Factors of ecological purchase: Case of consumers in Lima, Peru

ABSTRACT

The study established the relationship between ecological social influence (ESIN), ecological personal norm (EPN), ecological self-identity (ESI), ecological behavior (EB) as factors of ecological purchase (EP) in consumers in Lima Peru. The answers of 384 consumers in Lima, Peru were evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM) through the use of SmartPLS 3 statistical package to calculate the factorial structure. We found that the ESIN explains 12.6% of the EPN. Also, ESIN together with EPN explains 33,7% of ESI; ESIN jointly with ESI explains 23.3% of EB, and ESI together with EB explains 32.7% of EP. The outcomes show that ESIN, EPN, ESI, and EB work as factors of EP.

Keywords: Ecological social influence (ESIN), ecological personal norm (EPN), ecological self-identity (ESI), ecological behavior (EB), ecological purchase (EP), Peruvian consumers.

RESUMEN

El estudio estableció la relación entre la influencia social ecológica, la norma personal ecológica, la autoidentificación ecológica, la conducta ecológica como factores de compra ecológica en consumidores de Lima, Perú. Las respuestas de 384 consumidores en Lima, Perú, fueron evaluadas utilizando el Modelo de Ecuación Estructural de Mínimos Cuadrados Parciales (PLS-SEM) mediante el uso del paquete estadístico SmartPLS 3 para calcular la estructura factorial. Encontramos que la influencia social ecológica explica el 12.6% de la norma personal ecológica. Además, la influencia social ecológica junto con la norma persona ecológica explica el 33,7% de la autoidentificación ecológica; la infuencia social ecológica conjuntamente con la autoidentificación ecológica explica el 23.3% de la conducta ambiental, y la autoidentificación junto con la conducta ecológica explica el 32.7% de la compra ecológica. Los resultados muestran que las variables estudiadas funcionan como factores de la compra ecológica.

Palabras clave: influencia social ecológica (ESIN), norma ecológica personal (EPN), autoidentidad ecológica (ESI), comportamiento ecológico (EB), compra ecológica (PE), consumidores peruanos.

INTRODUCTION

In last twenty-five years, environmentalism has increased consumer engagement and there is increased interest in buying green products (Roy, Verplanken & Griffin, 2015; Bodur, Duval & Grohmann, 2015) which will help to nurture sustainable societies and in the creation of the sustainable world. Many authors and institutions have recognized that global sustainability requires change in human values and its attitudes and behaviors toward environmental issues (Dunlap, Van Liere, Mertig & Jones, 2000; Vermeir & Verbeke, 2006; Leiserowitz, Kates & Parris, 2010; Lozano, Lozano, Mulder, Huisingh & Waas, 2013; Zhu, Li, Geng & Qi, 2013; Sidiropoulus, 2014). In this way, environmental concern receives more attention when the consumer understands the harmful impact of unsustainable management of natural resources (Groe, 1995; Alibeli & Johnson, 2009; Dong et al., 2014). Also, Bergstra, Hogeveen & Stassen (2016) established the weakness of environmental attitudes of the population and Nyilasy, Gangadharbatla & Paladino (2014) demonstrated the same in companies.

Increasing interest in sustainable goals is expected to be related to ecological buy (Nguyen, Lobo & Greenland, 2016), that also provides a positive pressure for companies to develop environmental sustainable processes and initiatives and bring it to the market faster (Bey, Hauschild & McAloone, 2013). Despite efforts at selling green products, one should realize that ecological behavior and ecological buy have determinants such as environmental social influence, pro-environmental personal norm, and environmental self-identity. However without chaning the citizens attitude toward the environment, it is not easy to change the environmental behavior of citizens. Kotler and Andreasen (1991) described an explicative model for this kind of behavior change.

a. Creating conscience and interest

The consumer must be conscious of the existence of a new kind of conduct and which is appropriate for his social situation.

b. Changing values

They have to conclude that the proposed behavior is acceptable to them and the community where they live.

c. Persuasion

Convincing the consumer that this response is all right

d. Creating action

Persuasive consumer to make this his / her natural practice

e. Maintaining change

Assure that the new practice continues forever

Due to the importance of environmental social influence, pro-environmental personal norm and environmental self-identity in regulating behavior, they must be measured to know the current status and their role as a determinant of ecological behavior and ecological buy. As these three components vary in each society and even within different regions of the same country (Singh and Gupta, 2013), in this report we have tried to quantify these parameters for Peruvian consumers. Peru's topography includes - an arid lowland coastal region, central high sierra of the Andes and the forest of the Amazon. It is generally believed that, consumers from developed countries are more concerned about the environment than those from developing countries.

