s alpha values were more than 0.7, implying an acceptable value of reliability. Factor analysis was used to elicit relevant dimensions

and to examine the influence of each item on environmental buying behavior, and the results are shown in Table 4. As seen in Table 3, all statistics are within the acceptable range; KMO values are more than 0.7, and the variance explained exceeds 0.5 for all dimensions. Table 5 shows the results of the software-aided assessments. The overall fit for the majority of indicators is seen to be acceptable which implies that the developed model validly shows the relationship between latent and visible variables and demonstrates the need to continue to improve it.

Table 3. Descriptive and reliability analysis

Factor	Proportion Who Agree or Strongly Agree (%)	Mean ± SD	Cronbach´s alpha
Environmental social influence			
My friends, often, recommend environment-friendly products to me	42.5	3.15 ± 1.29	0.886
My friends often discuss environmental issues/products with me	35.7	2.91 ± 1.32	
My professors often discuss environmental issues/products with me	36.9	2.93 ± 1.33	
I have learned a lot about environmental issues from my professors	42.5	3.05 ± 1.36	
I have learned about environmental issues from my friends	40.0	3.00 ± 1.39	
Pro-environmental personal norms			
I feel an obligation to save energy where possible	55.9	3.55 ± 1.17	0.824
I should do what I can to conserve natural resources	60.8	3.68 ± 1.10	
I feel I must do something to help future generations	66.0	3.79 ± 1.10	
I feel a strong personal obligation to use energy wisely	53.9	3.51 ± 1.17	
Environmental self-identity			
Supporting environmental protection makes me feel that I'm an environmentally responsible person	51.7	3.41 ± 1.21	0.856
I feel proud of being a green person	51.3	3.43 ± 1.17	
Supporting environmental protection makes me feel meaningful	53.1	3.46 ± 1.21	
Ecological buying behavior			0.829
I read labels to see if contents are environmentally safe	34.8	2.87 ± 1.27	
I buy products made or packaged in recycled materials	34.2	2.91 ± 1.23	
I buy products in packages that can be refilled	42.9	3.18 ± 1.24	

Source: 2,485 questionnaires to consumers in commercial malls in Lima. Self-prepared.

Table 4. Descriptive and factor analysis of dimensions

Dimension	Mean	SD	KMO[a]	Convergent validity (%)	Factor loading
Environmental social influence	15.041	5.57	0.821	0.61	0.662 – 0.751
Pro-environmental personal norm	14.529	3.68	0.769	0.54	0.657 – 0.711

Environmental self-identity	10.303	3.17	0.731	0.67	0.744 – 0.796
Ecological buying behavior	8.954	3.24	0.713	0.62	0.703 – 0.795

SD: standard deviation

[a] Kaiser–Meyer–Olkin measure of sampling adequacy

Factorial composition of dimensions of ecological buying behavior

In Figure 2, the factorial structure of the main aspects of ecological buying behavior is shown.

