



THE AFFECT OF CONSUMER'S ECO AWARENESS ON THE USE, THE BUYING AND THE PREFERENCE OF ECO LABELED FOOD PRODUCTS

Jasmina Žnidaršič

University of Maribor, Faculty of Organizational Sciences

Slovenia

jasmina.znidarsic@fov.uni-mb.si

Miha Marič

University of Maribor, Faculty of Organizational Sciences

Slovenia

miha.maric@fov.uni-mb.si

Marko Ferjan

University of Maribor, Faculty of Organizational Sciences

Slovenia

marko.ferjan@fov.uni-mb.si

Abstract

The scope of our study was to define how the consumer's awareness about the eco label on food products in Slovenia defines the use, the frequency of buying and the preference of eco labeled food products in stores. To define the consumer's awareness about the eco label we used the following predictors: care for personal health, quality perception, eco awareness, knowing what the eco label stands for and the trust in the eco label. The study was based on theoretical definitions of the concepts of eco labeling and consumer behavior. The research part of was done through a survey that gave us the data required to determine the extent of the dependence, which is done by the use of correlations and regression analysis. We have found positive correlations and statistically significant results.

Key Words: eco labeling, consumer behavior, bio, eco awareness, marketing

INTRODUCTION

Environmental concern is gaining political and economic importance worldwide. Issues such as global warming, pollution or resource depletion caused mainly by economic activity, which is of interest to only relatively minor groups, rank quite high among the concerns of the public at large, featuring with prominence in mainstream media and the political agenda. Indeed, a considerable number of environmental policies aimed to reduce the damaging effects of socio-economic activities on our natural ecosystems that have emerged in the last two decades (Bleda & Valente, 2009).

Sustainable development is becoming one of the biggest concerns in most of the developed countries. In light of increasing pressures to adopt a more sustainable approach to product design and manufacture, the requirement to develop sustainable products is one of the key challenges facing industry in the 21st century. Sustainable product development initiatives, mainly through eco-design or eco-labels, have been evolving to support companies in developing more sustainable products (Maxwell & van der Vorst, 2003). Eco labels have emerged as one of the main tools of green marketing. But although a great deal of effort has been invested in making them more effective and efficient, the market share of eco labeled products is still quite low, partly because they have been addressed mainly to 'green' consumers (Rex & Baumann, 2007). But nevertheless, consumers' ecological consciousness is growing.

The aim of the study is to present, explore and outline the relationship between consumer's awareness about the eco label on food products and the use, the frequency of buying and the preference of eco labeled food products in stores.

The paper is organized in four parts. The introduction is followed by the theoretical background of explanation of eco-label, consumer behavior and relationship between both. After that comes the description of the methodology used for the contribution followed by the discussion referring to the results of our study and the conclusion. The last part is the list of references we used.

THEORETICAL BACKGROUND

Eco label

Environmental concern is growing also among consumers and their purchase behavior; therefore the environmental characteristics of products have become more and more important. Companies have responded to this by introducing eco-designs and eco-labeling programs to highlight the environmental attributes of the item. Governments and nongovernmental organizations have responded by organizing, implementing, and verifying eco-labeling programs. Recently, interest in eco labels has been extensive. Many studies examined correlations between attitudes (in a general sense) and the environmentally-friendly behavior of choosing eco-labeled, or organic, products. Academically, much effort has been invested in their design and use.

The environmental attributes of products can be either private or public and the proportion of each type varies across products. Private environmental attributes may be lower energy consumption, less pesticide residues or longer durability. Public environmental attributes may be lower emissions of greenhouse gases or chemicals harming the ozone layer (Grolleau et al., 2009).

During the last two decades the environmental performance of products has gained increased political attention and has resulted in restrictions of certain substances, mandated deposit refund systems, advance disposal fees, environmental surcharges, voluntary agreements and, in particular, the introduction of informative instruments (Leire & Thidell, 2005). Most developed countries and several transitional economies have introduced eco-labeling schemes in their policy arsenal (Grolleau et al., 2009). From a policy perspective, one aim of eco-labels is to educate consumers about the environmental impacts of the product's manufacture, use, and disposal, thereby leading to a change in purchasing behavior and ultimately, to a reduction in negative impacts. Further, eco-labeling policies may promote environmental objectives without production site command and control methods and are seen as a way of meeting global environmental objectives while complying with international trade agreements (Teisl et al., 2002).

In addition to governmental schemes, private initiatives have proliferated worldwide to distinguish products on the basis of their environmental qualities (Grolleau et al., 2009). Eco-labeling schemes, since their introduction in policy making in the late 70s have gained more and more relevance becoming one of the more high-profile market-based tools for the achievement of environmental objectives. Eco-labeling schemes are particular cases of product information policy instruments. They are seals of environmental approval – awarded by public or private organizations which provide information to consumers (Bleda & Valente, 2009).

