Electronic Green Journal
Volume 1, Issue 42

Eco-labels: A Tool for Green Marketing or Just a Blind Mirror for Consumers

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Abstract

Studies show that greening the business is not only helpful in getting the green products to the consumers, but it also helps the business as a strategy for enjoying a competitive advantage and strengthening brand image. Green marketing practices are gaining wide acceptance among various marketing practices. Green marketing is the set of marketing activities that start with the procurement of the product to the delivery of the product to the end user in a greener way. On the other hand,eco-labeling is one of the important tools for the green marketing as it helps to differentiate the green products from non-green products. However, many times these eco-labels fail to attain their goals. The objective of this paper is to establish a relationship of eco-labels with consumer knowledge, information communication, trust and its impact on green purchase intention. Further, all these relationships were verified with the help of structural equation modeling (SEM), performed by using SmartPLS 3.0. The total sample size for the study was 506 Indian consumers. The study reveals that eco-labeling is a significant criterion for consumer trust and green purchase intention via consumer information and knowledge.

Introduction

Green marketing is one of the significant initiatives by the companies' and is showing fruitful results worldwide (Kushwaha and Sharma, 2015). There are various green marketing practices such as green production, green pricing, eco-labeling, and recycling (Polonsky and Rosenberger, 2001; Oyewole, 2001; Rex and Baumann, 2007; Chan, 2013; Panda and Goswami, 2009). Green marketing strategy as a neo-concept in the marketing and is gaining momentum in most of the countries as in India (Singh et al., 2011). Green marketing is all about green products, services, and consumer awareness towards green products (Gleim, 2013). Many times customer gets confused in identifying the green product in the market. In order to reduce this confusion among consumers, the eco-labeling was introduced in Germany in 1978. (Kirchhoff, 2000; Brecard, 2014). Eco-labels are the symbol or logo on the product that depicts that the product is environmentally safe and can be regarded as a green product. There are different types of eco-labels available according to their environmental standard. Today, eco-labeling is in trend by most

of the product manufacturers. These manufacturer are claiming that the products are environmentally safe, with the help of eco-labels (Simi, 2009).Eco-labels are used as a vital means of communication in the green marketing, but due to lack of appropriate or misleading information, sometimes it fails to serve its purpose (Galil et al., 2013). This particular phenomenon raises the issue of consumer skepticisms in the market (Kirchhoff, 2000). Eco-labels are designed to make the consumer awareness of the product. It also helps in differentiating it from the other products. Eco-labels help the consumer in making purchase decisions (Bratt et al., 2011). Eco-labels seem to be just a logo, but it is far beyond, its responsibility is much bigger than others are as it reflects the image of the product (Amos et al., 2014).There are dark clouds on eco-labels such as consumer skepticism, lack of awareness among consumers, fake eco-labels, lack of trusted eco-labeling agencies, and lack of monitoring agencies (Simi, 2009; Van Amstel et al., 2007; Lewis and Stanley, 2012). Because of these problems, eco-labels cannot attain its objectives. Therefore, it is vital to know which eco-labels functioning properly in the market.

In this paper, the authors have put their endeavor to test the role of eco-labels in the marketing context. As per the past studies and market practices the fundamental functions of eco-labels are communication (Tang et al., 2004), building trust (Potts and Haward, 2007), knowledge (Taufique et al.,2015) and increasing purchase intention (Thøgersen et al., 2010; Sörqvist et al., 2016) towards the green product. The objective of the paper is to present the eco-labels in the domain of its functions. The research question addressed in this study concentrates around answer – is eco-labels really useful for the consumers regarding information communication, knowledge which leads to building trust among the consumers for making green purchase intention?

The need of the study is to clear the purpose of eco-labels in the marketplace and to check its usefulness to the consumers. The results of the study will help to understand the role of eco-labels in the green marketing context. Numerous research have been done on the eco-labels, but still, there are a very few studies available in India. The study consists of a research model loaded with five components namely the eco-label, information communication, and building trust, knowledge, and purchase intention. To bring the solution of the research problem, the authors analyzed the existing literature and gathered information that can be meaningful in this study. The research was conducted in the Indian context and could be helpful in understanding the significance of eco-labeling in the Indian market.

Literature review and hypotheses development

To bring the study in a meaningful manner, the authors have gathered more than fifty articles published in the international journals across the world. They also have collected the papers closely related to the study and divided the literature review into five categories.