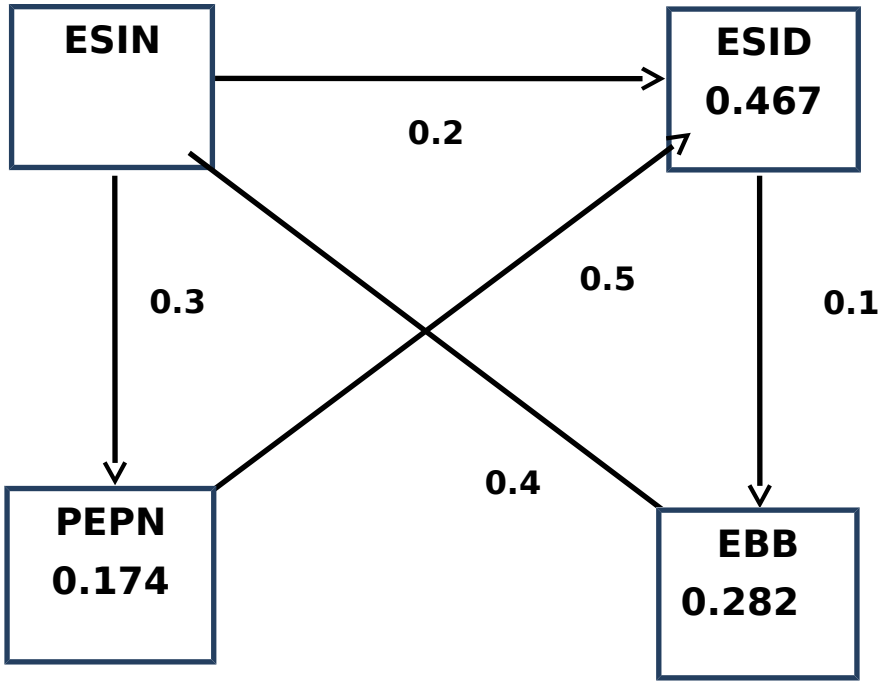

Figure 2: Research model tested by dimensions

According to Figure 2:

The ESIN has a positive influence of 0.34 over the PEPN. Also, the ESIN explain 34.0% of the PEPN.

The PEPN has a positive influence of 0.57 over the ESID and, ESIN has a positive influence over the ESID of 0.22. Also, the ESIN together with the PEPN explain the 46.7% of the ESID.

The ESID has a positive influence of 0.19 over the EBB and, the ESIN has a positive influence over the EBB of 0.44. Also, the ESID together with the ESIN explain the 28.2% of the EBB.

Table 5. Goodness-of-fit measures

Fitness indicator	Suggested criterion value	Validation value	Result
Absolute fit indicators			
RMSEA	< 0.10	0.098	Compliant
GFI	> 0.90	0.902	Compliant
RMR	< 0.05	0.049	Compliant
Incremental fit indicators			
NFI	> 0.90	0.901	Compliant
CFI	> 0.90	0.904	Compliant
IFI	> 0.90	0.904	Compliant
Goodness-of-fit indexes			
PNFI	> 0.5	0.720	Compliant
PGFI	> 0.5	0.631	Compliant

Evaluation of hypotheses

Considering the relations shown in Figure 2, we evaluate each of the proposed hypotheses:

H_1. Environmental social influence has a positive influence on pro-environmental personal norm

The ESIN has a positive influence of 0.34 over the PEPN. Hypotehsis 1 accepted.

H_2. Pro-environmental personal norms have a positive influence on environmental self-identity

The PEPN has a positive influence of 0.57 over the ESID. Hypotehsis 2 accepted.

H_3. Environmental social influence has a positive influence on environmental self-identity

The ESIN has a positive influence over ESID of 0.22. Hypothesis 3 accepted.

H_4. Environmental self-identity has a positive influence on ecological buying behavior

The ESID has a positive influence of 0.19 over the EBB. Hypothesis 4 accepted.

H_5. Environmental social influence has a positive influence on ecological buying behavior

ESIN has a positive influence over the EBB of 0.44. Hypothesis 5 accepted.

Discussion

Factors in environmental social impact are the starting point for understanding the relations between them, and then to determine how they influence environmental buying behavior and describe the role of people who share ideas and views. The factors capture opinions about the behavior of individuals regarding environmental activities. This information is affected by the level of education. Hence, the influence typically remains engrained in a person for life, except where the person receives new influences in jobs, universities, communities, etc. Note that this issue has been described previously in strategies to motivate employees (Robertson & Barling, 2013), adolescents by parents (Marceau et al., 2013) and students by teachers (Ojala, 2015).

Factors that constitute pro-environmental personal norms are focused on beliefs that people have respect for the environment and care about environmental issues. Another important factor is environmental self-identity which captures the private opinion of individuals and their activities for and against the environment. Environmental self-identity also is exhibited through personal rules which guide the activities of people, as these concentrate efforts guide people to care for the environment through their individual and collective actions. Note that this issue has been described previously in strategies to motivate the use of green electrical products (Bamberg, 2003), environmental conservation (Goldstein et al., 2008) and environmental policy development (Kinzig et al., 2013).