The eco-labels are an instrument used by firms and governments in order to raise awareness of the higher ecological quality of a given product with respect to unlabeled goods. Since the environmental consequences of the production and the consumption of a product are generally unobservable, the eco-label is the only way for consumers to collect such information (Brécard et al., 2009). Eco-labels signal that the product, with regard to environmental consequences, is superior to a non-labeled product (Grankvist & Biel, 2007). Further, eco-labels are intended as a means for consumers to make choices that will reduce environmental impact and enable them to influence how products are made (Rex & Baumann, 2007). Getting eco-label requires analyzing a product according to rules expressed in natural language which may be difficult to interpret but also to apply when the product is complex (Houe & Grabot, 2009).

There are various forms of eco-labels, including both mandatory and voluntary labels (Rex & Baumann, 2007). Houe and Grabot (2009) notice that eco-labels may have a double focus: first on ranges of products and second on a given geographic area (country, group of countries, continent). The use of eco-labels to tackle environmental issues is mainly based on two assumptions. Firstly, it is assumed that a given good may be produced in varied ways and that these ways differ among them in terms of their environmental impact. Secondly, it is necessary to assume that cleaner production methods are more expensive, or require a reduction in attributes of the product that are appreciated by consumers in a more immediate way (Bleda & Valente, 2009).

The license to use the eco label is quite often limited to a relatively short period of time. What is most important, however, is the fact that the criteria for eco labeling rights are revised, i.e. tightened, on average every 3 or 4 years. This feature of eco labeling systems implies that any firm, wishing to provide high enough environmental quality to secure an eco label, is forced to make investments to improve quality (and to reduce the costs of quality production) (Amacher et al., 2004).

Generalizing from eco-labels in the food industry can lead to erroneous conclusions, since consumers sometimes make confusion between eco-labels and bio products, considered as

healthier than common ones. Regarding to eco-labels it is often mention also the eco-design concept, also known as Design For Environment—DFE (ISO 14062), which aims at providing methods allowing the minimization of the environmental impact of a product during its lifecycle (Houe & Grabot, 2009).

Researchers into eco labeling have focused on making environmental labels more effective as communication instruments to advance green products and efficient as a means of giving information to be taken into account in the purchasing situation. Today's eco labels are primarily positive: the label signals that the product is to be preferred to a non-labeled product (Rex & Baumann, 2007, Grankvist & Biel, 2007). Sammer and Wüstenhagen (2005) argue that is eco-labeling an important tool to overcome market failure due to information asymmetries for environmental products. The trustworthiness or reliability of an eco-label means that the standards of an eco-label are clear, that producers comply with these standards during the production process and that there is an ecological impact on the environment (van Amstel et al., 2008).

Although a great deal of effort has been put into making eco-labeling schemes more effective and efficient, actual sales of eco-labeled products have remained at moderate levels (Rex & Baumann, 2007). For eco-labeling initiatives to meet with success not only must consumers hold preferences for environmentally preferred products, they also must be able to comprehend the information being presented and be willing to pay a premium for these products. Thus, the success of labeling programs may be contingent upon the characteristics of the consumer as individuals with varying personal characteristics, such as environmental perceptions and social norms, face eco-labeled products in the market (Noblet et al., 2006).

Consumer behavior

Consumers make numerous product decisions every day. Consumers usually gather information before purchasing products. They may search for a favorable price among different stores or brands, examine product quality, try out new products or brands, or investigate payment conditions (Oliveira-Castro, 2003). This decision-making process depends on the information processing style employed (Zinkhana & Braunsberger, 2004). A consumer often bases his or her decision on the basis of the perceived values of the product (Bleda & Valente, 2009).

Consumer behavior analysis combines theories and findings from marketing science, consumer research, and behavior analysis/behavioral economics (Foxall, 2003). The neoclassical theory of consumer behavior makes strong assumptions about the informational and computational bases of consumer behavior. The core assumption is that consumer behavior is reasonably characterized as the maximization of expected lifetime utility subject to a budget constraint and conditional on the available information (Graham & Isaac, 2002). Further, psychologists and economics also ascribe rationality to the consumer. Both generally assume that the consumer knows what he or she wants, and is capable of obtaining, processing and using the information required to make sensible choices in light of his or her objectives. Choice itself has been viewed as a cognitive activity (Foxall, 2003). The common microeconomic analysis of consumer choices rests on a utility function that translates consumer preferences among different baskets of goods. The utility level of a consumer then depends on the level of each good's characteristic (Brécard et al., 2009). On the other hand, Oliveira-Castro (2003) argues that consumer behavior is not always optimal as described by traditional economic theory.