Green marketing and concept of eco-labels

In 1970, the United States and Europe had started to focus on greening the business by making strict control and formed agencies such as Environmental Protection Agency (EPA). Due to public concern, green political power and green consumerism raised the voice. These forces with investors, employees, and management played the role of catalyst for greening the business and turn it into “green marketing” (Lampe and Gazda, 1995). Green marketing is classified into three phases. First is ecological marketing focuses on the ecological problems and solutions. The second phase is environmental marketing focuses on clean technology, innovation, and new design to reduce the environmental problems. The third phase is sustainable green marketing which came in 1990 and focuses on sustainable issues (Peattie, 2001). Menon and Menon in 1997 suggested three levels of green marketing that can occur in the organization: strategic, quasi-strategic, and tactical. In strategic greening there is the fundamental change in the completely corporate philosophy and in quasi-strategic, there is the substantial greening the organization as for saving water. Tactical green marketing activities perform when there is a time of scarcity of any resources for example if there is a situation of drought, then organizations such as water authorities may more focus on its saving (Polonsky and Rosenberger, 2001).Over the past decades, concerns about the environment have become very important not only in public but also in the research domain also (Rahbar and Wahid, 2011). It can be seen that the ecological concern is achieving political and economic significance globally (Blenda and Valente, 2009). In today’s world of business, the environment is the top priority because of two reasons, one is the pressure created by the government to go green, and another is changing customer needs, wants and demands in a green direction (Polonsky and Rosenberger, 2001; Singh et al., 2011). Implementing green strategies in business is not only helpful for the organization for achieving competitive advantage but also useful in complying the strict government rules and regulations (Cronin et al., 2011).

Eco-label is one of the significant tools for green marketing (Rex and Baumann, 2007). In 1977, the government brought the first eco-label named Blue Angel which affected business in that period.(Blumenfeld and Gilbert, 1990;Bleda and Valente, 2009).The oldest and perhaps the most reliable eco-label was Blue Angel of Germany and had been used by various countries (Simi, 2009; Bleda and Valente, 2009). A representative of consumers, governments, business groups, and environmental experts decided the criterion for Blue Angel (San Diego Union, 1990). In the U.S. there are two major eco-labels green seal and green cross. Green seal evaluates the product on effects from “cradle to grave” which was sponsored by Denis Hayes, the organizer of the first Earth Day in 1990. Green cross was introduced by an independent company, Scientific Certification System, which verifies the manufacturer’s specific claims on products and packaging (Lampe and Gazda, 1995).There are different classifications of eco-labels such as mandatory and voluntary eco-labels. Mandatory eco-labels includes EU energy stars for household appliances, and other International Organizations for Standardization (ISO) fall in voluntary eco-labels which are further divided into type I, type II and type III eco-labeling scheme. (Rubik et al., 2005; Simi, 2009).The purpose of eco-label is to provide information related to the life cycle of the product which includes the origination of the product, its process, consumption, and disposal (Simi, 2009). According to Global Eco-labeling Network (2011) “eco-label helps in identification of the product or services which are environmentally preferable based on the life cycle concern” (Bratt et al., 2011).Most of the consumer prefer eco-labeled product instead of unlabeled one

because eco-labels are the indication of environmental quality product (Brecard, 2014). In many of the cases of international trade, it is also seen that some of the countries particularly European nations prefer specific eco-labeled product for the import so many countries faced eco-labeling trade barriers (D'Souza, 2004; Greaker, 2006).

Eco-label as a tool for communication of information

In the current business environment, consumers prefer green products and services and they want businesses focus more on environmental issues (Zhang et al., 2014). The main obstacle consumers' face in the market is about the selection of the green product among other products. The information what they see on the packaging is limited, and due to lack of awareness, they failed to draw any conclusion (Lewis and Stanley, 2012). It is found that consumers are confused from medium to extreme level on the eco-labeling practices adopted by various firms (Brecard, 2014). The confusions can only be removed if consumers are provided appropriate information on the greening level of the product through proper communication by using eco-labels (Bleda and Valente, 2009). Most of the time consumers' have seen the eco-labels but they are not informed properly about its purpose and use.

Also, it is not an easy task for the labeling organization to provide the entire information related to the content specifically when the labeling scheme applies to different dimensions (Van Amstel et al., 2007). Several governments and non-government organizations have recognized the problem of eco-labeling awareness and made efforts to reduce the problem by creating trustworthy schemes for eco-labeling (Rex and Baumann, 2007). To reduce the perplexity among the consumers, various initiatives have been taken such as a guidelines to eco-labels was introduced by the Canadian Ministry of the Environment, other guidelines also launched by the association as GreenerChoices.org in the US, in the same way, "eco-label index" is also one of the perfect sources where approximately 435 eco-labels are listed from various countries (Brecard, 2014).Even after several initiatives, the information among consumers about the familiarity of the eco-labels is significantly very low (Berghoef and Dodds, 2011). Few examples of eco-labels can be seen in the Table number 1.

Table: 1 Few examples of Eco-labels with their description

Eco-labels	***Country***	***Description***
	Germany	"Blue Angel" is for that product and services, whose protection goal is concerned with health, climate, water, and other resources. It promotes the protection of both environment and consumer.
	Australia	"Energy rating" is the certified and verified eco-label by an independent organization. It is used to show the consumption of the energy used for home appliances.