In this manuscript we focus our analysis on evaluating environmental social influence, pro-environmental personal norm and environmental self-identity as a determinant of ecological behavior and ecological buy in Peruvian consumers who buy products in malls in Lima, the capital of Perú. Also, using Partial Least Squares Structural Equation Modeling (PLS-SEM) we established the validity of construct variables, discriminant validity and established internal consistency by the composite reliability.

Literature review

Social altruistic behavior

The process by which personal and social norms translate into individual action is the basis of the model of altruistic behavior (Schwartz, 1973). The process starts with social norms and then these social norms are expected to be adopted individually that finally becomes an integral part of personal norms, and finally into one's own behavior. Definition of social norms is that they are norms that represent the values and attitudes of significant members of the community we live in.

However, these social norms do not have enough power to govern individual behavior as they exist on the social structural level and are not substantial enough to modify behavior. Social norms must be adopted by an individual to have an influence on behavior (Hopper & Nielsen, 1991).

Ecological social influences on ecological purchase

Studies focus on ecological purchase demonstrated that social influence expressed as values and lifestyle are essential in explaining consumers' preference for ecological purchase. This was supported by Thogersen & Olander (2003) finding that the ecological behavior of Danish consumers was affected by personal norms. These studies clearly demonstrate the influence of consumer values and concern for the environment as a crucial factor for predicting consumers' willingness to purchase green products. Haanpa (2007) found that Finnish consumers' lifestyle was a significant predictor of ecological purchase. Lee (2008) found that social influence was the most relevant predictor affecting users' ecological purchase. Jansson (2011) found differences among Swedish consumers with different norms that affected ecological behavior.

Ecological personal norm on ecological purchase

Nordlund & Garvill (2003) found in Swedish consumer that personal norm influences the willingness to reduce care usage as an ecological behavior. Harland, Staats & Wilke (2007) found in Dutch consumer that personal norm affects the desire to minimize care usage as an ecological behavior and save water. Nordfjærn, Jørgensen & Rundmo (2015) found in Norwegian consumer that personal norm influences the willingness to reduce care usage as an ecological behavior.

Environmental self-identity on ecological purchase

Consumers' evaluations and perceptions about themselves affect their consumption patterns. Populations seek and purchase products that have a relationship with their environmental identity (Belk, 1988). Chan (2000) classified consumers as heavy and light ecological consumers – based on their demographics, environmental knowledge, and perceptions about environment-friendly products, and demonstrated that heavy ecological consumers were highly educated, had higher incomes and, they perceived themselves as ecological consumers and had strong green self-identity.

Ecological behavior

Burris and Rempel (2004) report that to purchase ecological products could confer pro-environmental status on users, enable them to project their commitment towards environment and differentiate themselves from others. To purchase green products, allow customers to fulfill individual and group motives of being ethical (Niinimaki, 2010). Van der Werff, Steg & Keizeer (2014) found that among Dutch consumers, driving fuel-efficient cars was a significant predictor of environmental self-identity. Table 1 summarizes the significant outcomes of environmentally buying behavior studies in different locations.

