

Relation among ecological affect, concern, and knowledge and purchase behavior: a study regarding Mexican consumers

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ABSTRACT

The aim of the research was to analyze the sustainability and social development, in the search for the relationship between the constructs: Ecological Affection (EA), Ecological Awareness (EC), and Ecological Knowledge (EK), and green purchasing behavior (GPB) in consumers - as a single field of application, which should not be analyzed for companies, public persons, places, or brands. This is a quantitative descriptive study in a sample of 1,550 consumers - 96% of them valid - chosen according to convenience criteria - men and women between 21 and 55 years of age -, carried out during the first half of 2015 in Mexico, in the states of Puebla, Tlaxcala, Guanajuato, San Luis Potosí, Tabasco, and Querétaro, with the personal application of questionnaires using the Likert scale. Regarding the measurement of dependent and independent variables, we used various subscales that make up the revised environmental attitudes and knowledge scale (EAKS) from Maloney et al. (1975).

As a result, it was found that the consumer in Mexico presents a positive attitude towards the purchase of organic products and is even willing to stop buying from those companies that contribute to pollution.

Keywords: ecological marketing; ecological affection; ecological awareness; ecological knowledge; ecological purchasing behavior.

Relación entre afecto ecológico, conciencia, conocimiento y comportamiento de compra: un estudio sobre los consumidores mexicanos

RESUMEN

El objetivo de la investigación fue analizar la sostenibilidad y el desarrollo social, en la búsqueda de la relación entre los constructos: Afecto Ecológico (EA), Conciencia Ecológica (EC) y Conocimiento Ecológico (EK) y el comportamiento de compra verde (GPB) en los consumidores —como un único campo de aplicación, que no debe analizarse para empresas, personas públicas, lugares o marcas—. Se trata de un estudio descriptivo cuantitativo en una muestra de 1.550 consumidores —válidos 96%— elegidos según el criterio de conveniencia —hombres y mujeres entre 21 y 55 años—, realizado en el primer semestre de 2015 en México, en los estados de Puebla, Tlaxcala, Guanajuato, San Luis Potosí, Tabasco y Querétaro, con la aplicación personal de cuestionarios utilizando la escala de Likert. En cuanto a la medición de variables dependientes e independientes, se utilizaron las diversas subescalas que componen la escala revisada de actitudes y conocimiento ambiental (EAKS) de Maloney et al. (1975).

Como resultado se encontró que el consumidor en México presenta una actitud positiva hacia la compra de productos orgánicos e incluso está dispuesto a dejar de comprar a aquellas empresas que contaminan.

Palabras clave: marketing ecológico; afecto ecológico; conciencia ecológica; conocimiento ecológico; comportamiento de compra ecológico.

Relation entre affection écologique, conscience, savoir et comportement d'achat: une étude des consommateurs mexicains

RÉSUMÉ

L'objectif de cette investigation consiste en l'analyse de la durabilité et du développement social dans la recherche de relations des concepts suivants : affection écologique (EA), sensibilisation à l'environnement (CE), connaissance écologique (EK) et comportement d'achat écologique (GPB) des consommateurs mexicains. Cette étude descriptive et quantitative se base sur un échantillon de 1 550 consommateurs —96% valides— choisis selon des critères de commodité —hommes et femmes âgés de 21 à 55 ans— et réalisée au premier semestre 2015 dans les districts mexicains de Puebla, Tlaxcala, Guanajuato, San Luis Potosí, Tabasco et Querétaro grâce à des questionnaires individuels utilisant l'échelle de Likert. La mesure des variables dépendantes et indépendantes des différentes sous-échelles composent l'échelle principale d'attitudes et de connaissances environnementales (EAKS) de Maloney et al. (1975).

Nous constatons donc que le consommateur mexicain présente une attitude positive à l'égard de l'achat de produits biologiques et respectueux de l'environnement et se trouve disposé à cesser ses achats auprès d'entreprises polluantes.

Mots clefs: marketing écologique; affection écologique; prise de conscience écologique; connaissances écologiques; comportement d'achat écologique.

Relação entre afeto ecológico, consciência, conhecimento e comportamento de compra: um estudo sobre os consumidores mexicanos

RESUMO

O objetivo da pesquisa foi analisar a sustentabilidade e o desenvolvimento social, na busca da relação entre os construtos: afeto ecológico (AA), consciência ecológica (EC) e conhecimento ecológico (EK) e o comportamento de compra verde (GPB) nos consumidores —como um único campo de aplicativo, que não deve ser analisado para empresas, pessoas públicas, lugares ou marcas—. Trata-se de um estudo descritivo quantitativo com uma mostra de 1.550 consumidores — válidos 96 % — escolhidos segundo o critério de conveniência — homens e mulheres entre 21 e 55 anos—, realizado no primeiro semestre de 2015 no México, nos estados de Puebla, Tlaxcala, Guanajuato, San Luis Potosí, Tabasco e Querétaro, com a aplicação pessoal de questionários utilizando a escala de Likert. Quanto à medição de variáveis dependentes e independentes, utilizaram-se as diversas subescalas que compõem a escala revisada de atitudes e conhecimento ambiental (EAKS) de Maloney et al (1975). Como resultado se encontrou que o consumidor no México apresenta uma atitude positiva para a compra de produtos orgânicos e inclusive está disposto a deixar de comprar daquelas empresas que contaminam.

Palavras-chave: marketing ecológico; afeto ecológico; consciência ecológica; conhecimento ecológico; comportamento de compra ecológico.