	Canada, New Zealand and the USA	“Energy Star” is used to make the consumer awareof the efficient consumption of the energy by the product. It is used by the home appliances mostly.
	European countries	“EU eco-label” comes under a voluntary scheme to market those products and services which are favorable for the environment. It covers both public and private consumers.
	Brazil	SustentaX is a Brazilian eco-label which helps consumers in identifying sustainable products, materials, equipment,etc. It is used to ensure the quality and safety of human. SustentaXis based on the ISO14024 standards.
	USA	“LEED” stands for leadership in energy and environmental design. This eco-label is used for the green building which certifies that the building is designed according to the environmental standards.
	India	“Ecomark” was launched by Government of India to make people aware about the green products. It follows cradle- to -grave approach. Products which can use ecomark are soaps, detergents, batteries, cosmetics, papers, textiles, etc.

Source: http://www.ecolabelindex.com/

Based on the litereture review the authors constracted two hypothesis:

- **H1:** Eco-labels significantly influence the communication of information.
- **H2:** Eco-labels have a direct and significant relationship with the consumer knowledge.

Disseminating knowledge to consumers through eco-labels

Knowledge plays a very significant role in the eco-labeling concept as it helps consumers in interpreting the factual purpose of the green product. There is a lack of transparency in the market because of insufficient knowledge among the consumers. Very few consumers have heard about

the term eco-label (Van Amstel et al., 2007). As in the case of eco-labeled food, product which had not gained so much attention among consumers, due to the lack of knowledge and trust (Rex and Baumann, 2007). The consumers who are ecologically concerned, these eco-labels are greatly helpful to identify food and other consumer products (Galil et al., 2013).Consumers are left in a dark room about the eco-labels and its use which sometimes also create “greenwashing” as there is less knowledge towards the production process (Van Amstel et al., 2007). The term “greenwashing” is used when a company claims that the product is eco-friendly, but in reality,their actions are biased and harm to the environment (Kangun et al., 1991). There are three main forms of eco-labeling communication, i.e., visual, verbal and visual, plus verbal both. Visual eco-labels only contain a logo without any message; verbal eco-labels are more informative with some messages whereas visual and verbal eco-labels contain both a logo and a message. To create more understanding about the visual eco-labels consumer knowledge matters in making a purchase decision (Tang et al., 2004). Knowledge plays a significant role in authenticating eco-labels and building trust which further helps the consumer to take the decisive steps in the purchase (Carlsson et al., 2010). The study conducted by (Taufique et al., 2015) also finds that the knowledge of a consumer regarding general environmental knowledge and knowledge of eco-labels both plays a crucial role in influencing the attitude of the consumer towards green purchase.

This discussion leads to build the next hypothesis:

- **H3:** Information communication through eco-labels significantly influences the knowledge of the consumer.

Eco-labels in building the trust of consumers

The right information and knowledge both are essential criteria for building the trust among the consumers (Thøgersen, 2000). The consumer trust for the eco-labels is one of the imperative conditions to make the green product successful (Potts and Haward, 2007). Studies have found that the eco-labels positively reinforce the consumer’s trust towards the product, as it evokes positive judgment and portray peasant view of nature. It assures a consumer that the product what he/she is going to buy is favorable in all the aspects with the help of affirmative sensations. (Amos et al., 2014). The green consumer often makes a purchase decision by the messages, information or eco-labels but many times they complain about the green claims by the firms (D’Souza, 2004). These misleading claims turn into “greenwashing,” and it is a leading cause towards the breach of the trust between a green claim led by eco-labels and consumers (Kirchhoff, 2000). Due to an increasingly large number of eco-labels consumers are confused about the criteria of eco-labeling which leads to confusion and weakening of the consumer’s trust upon eco-labels. The erosion of trust and the problem in differentiating eco-labels affects the green purchase attitudes (Bratt et al., 2011). It also shows that to make eco-labeling scheme successful, it is relevant that the trust of a consumer should be increased (Lozano et al., 2010).To increase the trust of a consumer, education is also a significant socio-economic factor. The educated consumers are more likely to trust on eco-labels (Teisl et al., 2008).

The discussion in this part of literature created two more hypotheses:

- **H4:** Communication of information through eco-labels significantly related to building the trust of the consumers.
- **H5:** Knowledge of the consumer is significantly associated with building the trust in consumers.

Eco-labels and green purchase intention

The primary objective of the eco-labels is to provide specific information related to the product so that consumer can make green purchase decisions (Thogersen et al., 2010). Most of the consumers are influenced by the product labeling when they purchase any product in the market (D'Souza, 2004). The green purchase intention is also influenced by eco-labels such as "Energy Star" and "EU labels" which are meant to reduce the electricity bills particularly for consumer durables, in fact they can pay a higher price (Bratt et al., 2011; Ward et al., 2011). The study proves that the eco-labels are often helpful to the green consumers when they go for purchase (Amos et al., 2014) because the packaging is the most appealing factor which initially sways a consumer in the purchasing decision process (Tang et al., 2004).A study conducted by Gallup Organization in Europe found that the majority of the individuals makes their purchase on the basis of the eco-labels on the product (Brecard, 2014). On the other hand, it is also true that the false claims and misleading eco-labels are not able to attract consumers in the long term (Galil et al., 2013).Therefore, consumer trust on eco-labels is the significant factor in green purchase intention (Vanclay et al., 2011).