Table 1. Studies in Green Buying Behavior

Authors and year	**Country of consumers**	**Key findings**
Mainieri et al. (1997)	USA	Environmental beliefs influenced green buying. Women exhibited higher levels of ecological consciousness than men.
Kalafatis et al. (1999)	Greek and British consumers	Social influence and norms predicted environment-friendly behavior
Roozen & De Pelsmacker (2000)	Polish & Belgian consumers	Purchase of environmentally friendly products does not reflect environment-friendly attitudes
Chan (2001)	Chinese consumers	Green buying behavior was influenced by culture, ecological concerns, and environmental knowledge.
Chan & Lau (2002)	Comparison between American and Chinese consumers	Subjective norms, group conformance, and perceived behavioral control affected environment-friendly behavior. American consumers placed importance on prices and saving resources.
Thogersen & Olander (2003)	Danish Consumers	Universalistic values influenced green buying
Fraj & Martinez (2006)	Spanish consumers	Consumers' environmental concerns and self-fulfillment values changed environment-friendly behavior.
Haanpaa (2007)	Finnish consumers	Lifestyles of Finnish consumers explain their green commitment better than sociodemographic factors.
Harland et al. (2007)	Danish consumers	The relationship between awareness of needs, personal norms, and pro-environment behavior was established.
Phau & Ong (2007)	Australian consumers	Environment-conscious consumers' respond favorably towards green brands

Kalantari et al. (2007)	Iranian consumers	Environment-friendly behavior was influenced by environmental knowledge, environment-related legislation, and stress. Age, income, and education changed ecological concerns.
Pickett-Baker & Ozaki (2008)	British consumers	Pro-environment beliefs influence consumers' evaluations of green products.
Lee (2008)	Chinese adolescents (Hong Kong)	Social influence, environmental concern, self-image, and perceived environment responsibility influenced green purchase behavior
Mostafa (2009)	Egyptian consumers	Green consumption was affected by consumers' altruistic values, environmental interest, and knowledge about green products.
Lee (2009)	Chinese adolescents (Hong Kong)	Females scored higher on environmental attitude, concern, perceived seriousness towards ecological responsibility, peer influence, and green purchasing behavior.
Finisterra do Paço & Raposo (2010)	Portuguese consumers	Environmental concerns do not translate into environment-friendly behavior. Age, income, occupation, and education could be used for profiling consumers.
Jansson et al. (2010)	Swedish consumers	Values, beliefs, and social norms influence Swedish consumers green curtailment behavior and willingness to adopt green innovations.
Niinimaki (2010)	Finnish consumers	Self-identity and self-concept were important in influencing consumers' green purchase.
Rahbar et al. (2011)	Malaysian consumers	Eco-brands and trust in ecolabels influence environment-friendly purchase behavior.
Ahn et al. (2012)	South Korean consumers	Social norms, personality factors, social connectedness, and perceived seriousness towards environment problems predicted pro-environmental behavior
Juwaheer et al. (2012)	Mauritius consumers	Consumers exhibited concerns towards environmental Degradation
Park & Sohn (2012)	Korean consumers	Injunctive and descriptive norms influence personal ecological norms
Zabkar & Hosta (2013)	Slovenian consumers	Environment-related knowledge, impact on the environment, and pro-social status impacts Green consumption.
Zhao, Gao, Wu, Wang, & Zhu (2014)	Chinese consumers	Effects of personal influence, knowledge of green consumption, attitudes toward green consumption
Moser (2015)	German consumers	Willingness to pay was the most influential predictor of green purchasing behavior, followed by personal norms

Boztepe (2016).	Turkey consumers	Social influence effect on customers purchasing behaviors
Liobikienė, Mandravickaitė & Bernatonienė (2016)	European Union consumers	Determinants of green purchase behavior
Muralidharan, Rejón-Guardia & Xue (2016)	India and USA consumers	Green buying behavior
Chaudhary (2018)	Indian consumers	Green buying behavior
Yadav & Pathak (2017)	Indian consumers	Green buying behavior

METHODS

Research methodology

The research model proposed in the present study is shown in Figure 1. The theoretical foundation for the current model is the altruistic social model proposed by Schwartz (1973). This model of altruistic behavior suggests that the process begins with social influence, which is expected to be adopted by an individual to become personal norms, impacting their self-identity and which will eventually be translated into purchase