1. Introduction

At present, the economic model in the world is based on the maximization of production and consumption, which generates enormous imbalances, not only in the economic and social order but also in the environmental one. The development and use of new technologies has gained great relevance due to its relationship with the quality of life of people, but it is also generating limited environmental conditions, which is a point of study of the Sustainable Development, in addition to increasing awareness in consumers about the consequences of their purchasing decisions on the environment. With greater choice at the place of purchase, consumers are increasingly contributing to the production and consumption of products that are friendly to the environment —goods, services, ideas, and experiences). In this context, and due to the concern that there is on environmental problems, green consumption appears as a recent trend that has strengthened within time due to consumers who are concerned about the environment and the impact that their actions have on it. The objective of the research was to analyze the sustainability and social development, seeking to determine the relationship among the constructs: Ecological Affect (EA), Ecological Concern (EC), and Ecological Knowledge (EK); and Green Purchasing Behavior (GPB) in consumers —as a single field of application, not to be analyzed for companies, public persons, places, or brands—. That is, consumer behavior that is ecologically conscious from its green consumer profile —sociodemographic and psychographic variables—, and the determinants of green purchasing behavior considering green purchasing intent and green purchasing consciousness.

Green purchasing behavior refers to the consumption of products —goods, services, ideas, or experiences— that preserve the environment. Because of its sense of being recyclable, conserved, sensitive, and receptive to the sustainability of non-renewable resources (Mostafa, 2007), it is a trend that is now known as «green consumption» (Chitra, 2007). The green consumption differs from the mass consumption in the determinants of the behavior of green purchases and the process of decision making from the profile of the consumers. Now consumption is based on the search for organic, ecological, or sustainable options for food, clothing, appliances, beverages, and even furniture, so consumers take care of their consumption - health or environment - through the acquisition and use of products that are friendly to the environment, linking marketing with ecology and sustainability (Orozco-Abundis, Cortes-Lamas, González, & Gracia-Villar, 2003).

According to Ottman (2012), the conscious lifestyle about the environment and the consumption of organic products in the consumer basket in the 1960s were almost impossible. This situation has been changing thanks to the advances in materials and technology; green products —known as alternative products— and more sustainable products —those that consider the social dimension— now work more efficiently than products and services. Hyper-consumption has found a more conscious and more concerned consumer at the time of purchase (Lipovetsky, 2007), the consumption of green products, and the factors that play an important

role in the decision-making process (Moser, 2015). Thus, the environment is a public good that is constantly threatened by human action. This is a challenge for the company, society, government, and for the same consumer-citizen, which will imply the application of a philosophy of environmental management and a different type of marketing for a new type of consumer called the ecological consumer, and for stakeholders who are interested in knowing what motivates your demand and what your profile is, in order to be able to satisfy your needs.

2. Origin of Sustainable Marketing

The past decades have witnessed the emergence of the discourse on sustainability as the dominant expression in the debate on environmental issues and social development in the broad sense. Its gradual expansion has influenced in diverse fields of knowledge and in diverse activities, among them, the field of education. According to the Human Development Report of the United Nations Development Program (PNUD, 2014), human development depends on the choice of access to education and health, and a reasonable standard of living a sense of security, which allow sufficient conditions for human development based on justice, health, quality of life, and the interaction of our environment or the environment that surrounds us. Therefore, sustainable development refers to activities that do not deteriorate the elements that make it possible, allowing the conservation of the environment and favoring the well-being of people (Cortéz, 2001).

That is, the result of economic growth that promotes social equity and establishes a non-destructive relationship with nature. In the Brundtland report in 1987 - originally called Our Common Future - it was the first time that sustainable development was discussed in the World Commission on the Environment, with the conviction that it was possible for humankind to build a not only prosperous but also fair and secure future. Avoiding the destruction of the environment, which is increasing poverty and vulnerability of various social groups, in order to ensure the satisfaction of present needs without compromising the possibilities of future generations to meet their own needs (WCED, 1987). The Brundtland report refers to the preservation of the environment through the «sustainable development», conceived as a multidimensional process constituted by three dimensions (Artaraz, 2002): the Economic Dimension, the Ecological Dimension, and the Social Dimension. In this context, Sachs (2000) and some authors have associated the idea of sustainability with ecological aspects, as can be seen in the works of Hoffman (2000), Jennings and Zandbergen (1995), and Calvelo-Ríos (2001), which add more dimensions: the Cultural Dimension, the Energy Dimension, the Scientific Dimension, the Space Dimension, and the Environmental Dimension —see Table 1—. Sustainable Development is much more than an ecological concept, since it raises the fundamental challenge of combining a dynamic —energy— economy with a —cultural— society that offers opportunities for all, while the productivity of resources is improved —spatiality—, and the growth of —scientific— degradation of the environment is cut off (Rossi, 2012), see Figure 1.

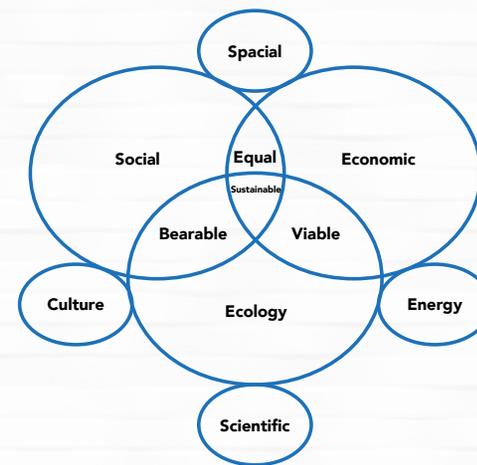
Table 1. Dimensions of sustainable development

Dimension	Description
Economic dimension	Arrange and manage resources to ensure durability and enable sustainable economic growth.
Ecological dimension	Protect natural resources, genetic resources — human, forestry, fishery, microbiological—, water, and soil.
Social dimension	Ensure that all humanity benefits —equity—.
Cultural dimension	Promote and include the diversity and specificity of local, regional, national, and international manifestations, without affecting the culture of different social groups.
Energy Dimension	Investigate, design, and use technologies that consume less energy and do not harm the environment.
Scientific dimension	Support research in pure and applied science related to new technologies, avoiding the fact that they are not oriented exclusively by criteria of profitability and short term.
Spatial dimensión	Seek to promote a balance between the rural and the urban, in order to balance the migrations and to adhere to agricultural practices that are more intelligent and not aggressive for the health and the environment.
Environmental dimensión	Prioritize the balance of ecosystems, the eradication of poverty and exclusion, the respect for human rights, and the social integration. It encompasses all the dimensions described above.