This discussion leads to construct the last hypothesis:

- **H6:** Building trust towards eco-labels influence the green purchase intention of consumers.

The authors also researched studies based on the eco-labeling published from 2010 until 2016.They selected published papers that consist term "eco-labels," "eco-labeling" or "environmental labeling" in their titles (Prieto-Sandoval et al., 2016).The summary of the literature review is presented in Table number 2.

Table: 2 Studies on eco-labels and their key findings (2010-2016)

Contributors	***Industry***	***Country of the study***	***Name of the Journal***	***Key findings***
Clemenz, 2010	General	Austria	*Environment Resource Economics*	Eco-labels can be an imperative market strategy in competition with other firms.
Lozano et al., 2010	General	Not-specified	*Ecological Economics*	Eco-labels are environmental strategies. Survival of eco-labels in the long term replaces other uncertified initiatives. Its survival depends upon the green strategies and "greenwash."
Bratt et al., 2011	General	Sweden	*Journal of Cleaner Production*	The study shows a lack of clear-cut guidelines for the eco-labeling and there are deficiencies in the criteria for eco-labeling. There is a contrast in theory and practice. It is an important mean of communication for marketing of green products.
Franzitta et al., 2011	Real Estate	Italy	*Energy*	The EU eco-label scheme is gaining attention among the consumers who are buying houses and buildings as it assures the energy efficiency.
Hansla, 2011	Electricity	Sweden	*Energy Efficiency*	The consumers are willing to pay for eco-labeled electricity as their altruistic values are supporting this kind of initiatives.
Mason, 2011	General	USA	*Environment Resource Economics*	Eco-labels communicate consumers about firm's environmental attributes. It is the significant communication tool for information.
Vanclay et al., 2011	Grocery	Australia	*Journal of Consumer Policy*	Grocery items with green labels record high sales,and go more up when the cost of green-labeled groceries reduced. Whereas the black label groceries faced declined in the sales. Consumers prefer greenness in their purchase.
Ward et al., 2011	Household appliances	USA	*Energy Policy*	Energy Star labels influence the purchasing of household appliances like refrigerators. Provide information regarding energy and cost saving.
Karlsen et al., 2012	Seafood	Norway	*Marine Policy*	Eco-labels are significant in seafood affecting the harvesting pattern.
Berghoef and Dodds, 2013	Wine	Canada	*Journal of Cleaner Production*	The Ontario wine industry agrees the eco-certifications are advantageous for the industry. The voluntary environmental bodies should provide the eco-certification.
Galil et al., 2013	Fishery	Spain	*Biological Invasions*	Eco-labels mainly influence consumers who are highly concerned about the environment.
Mesthrige and Man, 2013	Real Estate	Hong Kong	*Journal of Facilities Management*	Green features or eco-labels on the property have a significant relationship with the price. People can pay more prices for the green assets.
Amos et al., 2014	Food and Supplement	USA	*Journal of Product and Brand Management*	Eco-labels give positive feelings towards a product. Help in the purchase of the eco-labeled product.

Brecard, 2014	General	France	*Resource and Energy Economics*	Products with eco-labels are treated as high-quality standard among the consumers. The eco-labels provided by the firms make them confused. They rely on eco-labels provided by the third party.
Dentoni et al., 2014	Food	Australia	*British Food Journal*	Labels used on beef directly influence consumer attitudes. The animal welfare labels, directly and indirectly, effect consumer in their beef buying intentions.
Dekhili and Achabou, 2014	Coffee	France	*European Business Review*	Consumer gives more preference to eco-labeled coffee. They also pay attention to the self-declared certifications.
Lo et al., 2014	Hotel	China	*Journal of China Tourism Research*	Environmental assessment methods contain vague guidelines and therefore it is difficult to certify green hotels.
Sun et al., 2014	Household appliances	China	*Energy Policy*	The eco-labeled products with energy efficient are effective by saving energy. The government should not subsidize the less energy efficient product as it distracts the consumer from the eco-labeled product.
Clancy et al., 2015	Textiles	Sweden	*Journal of Cleaner Production*	Eco-labels in clothing design is marginally influencing the sustainability performance. There is a need for expanding information to make the eco-labels in clothing design a successful program.
Prieto-Sandoval et al., 2016	General	Spain	*Journal of Cleaner Production*	Eco-labels are eco-innovation tools to address the consumer, firm, institution and the government. The eco-labeling cycle starts from consumer environmental expectations.
Sorqvist et al., 2016	Food/Fruit	Sweden	*Food Quality and Preference*	Social motives are important factors for buying an eco-labeled product such as food items.
Taufique et al., 2016	General	Malaysia	*Procedia Economics and Finance*	General environmental knowledge and knowledge about eco-labels both positively affects the attitude of the consumer. Marketing strategies need to be focused on communication to educate the consumers.