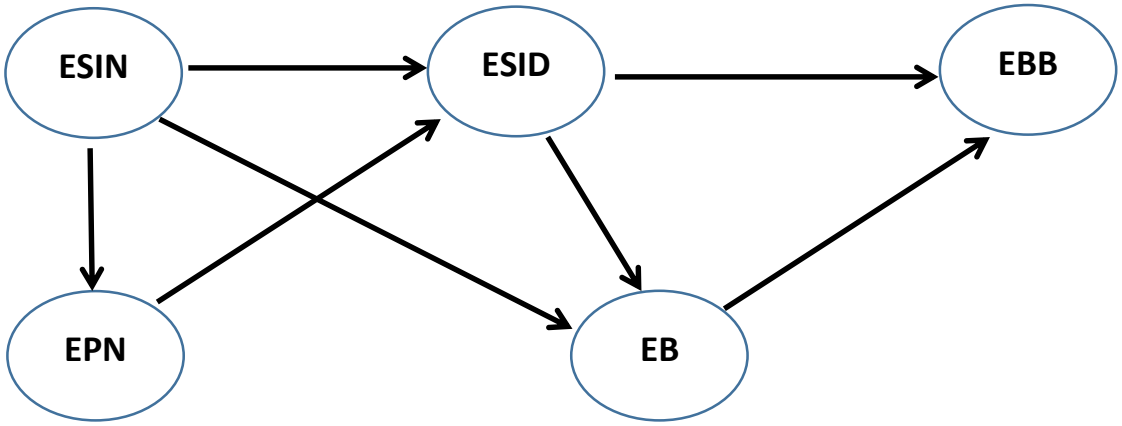

Figure 1. Research model

Where:

ESIN: Ecological social influence

EPN: Ecological personal norm

ESI: Ecological self-identity

EB: Ecological behavior

EP: Ecological purchase

We propose the following set of hypotheses:

H_1. Ecological social influence has a positive effect on the ecological personal norm.

H_2. Ecological social influence together with ecological personal norm has a positive effect on ecological self-identity.

H_3. Ecological social influence together with ecological self-identity has a positive effect on ecological behavior.

H_4. Ecological self-identity together with ecological behavior has a positive effect on ecological purchase.

Measurement

We build the questionnaire for the current research using information derived from the previous literature. All responses to questions were based on a five-point Likert-type scale (1 = strongly disagree to 5 = strongly agree), with an exception for specific demographics. Table 2 shows the questionnaire's constructs, the number of items in each construct, and sources.

Table 2. The questionnaire's constructs, numbers of items and sources

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

Sample and survey

Study was conducted in Lima, capital of Peru, during two weeks in April 2016. For this study consumers from one mall in Lima were included. The sample constituted of 384 customers. Table 3 shows the demographics of the respondents.

Table 3. Demographics of the respondents

Demographics	Sub-division	Ratio (%)
Gender	Female	46.4
	Male	53.6
Age (years)	Between 18 and less than 30	60.2
	Between 30 and less than 40	18.5
	Between 40 and less than 50	16.0
	More than 50	5.3
Daily activities	Only work	62.2
	Study and work	23.8
	Only study	14.0
Salary (in Soles, Peruvian currency)	Between 2000 and 5000	39.5
	Less than 2000	39.8
	Between 5000 and 7000	10.4
	Between 7000 and 10000	8.6
	More than 10000	1.7
Scholar level	Superior	64.8
	Technical	12.7
	Secondary	21.3
	Primary	1.2

Source: 384 questionnaires to consumers in commercial malls in Lima. Self-prepared.

Validation

Validation with SEM-PLS

Validity of construct and discriminant was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) and, internal consistency by the composite reliability. SmartPLS statistical package (Ringle, Wende & Becker, 2015) is used to calculate the factorial structure of the indicators, using Partial Least Squares. SEM-PLS aims to predict the latent variables by estimating Partial Least Squares (PLS) and Principal Component Analysis (PCA). The main advantage of PLS is its significant strength calculations for smaller samples and breach of statistical assumptions of the variables (non-normal distribution, different levels of measurement, multicollinearity, among others). PLS structural equation modeling technique can simultaneously integrate the following two models: the measurement model and the structural model. In establishing validity - the measurement model is used which involves the analysis of the reliability of each indicator, the internal consistency of each dimension, analysis of average variance extracted

and discriminant validity. In a PLS model, the individual reliability of the items assessed was determined by examining the load between each item and dimension, accepting as reliable those with above 0.707 loads. Although some authors argue against extreme rigidity in early stages of developing an instrument. Another measure used to evaluate the fit of the model is the average variance extracted that provides the amount of variance that a construct (dimension) obtains from its indicators about the error variance. A good fit requires values above 50%.