Source. Prepared by the authors with information from WCED, 1987; Artaraz, 2002; Calvelo-Ríos, 2001; Sachs, 2000; Hoffman, 2000; Rossi, 2012; Jennings & Zandbergen, 1995.

In general terms, sustainable development is based on basic aspects, such as the sustainable use of natural resources with the reuse of materials, or the healthiest ecosystems since there are less damages produced by the producing and consuming organizations in the most sensitized economic development that benefit the community as a whole (Whitford & Ruhanen, 2010). Sustainability for Gladwin, Kennelly, & Krause (1995) is configured as a possibility of comparative advantage, on the benefit of organizations —educational, industrial, and social—, governmental institutions —local and federal—, and civil associations, without losing their profitable orientation in the market and obtaining a social image in front of suppliers and consumers —social marketing—. This explains why since the 1990s, and in spite of their economic approach, organizations have invested in socio-environmental actions in the market (Callenbach, Capra, Goldman, Lutz, & Marburg, 1993).

Figure 1. Dimensions of Sustainable Development



Source. Prepared by the authors with information from WCED, 1987; Artaraz, 2002; Calvelo-Ríos, 2001; Sachs, 2000; Hoffman, 2000; Rossi, 2012; Jennings & Zandbergen, 1995.

With the gradual intervention of stakeholders in the process of consolidation and impact of sustainable development, in the different scientific, social, and business areas, we can say that there are groups that are affected by the activities of a company and the environment: internal stakeholders such as employees, shareholders, investors, and external stakeholders such as customers, suppliers, distributors, competitors, and society itself. These groups or individuals have been considered as an essential element in strategic business planning and in incorporating the concept of sustainability into the company (Bur, 2013). Starting with various concepts and activities such as fair trade —marketing—, organic trade, sustainable products, the green market, social consumers, alternative stores, organic products, and corporate social responsibility to the market and consumers; and it is when the term environment begins to be defined in different ways. For the present research, environment is the set of natural —physical, chemical, and biological—, cultural, and social conditions and their interactions that are permanently modified by human or natural action, and that condition the existence and development of life in its manifold manifestations. In the long run, a healthy environment is fundamental to maintain the prosperity and quality of life of a society (Bur, 2013), and together with sustainable development, it is in solidarity with future generations to preserve the environment so that they have the opportunity to live (with the participation of the people involved, everyone must be aware of the need to conserve the environment and do each one's share) and preserve natural resources (Mendes, 2009; Hart, 1997).

From a marketing perspective, there are two types of entities that characterize the environment: the personal consumer and the organizational consumer. The first one

buys products for their own use or for their own family unit, and the consumer organization that includes companies with or without social objective (Orozco-Abundis, et al., 2003). In order to achieve this goal, it is necessary to establish a system for the development of new products and services. It is thus that the need for sustainable development, companies, government, and society in general are focused on creating Value Creation Models —companies, brands, products, people, consumers, and places— from pollution prevention perspectives, product management, clean technologies, and a vision of sustainability (Hart & Milstein, 2003); and by the limitation of commercial marketing oriented to the operation of the economic interests of the company and to the emerging needs of the consumers, that leave aside the preservation of the environment and the social welfare in the long term.

It is then that sustainable marketing arises - also known as ecological marketing (Kinneer & Taylor, 1973), green marketing (Ottman, 1993), and environmental marketing (Coddington, 1993) - as a process of integral management of the environment, to identify, anticipate, and meet the demands —in a mix of needs and desires— of customers and society in a cost-effective and sustainable way of natural resources, satisfying social needs as long as they do not compromise natural assets in the present and for the future. This can create value for a company, product, brand, character, consumer, or place - stakeholders of marketing- in its fundamental role of transmitting innovations for the production, development, commercialization, distribution, and supply of goods, services, ideas and experiences —products— to the consumer with its new environmental requirements, considering its value chain up to post-consumption.

3. Sustainable marketing: objective and fields of application

Although social marketing is the origin of sustainable marketing —ecological marketing, green marketing, and environmental marketing—, given from the perspectives of sustainable development and the concern for preserving the environment. It is also the mediator between the interests of the company —supplier— and the interest of consumers —demander—. Throughout history and in the context of trade, there have been different approaches to doing business, but they are increasingly oriented to the market and the customer, from the perspective where consumers procure those products that are widely available and have low cost in the market, when customers prefer those products that offer quality and durability, and even when protecting and increasing the welfare of the consumer and society, thereby achieving a balance between the two sides of mutual benefit.

From a social perspective, Sustainable Marketing is part of and emanates from social marketing, and its activities are directed to the same objective of stimulating, facilitating, and modifying social ideas or behaviors —beliefs, thoughts, customs, and ideologies—, so that they are beneficial for society; this change in behavior ranging from political, religious, environmental, spiritual, and even sexual. The sustainable marketing reorients consumer behavior, by actions that stimulate consumers' responsible purchasing and consents to ecological problems.