Research methods

The conceptual framework of the study is presented in Figure 1.

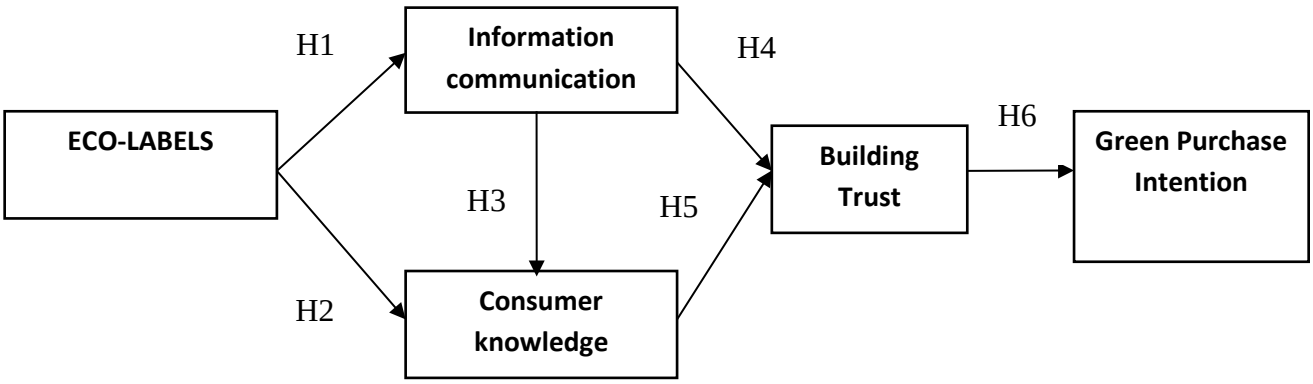

Figure: 1 The conceptual framework of the study

Measurement instrument

The extensive literature review based on the previous studies in the area of eco-labeling and its inclined consumer concept helps in developing the survey instrument for the research. The authors developed the constructs and its observable items that have been reported in Table 3.In the study of a final set of 15 items after pre-testing on 20 students were made for the respondents. The purpose of the pre-testing was necessary to improve the quality regarding suitability and lucidity of the questionnaire. Some minor corrections were made which has been incorporated with the help of research experts. All the questions were measured on a five-point Likert-type scale which ranges from 1 to 5 where one stands for “strongly disagree,” and five is for “strongly agree.”.”The final questionnaire was divided into two broad sections. The first section was about the demographic characteristics of the respondents which include gender, age, education, and their occupation. In the next section, consumers were asked about their experience related to the eco-labels.

Sampling design and data collection

To test the proposed hypotheses in the research an offline and online both convenience sampling survey has been done across the country. Educated consumers were chosen so that they can better fill the responses about eco-labels. As it was presumed that uneducated consumers could not understand about eco-labels which can result in the vague sample. Due to it student and office executives were approached at the city of Bhopal, located in Madhya Pradesh, India. Bhopal is also the capital of Madhya Pradesh which lies in a central part of India, where people come from across the country to take education and earn their livelihood. The characteristics of the sample

have been tabulated for the representation in the Table 4. Total 600 questionnaires were printed on the used paper and were distributed to the respondents. Total 483 samples were received out of which all those samples were found incomplete or insignificant were neglected and which resulted in a final list of 371 samples from the offline survey. The sample collection took place from February until May 2016. In the online sampling procedure, authors first created an online set of the questionnaire and generated a link. The online approach for sample collection turned out to be very slow. However, total 135 useful samples were received for the study. By adding online and offline both the samples a total of 506 concrete samples were collected.

Table: 3 Summary of latent variables with their observable items

Latent variables	*Observable items*
Eco-labels	**Green Symbols (GS):** (Tang et al., 2004; Amos et al., 2014) **Environmental Certification (GC):** (Lampe and Gazda, 1995; Berghoef and Dodds, 2013; Dekhili and Achabou, 2014) **Environmental Performance Indicators (EPI):** (Rondinelli and Vastag, 2000; Clancy et al., 2015)
Information communication (IC)	**Green Manufacturing Process (GMP):** (Van Amstel et al., 2007; Simi, 2009) **Green Features (GF):** (Mesthrige and Man, 2013) **Eco-logical Messages (EM):** (Davis, 1998; D'Souza, 2004; Bruce and Laroiya, 2007; Simi, 2009;Teisl et al., 2008; Brecard, 2014; Sörqvist et al., 2016)
Consumer knowledge (CK)	**Energy Star (ES):** (Tang et al., 2004; Proto et al., 2007; Bratt et al., 2011; Ward et al., 2011; Franzitta et al., 2011; Sun et al., 2014) **Recycling (RY):** (Rex and Baumann, 2007; Koo et al., 2014) **Eco-friendly Products (EP):** (Bratt et al., 2011; Lewis and Stanley, 2012)
Building trust (BT)	**Quality Assurance (QA):** (Simi, 2009; Bratt et al., 2011; Brecard, 2014) **Safety for Environment (SE):** (Amos et al., 2014) **Consumer Healthiness (CH):** (Davis, 1998; Amos et al., 2014; Brecard, 2014)
Green Purchase Intention (GPI)	**Environmental Benefits (EB):** (Amos et al., 2014) **Environmental Affection (EA):** (Bleda and Valente, 2009; Carlsson et al, 2010;Galil et al., 2013) **Cost Effectiveness (CE):** (Vanclay et al., 2011; Ward et al., 2011)