RESULTS

Validation *of construct of ecological buy behavior with SEM-PLS*

Table 4 shows that all the factor weights of the dimensions of the ecological buy behavior are higher than the expected minimum (0.707), with average variance extracted by scale between 59.5 and 77.7%, and high levels of composite reliability (between 0.815 and 0.917). These values confirm the internal consistency and construct validity of each of the subscales of ecological buy behavior.

Table 4. Construct validity of the items of the scales of ecological buy behavior using Structural Equations of Variance using Partial Least Squares

	Ítems	**Loading**	**Composite reliability**	**Extracted variance**
Ecological social influence	My friends, often, recommend environment-friendly products to me	**.817**	**.861**	**.701**
	My friends often discuss the environmental issues/products with me	**.825**		
	My professors often discuss the environmental issues/products with me	**.882**		
	I have learned a lot about environmental issues from my professors	**.822**		
	I have learned a lot about environmental issues from my friends	**.802**		
Ecological personal norm	I feel an obligation to save energy where possible	**.789**	**.832**	**.688**
	I should do what I can to conserve natural resources	**.851**		
	I feel I must do something to help future generations	**.764**		
	I feel a strong personal obligation to use energy wisely	**.792**		

Ecologica self-identity	Supporting environmental protection makes me feel that I'm an environmentally-responsible person	**.812**	**.874**	**.776**
	I feel proud of being a green person	**.876**		
	Supporting environmental protection makes me feel meaningful	**.874**		
Ecological behavior	I recycle newspapers	**.739**	**.822**	**.525**
	I try to cut down on car use	**.722**		
	I contribute money to environmental causes	**.735**		
Ecological purchase	I read labels to see if contents are environmentally safe	**.822**	**.871**	**.747**
	I buy products made or packaged in recycled materials	**.891**		
	I buy products in packages that can be refilled	**.846**		

Source: 384 questionnaires to consumers in commercial malls in Lima. Self-prepared.

Coefficients path (β)

The values of the route coefficient are standardized in a range of -1 to +1, with coefficients closest to +1 representing strong positive relationships and coefficients closer to -1 indicating strong negative relationships.

Coefficient of determination ()

It is the percentage of the explained variance of the exogenous construct on the endogenous construct, as mentioned this effect varies from 0 to 1. 1 represents the complete predictive precision. Because it is adopted by a variety of disciplines, the approximate gold rule, with respect to an acceptable one, is 0.75, 0.50, 0.25, respectively, which describes levels of substantial, moderate or weak predictive accuracy (Hair et al., 2011).

Evaluation of hypotheses

Considering the relation showed in figure 2, we evaluated the proposed hypotheses.

ESIN: Ecological social influence

EPN: Ecological personal norm

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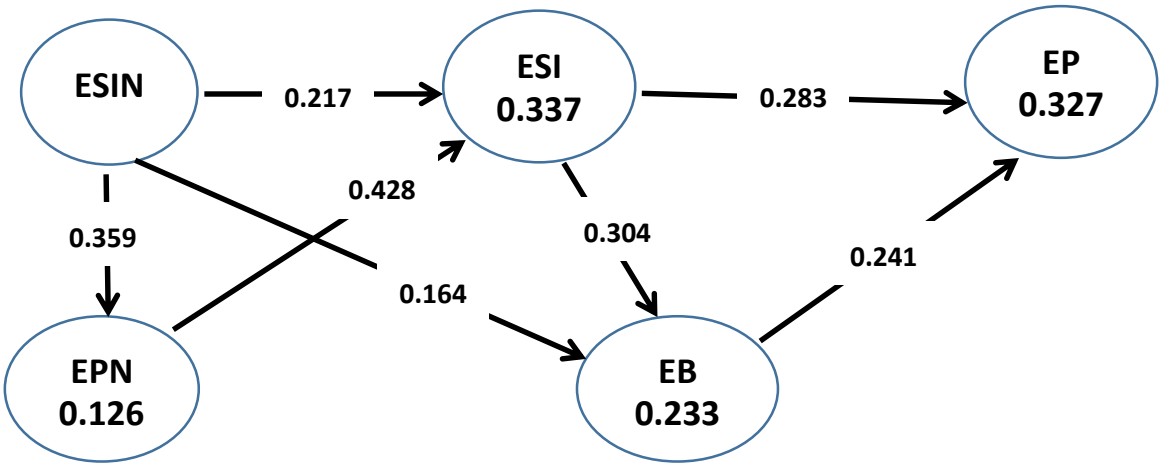