As far as sustainable marketing is concerned, it is the way in which the terms of trade —society-environment— are perceived and carried out, in order to be satisfactory for the interested parties, for development, valuation, distribution, and promotion of the goods, services, ideas, or experiences that one of the counterpart needs for the preservation and improvement of the environment, they contribute to the sustainable development of the economy and society (Hartmann, Forcada, & Apaolaza, 2004), at a reasonable price and with minimum environmental impact (Fraj & Martínez, 2002).

In addition, it aims at increasing social acceptance and is characterized by being an agent of voluntary social change. It is the type of marketing that is based on the use of market segmentation, consumer research, and communication, among other factors. Finally, sustainable marketing —like social marketing—, aims at increasing social acceptance and does not pursue economic ends, only addresses behavior, values, or lifestyles within society for a change in the medium or long term —never in the short term, because of the cognitive process of learning of the individual), which causes that it cannot be measured objectively because it has intangible results. Therefore, its objective of action is in two senses: from a social perspective and from a business perspective, as following:

A. Sustainable Marketing from a social perspective, aims to:

- Inform and/or educate about environmental issues: Awareness.
- Stimulate actions for the benefit of the environment: Tangibilization the conscience.
- Change behaviors that may be harmful to the natural environment: Valorization of behavior.
- Change the values of society: Benefits for the environment and the future.

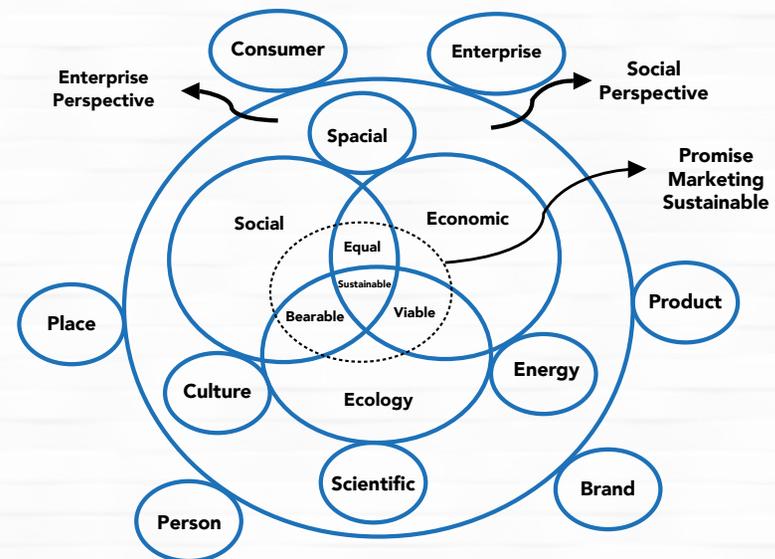
B. Sustainable Marketing from a business perspective, aims to:

- Satisfy the needs, desires, or demands of internal and external.
- Comply with the objectives of the organization — economic, positioning, growth, and expansion—.
- Generate the least negative impact on the ecosystem —conservation of present and future natural assets—.

In general terms, if one of several functions of social marketing is to increase or preserve the welfare of society, not to harm the health of consumers and not to harm the environment, from the perspective of sustainable marketing, the field of application should be holistic and integral (Ramírez-Vázquez, Ochoa-Olivares, Martínez-Guel, & Ríos-González, 2016). That is, it must involve all the agents that are involved in the commercial —social or business— process of the good, service, idea, or sustainable experience in question —green product—. All those involved in the

value-production chain are co-responsible for sustainability: stakeholders. From employees, managers, suppliers, and commercial allies —Internal—; Government, customers, consumers, competitors, and society in general —External— and the same Sustainable Marketing —Strategy—, must fulfill the promise, and not generate false expectations; it is from this point that the sustainability of marketing begins. Then, the application of sustainable marketing —as in the same commercial marketing— is given in for companies —public, social, and business—, products —goods, services, ideas, and experiences of basic and luxury consumption), brands —artists, politicians, altruists, show, and sportsmen—, places —countries, cities, regions, and localities— and consumers —potential consumers and final consumers—. See Figure 2.

Figure 2. Fields of application of sustainable marketing: stakeholders



Source. Prepared by the author, based on his experience in marketing.

4. Environmental awareness and the ecological behavior of the consumer

Discussions that have been generated around ecological awareness open up new business opportunities and new labor markets —new product development—, and are contributing to the consolidation of socio-environmental responsibility practices at increasingly multidimensional and systemic scales, given the Interdependence between the various publics involved: customers, suppliers, shareholders, government, media, and community. This action of reducing environmental impacts and contributing to the preservation of the environment is defined as environmentally responsible behavior (Lee, Jan, & Yang, 2013), which is the fundamental basis of sustainable marketing. For example, the GEO5 (2014) data show that Europe and North America are consuming the planet's resources at unsustainable levels, just as in the Asia-Pacific region. As a result, more than 600 million people will be without access to safe drinking water by 2015 and more than 2.5 billion people will not have access to basic sanitation; but with the help of marketing, society can adopt environmentally friendly attitudes towards its poor habits of ecological-sustainable consumption (Lee, et al., 2013). It is within this approach that behavior based on the development of environmental awareness has become necessary and urgent.