Table: 4 Demographic summary of the respondents

Section	*n*	*Percentage (%)*
Gender		
Male	387	76.48
Female	119	23.52

Age		
18- 28	293	57.90
29-39	168	33.21
40- 50	29	5.73
> 50	16	3.16
Education		
Under graduate	83	16.41
Graduate	192	37.95
Post Graduate	220	43.47
Above	11	2.17
Occupation		
Student	281	55.53
Job	184	36.37
Business	32	6.32
Professionals	9	1.78

Data analysis and findings

To test the conceptual research framework structural equation modeling (SEM) has been approached. SEM is one of the significant methods in the behavioral studies such as marketing and other management areas.(Hair et al., 2012; Ringle et al., 2012). Partial least square (PLS) has been deployed with the help of SmartPLS 3.0 software (Anderson and Gerbing, 1988; Ring et al., 2005;Chin 2010). Recent studies conclude that the PLS techniques work as a “silver bullet” in different research situation if applied appropriately. (Hair et al., 2014). Due to the complexity of the research model in the study bootstrapping has been performed with 2000 subsamples with the help of SmartPLS (Becker et al., 2012).

Scale validity and reliability

To evaluate the construct validity of each latent construct of themeasurement model, confirmatory factor analysis has been done (Hair et al., 1998). It has been assessed through the convergent validity and discriminant validity. With the help of factor loadings and the average variance extracted (AVE), convergent validity has been examined. The values found greater than 0.50 for both the results which are considerable (Hair et al., 2011; Sarstedt et al., 2014). The discriminant validity has been examined with the help of the Fornell and Larcker (1981) criterion. In this case, the square root of AVE should be more than the other construct correlations. The construct’s internal consistency has been measured for all the scales with the help of Cronbach’s alpha (α) and composite reliability (CR) which should be ranging from 0.60 to 0.70 for both the measures in exploratory research (Nunnally and Bernstein, 1994). In Table-5, it can be seen that all the values of α and CR were found satisfactory as per the recommended level. Factor loadings of the

respective latent variable were also found more than 0.50, and authors have removed two items due to less value of its factor loadings. The values of AVE are more than 0.50 which is acceptable (Hair et al., 2011).Table- 6 shows the values of the square root of the AVE and all these values are greater than the inter-construct correlations. In this way, the measurement model depicts a good construct validity and reliability.

Table: 5 Measurement model summaries

Construct	***Items***	***Factor loadings***	***AVE***	***CR***	***Cronbach's***
Eco-labels	GS	0.75	0.58	0.73	0.72
	GC	0.88			
	EPI	0.69			
Information Communication	GMP	0.79	0.63	0.77	0.69
	GF	0.81			
	EM	0.88			
Consumer Knowledge	ES	0.73	0.57	0.80	0.72
	RY	0.85			
	EP	0.43 (removed)			
Building Trust	QA	0.82	0.71	0.88	0.82
	SE	0.71			
	CH	0.49 (removed)			
Green purchase Intention	EB	0.90	0.61	0.82	0.78
	EA	0.77			
	CE	0.86			

Note: AVE stands for Average variance extracted and CR is for composite reliability.

Table: 6 Discriminant validity of latent construct

Note: (*) Diagonal values are the square root of AVE and all the others are correlations between constructs

Structural Model Analysis

Constructs	Eco-labels	Information communication	Consumer knowledge	Building trust	Green purchase intention
Eco-labels	**0.76***				
Information communication	.36	**0.79***			
Consumer knowledge	.18	.11	**0.75***		
Building trust	.09	.14	.16	**0.84***	
Green purchase Intention	.35	.48	.43	.31	**0.78***

To evaluate the proposed model in the study, the goodness of fit (GoF) index (Tenenhaus et al., 2005) has been deployed. The SmartPLS does not provide the model fit (Sarstedt et al., 2014). The GoF can be calculated with the following formulae:

$$GoF = \sqrt{\overline{AVE} X \overline{R^2}}$$

Here, the geometric mean of average AVE and the average of R^2 (for endogenous constructs) is considered for the calculation of GoF. The value of average AVE is found 0.62, and the average R^2 is 0.172. Therefore, the calculated value of GoF is 0.32 which shows a medium model fit for the study. According to the cut-off values of model fit proposed by Wetzels et al., (2009) for the assessment of model, GoF = 0.10 (small); GoF= 0.25 (medium) and GoF = 0.36 (large).