Validation

The validity of this study and its results was investigated. This study is based on a conceptual framework that is founded on reliable and valid instruments. These are applied to a representative sample population at the level of the city of Lima. The results consequently exhibit low levels of margin of error and high levels of confidence, allowing compelling contrast analysis hypotheses to be examined using structural equations. Indeed, the study design and analysis of the results are based on a theory that explains the relation between determinants and ecological buying behavior. We now consider further the fact that the results are based on a representative sample of consumers. Although the sample used (intentional sampling rate) is a limitation of the study, the number of participating consumers (2,485), sample size, geographic distribution (malls from

districts representing five socioeconomic levels) and its final composition provides confidence about its representativeness. This is due to the fact that we utilized at least 384 for each retail mall because is the sample size for infinite population (Krejcie & Morgan, 1970).

Regarding the instruments utilized, it is noted that data were obtained using scales to measure the ecological buying behavior and its different determinants. It can be asked if this has contributed to obtaining more reliable data and to controlling possible distortions on the results by social desirability. Through comparisons with previous studies on environmental social influence, pro- environmental personal norms and environmental self-identity, the reliability and validity of the instruments utilized were determined, establishing values of factors higher than 0.7 for Cronbach´s Alpha of items. Also, a confirmatory analysis was obtained via the LISREL outcomes.

The analysis described provides confidence in the accuracy and validity of the obtained results, and demonstrates that this study represents a significant advance in the methodology used to analyze the relation between environmental social influence, pro-environmental personal norms and environmental self-identity, and their impact on ecological behavior in general and ecological buying behavior in consumers in particular.

This paper is the first attempt on investigating Peruvian consumers and has strong potential to contribute to development of policies to modify behavior for achieving sustainable living. Also, this manuscript derived information from the literature to identify four components of EBB and show their inter-relationship to better predict future ecological marketing strategies. Finally, outcomes can be used by practitioners to improve current marketing strategies and for policymakers in developing environmental laws that stimulates environmentally sustainable purchasing. It is recommendable that the practitioners can use the findings of this study to generate marketing strategies that are more focused to impact these variables. Based on our findings, practitioners can consider to highlight the benefits that their products/services have in environmental care. Also, policymakers can use our findings for developing laws that can be used for the promotion of ecological behavior, as well as incorporating appropriate curricular changes at school and university level. Having citizens with motivated ecological behavior will lead to greater number of customer with greater awareness of ecological buy practice. Future research need to be developed in Peruvian customers in other regions to improve the validity of the model at national level. Also, we recommend similar studies in other Latin American countries that enable one to make comparisons of customer behavior across the region.

Conclusions

Limited research has been reported on environmental social influence, pro-environmental personal norms and environmental self-identity as determinants of ecological buying behavior in Peruvian consumers. As an emerging economy, understanding factors influencing consumers' ecological buying behavior can provide information to generate strategies of marketing more fit to Peruvian consumers. Consumers' ecological buying behavior was found to be influenced by environmental social influence, pro-environmental personal norms and environmental self-identity.

Influence from peer groups who purchase ecological products further supports the view that people with a green identity discuss their purchases with family and friends equally committed to protecting environment. The study posits the relevance of social and altruistic behavior (Schwartz, 1973) in the purchase of ecological products. Consumers associate ecological products with their pro-environmental self-image. Social influence and past green behavior reinforce reasons to purchase ecological products. Future research appears to be merited on exploring in detail differences in influence from family and friends. Also, it would be useful to include populations of other cities in the same country in future studies, to identify any behavior differences that may exist. Finally, future studies to understand consumers' ecological buying behavior for different product categories, like organic foods, recyclable products and pharmaceuticals products, would be useful for furthering understanding.

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