Environmental awareness is a tendency to take a stand on issues that are related to the environment, which can be for or against (Firat, Dholakia, & Venkatesh, 1995); and at a higher level of environmental awareness, smart purchasing decisions are tended to consider environmental impact (Bedante & Slongo, 2004). Environmental consumers seek to consume products - perceived - with minimal impact on the environment, reflecting behavior of ethical buying and ethical consumption (Harrison, Newholm, & Shaw, 2005). In Mexico, this purchase is synonymous with green purchasing, which should be understood as the development of sustainable ways of life that incorporate other environmental actions into a more holistic conceptualization (Gilg, Barr, & Ford, 2005), changing a brand X by a brand Y, or even stop buying certain product, so that the producers perceive the changes in the demand (Portilho, 2005), where the consumer's perception and behavior in the purchase decision is given by the most efficient green-ecological marketing strategies (Schiffman & Kanulk, 2000) because they are willing to change many of their behavior patterns for others that are more respectful of our environment.

The ecological consumer can be a fully informed «intellectual», who decides on the will to collaborate with or in the search of a more socially and environmentally equitable planet, environment, or space. And also, you can be a person that is concerned with your health, well-being, and future-being; that from its attitude as a complex phenomenon of behavior, participate with both variables: the internal to the individual and the external to it, such as values, ideas, and opinions, going through information, advertising, social groups, family, education, and their interaction with their environment. They influence their behavior to be more or less ecologically responsible —by consuming less polluting products, recycling certain products, and/or packaging and buying or willing to buy organic products, they are even willing to pay a higher price—.

5. Determinants of the ecological behavior of the consumer

The behavior of the ecological consumer has been measured in different ways and through different variables that are related to each other, because of the multidisciplinary nature of the concepts that are focused from their analysis to the study of greater or lesser environmental responsibility (Stone, Barnes, & Montgomery, 1995), to a greater or lesser ecological awareness (Sánchez, Gil, & Gracia, 1998). Such relationships can occur between attitude and general ecological behavior (Hines, Hungerford, & Tomera, 1987; Kaiser, Ranney, Hartig, & Bowler, 1999; Kaiser, Wölfing, & Fuhrer, 1999a), between

attitudes towards the environment (Maloney, Ward & Braucht, 1975; Schahn & Holzer, 1990), and on the balance of nature and the possibility of an ecological catastrophe outside consumer behavior (Dunlap & Van, 1978; Kotchen & Reiling, 2000).

The behavior of the sustainable-ecological-green consumer manifests itself through the Ecological Affect (EA), which is related to the emotions and feelings that an object awakens in someone. It is a factor that sums up the positive or negative feelings and the consequent emotions, which means that it is stimulated by the emotions that are used in advertising and marketing arguments in messages, product attributes, and the marketing mix process, since the affective component corresponds to the evaluation of the formed image (Karsaklian, 2008). The emotional factor, as understood by Schouten (1991), is one of the most interesting components of human behavior, and in particular of the consumer. Some studies indicate that, even with little knowledge about the environment, people have a strong emotional relationship with it (Maloney & Ward, 1973). Consumers with high levels of ecological concern and affection are more likely to have positive attitudes towards the environment than those with a low level of concern and affection (Laskova, 2007). Martin and Simintiras (1995) suggest that the influences of ecological knowledge and the ecological affection of the individuals are configured as independent variables and, therefore, both influence the behavioral responses of the consumers.

On the other hand, «ecological knowledge» (EK), as «factual knowledge», tends to affect the action of people even when the focus is not only on environmental issues (Schahn & Holzer, 1990). Tanner and Kast (2003) suggest that there is no conclusive uniformity that shows the direct relationship between environmental knowledge and environmental behavior. The results of the studies of Dispoto (1977) showed that knowledge about ecology, environment, and pollution is a predictor of environmental behavior, but with a low relation between the two variables. And sustainable marketing can be the guide to environmental education for changes related to the behavior of individuals —through social marketing—. Consumers who are well informed about environmental problems tend to purchase green products (D'Souza, Taghian, & Khosla, 2007). Conversely, a low level of knowledge about the uses and values of green products generates in consumers the commitment to the purchase decision (Chen & Chai, 2010).

Finally, the environmental concern, referred to as ecological (EC) or green (Ottman, 1992) concerns the dimensions related to the concern for the environment within the market, where consumers are the first link for the development of green marketing strategies (Chan & Lau, 2000; Chan, Wong, & Leung, 2008; Zimmer, Stafford, & Stafford, 1994).

6. Problem

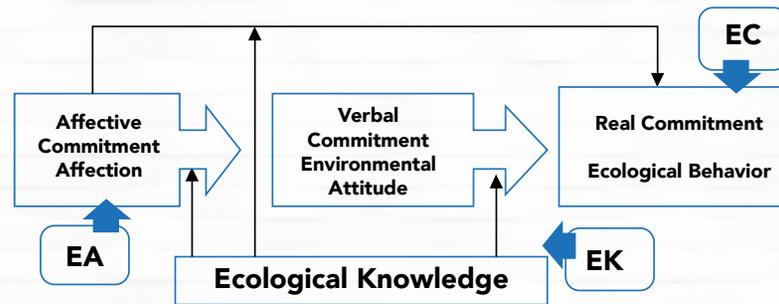
In Mexico, the spectacular growth and ecological boom, has made 9 of 10 Mexicans think that it is very important for companies to carry out environmental care policies, 8 out of 10

are very concerned about the environment, and 60% ensures that if it is an ecological product, it will definitely influence its purchase decision (Ramírez, 2013). Contrary to this, the desire is greater than reality, since the *The green disconnect*.

Consumer attitudes and behaviours in the EU (2013) mentions that only 50% of Mexicans prefer to consume environmentally friendly products (with biodegradable packaging and that use less pollutants in their manufacture). The main obstacle to the development of this market lies in two aspects: a) low availability of organic products in conventional establishments and b) high sales prices, higher than the consumer's payment provision for the ecological attribute. According to another recent study, people are willing to make more responsible purchases, but 41% believe that the prices for green products are higher than the prices for traditional products (Trujillo-León & Vera-Martínez, 2011).