High multicollinearity can affect the results of the study. SmartPLS 3.0 has given the values of variance inflation factor (VIF), which is less than 5 and it shows that there are no multicollinearity issues in the study (Hair et al., 2011). The VIF for all the constructs has been reported in Table-7.

Main effects and path coefficients

Bootstrapping with 2000 subsamples has been a non-parametric procedure to find the values of path coefficients (β), t-statistics and associated significance level (p- values) for all the relationships in the study. The summary of the model has been reported in Table-7. Figure-2 shows the values of the coefficient and values of t. The path coefficient will be significant if the t-value = 1.96 or more at 95% level of confidence. The results of the study indicate that the eco-labels (β = 0.491; p<0.05) are significantly influencing the information communication. Information communication (β = 0.309; p<0.05) through eco-labels greatly influences the consumer knowledge. Communication of information through eco-labels (β = 0.144; p<0.05) significantly related to building the trust of the consumers. Knowledge of the consumer (β = 0.325; p<0.05) is also significantly associated with building the trust of the consumers. Whereas, building trust towards eco-labels (β = 0.454; p<0.05) influence the green purchase intention of the consumers. In this way, H1, H3, H4, H5, and H6 can be accepted. However, the eco-labels (β = −0.025; p>0.05) were not directly and significantly associated with the consumer knowledge. Hence, in this case, H2 cannot be accepted.

Table: 7 Structural model estimates

Path	Coefficient (β)	t-values	p-values	VIF	Results
H1:Eco-label → Information communication	0.491	13.424	0.000*	1.000	Accepted
H2:Eco-labels → Consumer knolwedge	−0.025	0.486	0.627	1.318	Not accepted
H3:Information communication → Consumer knowledge	0.309	5.616	0.000*	1.341	Accepted

H4: Information communication → Building trust	0.144	2.768	0.006*	1.042	Accepted
H5: Consumer knowledge → Building trust	0.325	7.280	0.000*	1.097	Accepted
H6: Building trust → Green purchase itention	0.454	14.684	0.000*	1.000	Accepted

Note: *p< 0.05; t > 1.96

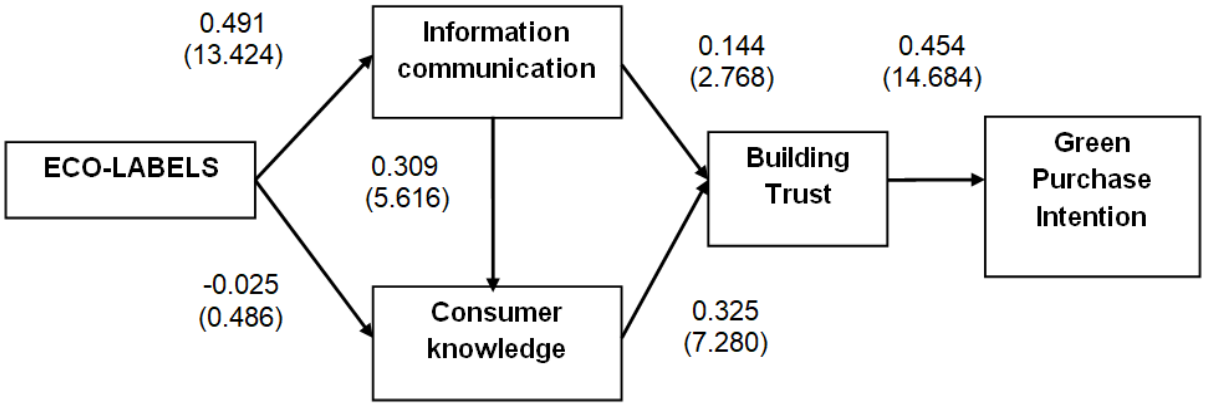

Fig. 2 The Structural Model (t values are in bracket with beta coefficient)

Discussion and Conclusion

The purpose of the study was to focus on the effectiveness of the eco-labels, as one of the significant tools in the green marketing practices. It was discussed in several studies, the eco-labels create confusion instead of giving appropriate information about the product. To reduce these doubts about eco-labels, this study presents a new model based on the previous studies. The model has been tested and found a separate school of thoughts in the eco-labeling concept among the Indian consumers. Eco-labels communicate information and that information leads to the knowledge of the consumer (Houston, 2012). The main purpose of the eco-labels is to provide information to the consumers to build their trust towards the green product (Bleda and Valente, 2009). The information provided by eco-label and knowledge of the consumer both helps in building trust of eco-labels products. This trust helps consumers in developing green purchase intention. It is also found in the study that eco-labels alone are not the responsible cause for influencing the knowledge of the consumer unless they give any information to the consumers. There are many eco-labels which give only visual representations and carry almost no written information. These kind of eco-labels certainly does not increase the knowledge of the consumers instead they create doubts. For example, if Indian consumers have to take a green buying decision merely watching an “Ecomark” labeled on the product which shows only an earthen pot. In this case a green buying decision only possible when the consumers have some previous information related to the “Ecomark.” not just by watching and making uncertain guesses. Visual