Figure 2. Research model tested

H_1. Ecological social influence has a positive effect on ecological personal norm

We observed that the ecological social influence has a positive effect of 0.359 over ecological personal norm. Also, the ecological social influence explains 12.6% of the pro-environmental personal norm.

H_2. Ecological social influence together with ecological personal norm has a positive effect on ecological self-identity

We observed that ecological social influence has a positive effect of 0.217 over ecological self-identity. Also, the ecological personal norm has a positive effect of 0.428 over ecological self-identity. Finally, the ecological social influence together with ecological personal norm explains 33.7% of ecological self-identity.

H_3. Ecological social influence together with ecological self-identity has a positive effect on ecological behavior

We observed that the ecological self-identity has a positive effect of 0.304 over ecological behavior. Also, the ecological self-identity has a positive effect of 0.241 over ecological purchase. Finally, the ecological social influence together with ecological self-identity explains 23.3% of ecological behavior

H_4. Ecological self-identity together with ecological behavior *has a positive effect on ecological purchase*

We observed that the ecological self-identity has a positive effect of 0.283 over ecological purchase. Also the ecological behavior has a positive effect of 0.241 over ecological purchase. Finally, the ecological self-identity together with ecological behavior explains 32.7% of ecological purchase

DISCUSSION

Items in ecological social influence are the starting point of ecological purchase practice and describe the role of people who regularly share ideas and views. The factor captures the opinion about the behavior of individuals around and about ecological activities. This information has maximal influence during the growth stage of a person (while at school) so for that influence can become ingrained in the person for rest of its life. This issue was described previously in strategies to motivate employees (Robertson & Barling, 2013), adolescents by parents (Marceau et al. 2013) and students by teachers (Ojala, 2015).

Items in pro ecological personal norm focus on the beliefs and thoughts that people have respect for the environment. Another critical factor is ecological self-identity which captures the private opinion of personal activities, pro and against the environment that in turn guide people's actions. This issue was described previously in strategies to motivate the use of green electricity products (Bamberg, 2003), ecological conservation (Goldstein, Cialdini & Griskevicius, 2008) and the creation of policies (Kinzig, 2013).

Ecological behavior is related to usual activities which people do to care for the environment and to ecological purchase that shows concrete actions by people to contribute to ecological initiatives and buy products that has less negative impact on the environment. The focus is on evaluating what is the frequency of doing some specific activities that can be linked to ecological care. This item was described previously by the recommendation to marketing managers and policymakers to consider different combinations of ecological behaviors (Gonzalez, Felix, Carrete, Centeno &

Castaño, 2015). Also, to find not only the benefit to nature but also the hedonic component of a new product to be successful (Gurtner & Soyez, 2016).

As for the validity, the study uses a conceptual framework that is based on reliable and valid instruments applied in an intentional but representative sample at Lima level, with low levels of margin of error and high levels of confidence, and dominant contrast analysis hypotheses using structural equations. Indeed, the study design and analysis of the results utilize a theory that explains the relationship between determinants and ecological buy behavior. Regarding the instrument, data have been obtained using scales containing the ecological purchase and its different determinants.

How has this contributed to getting more reliable data and control possible distortions in the answers by social desirability? Compared with previous studies on ecological social influence, ecological personal norm and ecological self-identity, reliability, and validity of the instruments in this study were determined through Structural Equations. All these changes taken together - ensure confidence in the accuracy and validity of the information presented. This study represents a significant advance in the methodology used to analyze the relationship between ecological social influence, ecological personal norm and ecological self-identity and its impact on ecological behavior and lastly ecological purchase in consumers.

CONCLUSION

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 ecological purchase 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 ecological 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 highlighting the benefits that their products/services have in environmental care. Also, policymakers can use our outcomes 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 purchase 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.

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