From a three-dimensional perspective, taking into account the three elements of the attitude affective or emotional, cognitive, and intentional), adding the element of behavior with the determinants of ecological behavior such as ecological knowledge (EK), ecological concern (EC), and ecological affection (EA) (Kassarjian, 1971; Maloney & Ward, 1973; Kinnear & Taylor, 1973; Kinnear, Taylor, & Ahmed, 1974). A model for defining the ecological consumer in Mexico (Figure 3), which is separate from the model of the ecological consumer in Mexico, is used to describe the behavior of the ecological consumer in Mexico (Dunlop & Van, 1978; Elkington & Hailes, 1989); and the cognitive element (environmental knowledge) appears as a moderating variable of the relations that are established between the previous elements of the attitude (Fraj & Martínez, 2005).

Figure 3. Model for the definition of the Ecological Consumer in Mexico



Source. Prepared by the author with information from Kassarian, 1971; Maloney & Ward, 1973; Kinnear & Taylor, 1973; Kinnear, Taylor, & Ahmed, 1974; Maloney, Ward, & Braucht, 1975; Dunking & Van, 1978; Elkington & Hailes, 1989; Chan, Wong, & Leung, 2008; Fraj & Martínez, 2005.

So, is there a relationship between the purchasing behavior of Mexican consumers and ecological knowledge? Do Mexican consumers decide through ecological affection? Or is that decision made based on ecological concern? What is the relationship between knowledge, affection, and ecological concern?

7. Methodology

The objective of the research was to analyze the relationships of green consumption in Mexicans, in the search to determine the correlation between the constructs: Ecological Affect (EA), Ecological Concern (EC), and Ecological Knowledge (EK); and green purchasing behavior (GPB) in consumers. It was a quantitative descriptive study in a sample of 1,550

consumers —valid 96%, 1488 responses—, chosen according to the criterion of convenience —men and women between 21 and 55 years), carried out during the first half of 2015 in Mexico —the States of Puebla, Tlaxcala, Guanajuato, San Luis Potosí, Tabasco, and Querétaro—, with the application of personal questionnaires using the Likert scale. Regarding the measurement of dependent —green purchasing behavior —GPB— and independent variables (Ecological Affect -EA, Ecological Concern -EC, and Ecological Knowledge -EK), we used the various subscales that make up the revised scale of attitudes and environmental knowledge (EAKS) by Maloney, et al., (1975). The survey instrument was administered in a self-completion format, which is a sampling error of +/- 4.75% —for Intermediate proportions $p = q = 0.5$ — and the level of confidence was of 95 %. The sample design was simple random sampling.

With the application of personal questionnaires using the Likert scale, the scale was shortened to 18 items, with responses ranging from 1 «strongly disagree», to 5 «strongly agree». Regarding the measurement of dependent and independent variables, we used the various subscales that make up the revised environmental attitudes and knowledge scale (EAKS) (Table 2).

Table 2. Operationalized variables

Variable	Question	Ítems
A.-Affective Ecological Commitment	1. It scares me to think that the food I eat is contaminated with pesticides.	From 1 to 7
	2. It infuriates me to think that the Government does nothing to help control the pollution of the environment.	
Ecological affection (EA)	3. I get angry when I think about the damage that is caused to plants and animal life by pollution.	
	4. I get depressed in the days that there is pollution in the environment —fog, smoke, bad odors—.	
	5. I get angry when I think about how they pollute industries.	
	6. I have never been affected by the pollution since people are exaggerating a lot on the subject.	
	7. I almost never worry about the effects that smoke can cause in my family and myself.	
B. - Verbal Ecological Commitment	1. Would you be willing to take a bicycle or to catch the bus to go to work in order to reduce air pollution?	From 8 to 12
	2. Would you be willing to use a less polluting transport system to help reduce air pollution?	
Ecological knowledge (EK)	3. Would you donate a day's salary to an institution to help improve the environment?	
	4. I would stop buying products from companies that pollute the environment, even if it was a problem for me.	
	5. It would not pay an environmental tax for the contamination although this supposed a reduction of the pollution problem.	
C. - Royal Ecological Commitment	1. I am aware of the environmental proposals that were made by the party I voted for in the last general election.	From 13 to 18
	2. I have contacted the environmental department of my Autonomous Community or City Council to inform me about what I can do to reduce pollution.	
Ecological Concern (EC)	3. I try to make purchases of products that carry recyclable packaging.	
	4. I attended a conference that was hosted by an organization concerned with environmental improvement.	
	5. I have changed products for ecological reasons.	
	6. I have never participated in an act that would concern itself with aspects of M.A. —Planting a tree, cleaning park, etc.—	

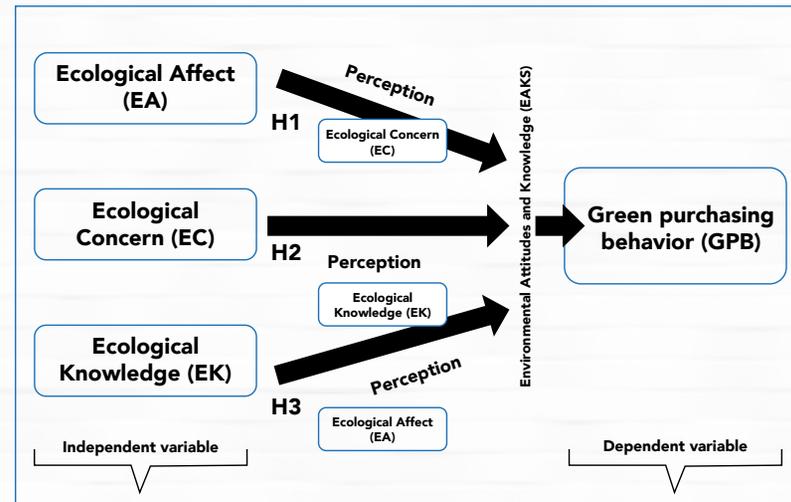
Source. Prepared by the authors.