and verbal eco-labels (Tang et al., 2004) both are important, but for the visual eco-labels, there must be a good awareness among the consumers. In the present study, it is clear that the consumers are willing to make any green purchase decision only on the basis of three important factors that are information, consumer knowledge and trust on the eco-labeled product. Consumers who wish to buy a green product or eco-labeled product, they get confuse because of the lack of information and knowledge (Bratt et al., 2011). Sometimes it is more serious when they feel skeptic about the green products (Bruce and Laroiya, 2007), in this situation authentic eco-labels help them to make a good purchase decision. The information contained by the eco-labels gives an idea about the material used in the product and its suitability for the environment (Grolleau, 2007). The eco-information provided to the consumers cannot achieve its aim unless consumers notice, believe, understand and can use this information in their purchase decisions (Teisl et al., 2008). The effectiveness of eco-labels largely depends on its awareness among the consumers (Simi, 2009). In this study, many of the consumers when they surveyed had not heard about the term eco-label like in other studies (Berghoef and Dodds, 2011). But, they knew it when the authors explored its use and remind them some common eco-labels in the market such as Indian “Eco-mark” and other “Energy Star” labels (Proto et al., 2007).To make the eco-labels a successful program in the green marketing domain, it is important to make the people aware and educate (Simi, 2009). On the other hand, eco-labels and other certifications help in building trust among the consumers in the purchasing process. This study also makes it clear that the eco-labels help in building the trust of the consumers and that leads to the green purchase intentions.

In the last decade that the people are more concerned about the environment and hence there is a shift in the consumption pattern of the people. They started giving more preference to the ecological products (Carlsson et al., 2010). For instance, a consumer intended to buy organic-labeled tomato because of its organic attributes and his health consciousness (Dentoni et al., 2014). The eco-labels are the best way to communicate the environmentally conscious consumers (Brecard, 2014). But, it is also true that there is a need for a better understanding of consumer response to eco-labels (Vanclay et al., 2011). The level of awareness and reliability among the consumers need to be increased to uplift the effectiveness of eco-labels in the market. (Van Amstel et al., 2007). There are certain doubts related to the eco-labels such as consumers assume that eco-labels are costly affairs because certifications incur the cost and they have to repay it (Brecard, 2014). Therefore, these doubts should be overcome from the marketer’s side so that consumer can make a better decision about the product. There is also a need of government’s more active participation in making the eco-labeling a more transparent program to the consumers as this is directly connected to the environment and sustainability. Finally, the authors have provided a modified model i.e. Figure-3 in the study that is based on the results of hypothesized model shown in the Figure- 1. The relationship between eco-label and consumer knowledge were found insignificant and hence it is removed from the modified model.

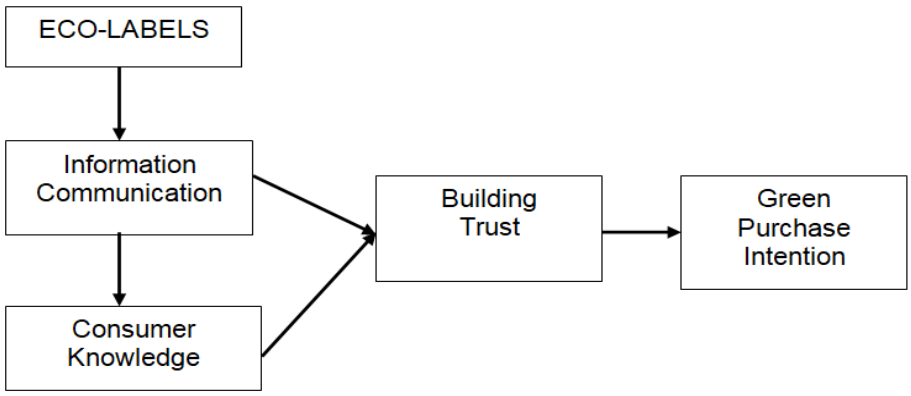

Fig: 3 The Modified Model

Limitations and future research directions

This research focuses on the important elements which are significant in the eco-labeling concept and that too in the Indian scenario. The purpose of the study was to verify empirically that the eco-labels are a useful tool in the green marketing area. Eco-labels are not just a blind mirror for consumers they mean a lot. This study also contains some limitations as every study. The study cannot be generalized in India with this sample size. The study has not been performed in any specific industry neither the respondent has been chosen on a categorical basis. Eco-labeling is a multidimensional research topic among the researchers in the current time (Prieto-Sandoval, 2016). Therefore in future research, this topic can be more explored with large sample size and with multiple locations. There can be some industry-specific study on eco-labels as electronics or fast moving consumer goods (FMCG), and comparative effects of eco-labeling in both the industries among Indian consumers can be seen.

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