8. Research Hypotheses

For reference, all three (3) hypotheses have been formulated according to Figure 4. With the previous study about Green Purchase Intention, carried out by Aman, Harun, & Hussein (2012), for this study, the definitions of the following concepts was taken:

- Green Purchasing Behavior (GPB), as «the probability and willingness of an individual to give preference to Green products over conventional products, in their purchase considerations».
- Ecological Knowledge (EK) as «a uni-dimension variable that includes the general aspects on what people know about the environmental issues».
- Ecological Concern (EC) as «the level of emotion and commitment towards environmental issues».
- Ecological Affect (EA), as «the personal affection that a person gets for causes of environmental interaction».

Figure 4. Research Hypotheses Model for the definition of the Ecological Consumer in Mexico



Source. Prepared by the authors.

Hypothesis 1. There is a significant relationship between Ecological Affect (EA) and Ecological Concern (EC), for predicting the green purchasing behavior (GPB) of Mexicans.

Hypothesis 2. There is a significant relationship between Ecological Affect (EA) and Ecological Knowledge (EK), for predicting the green purchasing behavior (GPB) of Mexicans.

Hypothesis 3. There is a significant relationship between Ecological Concern (EC) and Ecological Knowledge (EK), for predicting the green purchasing behavior (GPB) of Mexicans.

- Section C of the questionnaire, which contained six (6) questions measured on the Ecological Concern (EC) of respondents based on a five (5) point Likert scale —1= Strongly Disagree, 5= Strongly Agree—.

9. Results

With the objective of analyzing sustainability and social development under the perspective of the ecological behavior of the consumer, and seeking to determine the relationship between ecological knowledge, ecological affection, ecological concern, and green purchasing behavior, in a measurement of dependent variable —green purchasing behavior – GPB— and independent variable —Ecological Affect - EA, Ecological Concern – EC, and Ecological Knowledge – EK—. The questionnaire consisted of four (4) section:

- Section 1 of the questionnaire was on respondents' demographic profile —such as gender, marital status, age, education, and location—.
- Section A of the questionnaire, which contained seven (7) questions measured on the Ecological affection (EA) of respondents based on a five (5) point Likert scale —1= Strongly Disagree, 5= Strongly Agree—.
- Section B of the questionnaire, which contained seven (7) questions measured on the Ecological knowledge (EK) of respondents based on a five (5) point Likert scale —1= Strongly Disagree, 5= Strongly Agree—.

10. Respondent Profile and reliability

Overall, the analysis of frequency revealed that the majority of the respondents were female (59.01%), and single (70.90%). The sample was mostly composed of about 71.98% aged between 21 to 27 years old, and in term of education level, the majority of the respondents have entered university with 73.99%. Geographically, there were six (6) states of Mexico, who integrated of simple: Puebla and Tlaxcala with 270 respondents each one (18%), Guanajuato, San Luis Potosí, Tabasco, and Querétaro with 237 respondents each one (16%), see the Table 3.

Table 3. Respondent Profile

Demographics	Frequency (n=1488)	Percentage (%)
Gender		
Male	610.00	40.99%
Female	878.00	59.01%
Marital Status		
Single	1055.00	70.90%
Married	433.00	29.10%

Age (Years)		
21-27	1071.00	71.98%
28-34	178.00	11.96%
34-41	104.00	6.99%
42-48	76.00	5.11%
49-55	59.00	3.97%
Education		
Basic	178.00	11.96%
Media Superior	209.00	14.05%
University	1101.00	73.99%
Location		
Puebla	270.00	18.15%
Tlaxcala	270.00	18.15%
Guanajuato	237.00	15.93%
San Luis Potosí	237.00	15.93%
Tabasco	237.00	15.93%
Querétaro	237.00	15.93%

Source. Prepared by the authors, with SPSS 24.

Using the SPSS software, these tests have been realised for each of the four measurement scales (Table 4). The results confirm the reliability of the modified scales; the Chrombach's alpha has the following values: A.-Affective Ecological Commitment, the Ecological affection (EA): 0.860; B. - Verbal Ecological Commitment, the Ecological knowledge (EK): 0.940; and C. - Royal Ecological Commitment, the Ecological Concern (EC): 0.810. Furthermore, in comparison with the scales used in Straughan and Roberts (1999), and

Selvanathan, Selvanathan, Keller, and Warrack (2004), which stated that questions with Cronbach Alpha above 0.50 can be used and are acceptable. Therefore, it can be concluded that all the items under study were acceptable because the adapted questionnaire has a higher reliability (Cronbach Alpha values ranged between 0.810 to 0.940), with 0.870 as general Chrombach's alpha.

Table 4. Chrombach's alpha: Reliability

Variable	Ítems	Alpha	Alpha
A.-Affective Ecological Commitment	From 1 to 7	.860	0.870
	Ecological affection (EA)		
B. - Verbal Ecological Commitment	From 8 to 12	.940	
	Ecological knowledge (EK)		
C. - Royal Ecological Commitment	From 13 to 18	.810	
	Ecological Concern (EC)		

Source. Prepared by the authors, with SPSS 24.

11. Correlation Analysis and Hypotheses Testing

According to Coakes, Steed, & Ong (2009), the Pearson Product Moment Correlation (PPMC) provides information regarding the linear relationship between two continuous variables. In this investigation, a bivariate correlation analysis

(PPMC) was performed on all the variables; results that are shown in Table 5. In order to achieve the objective of this study, the Hypotheses Testing was performed with the correlation. In this study, the result for hypothesis #1 revealed that ecological concern has weak to medium positive correlations with ecological knowledge ($r=0.359^{**}$, $p=0.001$). The study found that there is significant direct influence between ecological knowledge and concern for predicting the green purchasing behavior (GPB) of Mexicans. This means that Mexicans are aware of environmental problems, but do not express ecological behaviors or emotional affections regarding their degree of knowledge about it, because green purchasing must be understood as the development of sustainable livelihoods, which incorporate other environmental actions into a more holistic conceptualization (Gill, Barr, & Ford, 2005). Similar results were achieved for the Brazilian market, in a research using the same model of analysis on consumer behavior (Da Silva-Tamashiro, Merlo, Gómez, & Junior, 2016).

About hypothesis #2, it revealed that ecological concern has weak to medium positive correlations with ecological affection ($r=0.234^{**}$, $p=0.000$). The study found that there is no significant direct influence between ecological concern and ecological affection for predicting the green purchasing behavior (GPB) of Mexicans. Thus, the results indicate that the ecological consumer in Mexico is an individual who is interested and concerned about environmental issues and who shows a very important verbal and real ecological commitment that should be tangibilized in the relationship of a greater verbal ecological commitment, which implies a greater final ecological behavior.

Finally, about hypothesis #3, the ecological knowledge has moderate positive correlations with ecological affection ($r=0.428^{**}$, $p=0.000$). The study found that there is significant direct influence between ecological knowledge and ecological affection for predicting the green purchasing behavior (GPB) of Mexicans. The important fact is that Mexicans present an intermediate level of environmental knowledge, which should conservatively intensify the relationship between affective ecological commitment and the verbal ecological commitment of individuals. In the investigation, it is also identified that 79.86% perceive that organic products are little known, distributed and bought in the conventional market and in the commercial centers, and that advertising campaigns should demonstrate the benefits of consuming organic products, along with awareness of their consumption —95.3%—. Advertising campaigns or the existence of more sustainable products —ecological or green—, nor the actions or programs of governments and companies, are a solution to the problems of environmental pollution, but it also depends on the people, who have the power to change their behavior towards the protection of the planet (Maloney & Ward, 1973; Elkington & Hailes, 1989), a situation that is present in Mexico and it can be said that in Latin America, since the same situation can be seen in Brazil.

Table 5. Result for the Bivariate Correlation Analysis

		Ecological affection (EA)	Ecological knowledge (EK)	Ecological Concern (EC)
Ecological affection (EA)	Pearson Correlation	1		
	(Bivariate)			
	N	1488		
Ecological knowledge (EK)	Pearson Correlation	0.428**	1	
	(Bivariate)	0.000		
	N	1488		
Ecological Concern (EC)	Pearson Correlation	0.234**	0.359**	1
	(Bivariate)	0.000	0.001	
	N	1488	1488	1488
		** Correlation is significant at the 0.01 level		

Source. Prepared by the authors.

12. Conclusions

The current study tested the relationships between sustainability and social development, in the search to determine the relationship among the constructs: Ecological Affection (EA), Ecological Concern (EC), and Ecological Knowledge (EK); for the prediction of the purchasing behavior relative to sustainable green-organic products — green purchasing behavior GPB—. From the intensity of the

association between these scales of behavior, it has been identified that the purchase or choice of a product of this type goes beyond the quality and price. It should be based on social marketing strategies —idea-type products—, which allow consumers to become aware of a healthy lifestyle change, denoting the benefits to their health, their well-being, and their final economy; the latter, in saving the investment in medical services and special interventions in their bodies as it can be seen as a «preventive maintenance in your health». In addition, environmental information and knowledge are used as moderators of the relationship between attitudes and behavior (Arbuthnot & Lingg, 1975; Grunert & Kristensen, 1992), the psycho-demographic characteristics of grade school, NSE-social class and style do not have any association with the purchasing behavior related to these products — goods, services, ideas, and experiences—. The consumer in Mexico presents a positive attitude toward the purchase of organic products and is even willing to stop buying from those companies that pollute. If the stakeholders —Society, Government, Companies, and universities— stimulate consumption in those individuals who are really committed to the environment, they would pay more for them, being aware of the economic change, for a change of health.

The Mexican consumer is a Prosumer (Larios-Gómez & Fischer, 2016), who hopes to participate in the design and production of products that incorporate environmental factors, as an additional factor to those that are traditionally contemplated. Thinking that this diminishes the environmental impacts through an increase of environmental efficiency in their life cycle requires fewer inputs, generates less waste, and gives use value to the nature; so, it reduces environmental

impacts, generates economies of scale, facilitates the life of the user, tends to become massive, and stops being a product of niche or craft, which grants the «moral reward» to carry out actions for the good of the environment —i.e.: paperless telephone receipt, electronic or reusable diapers—, and less environmental impact in its manufacture, distribution, and final disposal. It also creates an affective bond with the user. It allows you to «materialize» your environmental commitment. That does not imply higher costs in its elaboration and therefore a higher sale price, nor additional efforts on the part of the user when using it. Finally, a sustainable product with «Utilitarian Attributes» that solve concrete and specific needs: mobility, food, clothing, and hygiene with «Sustainable Attributes» that generate the product to reduce its environmental impact in at least one stage of the cycle of Life and Attributes of Sustainable Communication» that generate in the user — and most of the time in the person who observes it— the perception that is a sustainable product.

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