Baumgartner and Steenkamp (1996) argue that consumers derive mostly sensory stimulation from the examining acquisition of products, whereas examining information

seeking satisfies their cognitive stimulation needs. Their framework for conceptualizing examining consumer buying behavior suggests that seemingly dissimilar behaviors such as risk taking, innovativeness, and variety seeking in product purchase and curiosity-motivated search for information share a common characteristic in that they offer the potential for stimulating experiences and are motivated, at least in part, by a desire to adjust actual stimulation to the most preferred level.

Fischer and Hanley (2007) distinguish between extensive and limited consumer decision. Extensive decisions are characterized by relatively strong emotional involvement and a strong demand for additional information. Consumers decide extensively when the choice of an appropriate product appears important to them and when they have no experience of purchasing such an item. In such cases, they invest time and money making a sound decision based on their newly acquired knowledge and their subjective valuation. Limited decisions, on the other hand, require less new information, because the consumer has typically gained some prior experience concerning the purchase of this good and is able to decide on the basis of existing data.

Labeling has an important influence on consumer behavior. It decreases the search cost for the information and may signal the importance of the environmental or other information. Hence, labeling may affect behavior by influencing the number of attributes that a consumer considers during a choice occasion. Furthermore, labeling may affect the implicit weights that consumers assign to each attribute (Teisl et al., 2002). Brands and labels fulfill two main functions for consumers: they inform them about intangible product characteristics (information function, e.g. quality) and provide a value in themselves (value function, e.g. prestige) (Sammer & Wüstenhagen, 2005). Consumers, for example do not have time or competence for directly accessing to what extend a product is respectful of the environment (Houe & Grabot, 2009). Therefore, simple information carriers, such as eco-labels, seem to be desired by most consumers and are sufficient for decision-making (Leire & Thidell, 2005).

Eco label and consumer behavior

Characteristic of the green consumers is the area that attracted a great deal of interest early on. Surveys aimed either at identifying the typical demographic qualities, such as gender or age, or psychographic characteristics such as political orientation and environmental concerns to identify the green consumer. Also, environmental labels the area that gains a lot of attention, particularly among psychologists who are curious about the psychological determinants for the choice or non-choice of eco labeled products (Rex & Baumann, 2007). Several sociological studies on the changes of behaviors towards environmentally friendlier ways have demonstrated that individuals are not just taking in new information or environmentally oriented advice as such, and then behaving accordingly (Bartiaux, 2008).

Many researchers have studied consumers' eco-awareness and their behavior in case of purchasing eco-labeled products. Ecological consciousness is on one hand explained by a certain degree of altruism and on the other hand, results in willingness-to-pay more for a green product than for a standard one, and both economic and informational constraints (Brécard et al., 2009). Consumers pay significant price premiums for organic foods, for "green electricity", for shade-grown and fair-trade coffee, and for various environmental attributes such as sustainable, recycled, non-toxic, biodegradable, and cruelty-free. One reason why consumers buy environmentally-friendly versions of products instead of cheaper, but otherwise equivalent versions is that consuming products that contain environmental attributes is gratifying. Consumers prefer environmental attributes in their products much like they prefer any other desirable product quality attribute in market goods (Hamilton & Zilberman, 2006).

Houe and Grabot (2009) argue that individual's awareness about importance of environmental protection has now reached the point where more expensive but environment-friendly products can be preferred to cheaper "common" products. Consumer preference to purchase from "green" firms is well established and often revealed through increased willingness to pay for products viewed as "clean," i.e., produced with environmentally friendly production or abatement technologies such as recycling and use of less polluting inputs (Amacher et al., 2004). Cornelissen et al. (2008) argue that positive cueing successfully increased the level of the participants' environmental behavior. Participants in the high frequency condition indicated a larger preference for a more expensive, but environmentally friendly, variant of a common product in the simulated shop environment, and more often chose the less attractive but recycled notepad that they were offered.

A number of reports conclude that consumers tend to overemphasize their purchases of eco-labeled products, which implies a limited consumer behavior change. Positive information guides consumers by pointing out the environmentally preferable products among otherwise equal ones, while neutral information gives the consumer an opportunity to judge the products' environmental performance according to their individual priorities. The assumption is that product-related environmental information, in combination with preconditions such as environmental awareness, knowledge and attitudes, will lead consumers to make informed choices when purchasing products (Leire & Thidell, 2005).

Results of Grankvist' and Biel's (2007) study indicates consumers' general tendency towards a more frequent choice of eco-labeled food products. They point out the idea that a positive general attitude towards environmentally-friendly behavior might be necessary, but no sufficient to change behavior. Leire and Thidell (2005) believe that it is valuable to examine the role of guidance from sales personnel in order to stimulate the use of the eco-labels and to influence actual consumer behavior.

In order for eco-labels to achieve policy objectives, consumers must hold preferences for certain environmental amenities and respond to the information presented on eco-labels by altering purchases toward eco-labeled goods. Their widespread use suggests that eco-labeling is perceived as an effective method of altering consumer behavior. However, few studies have attempted to identify the behavioral effectiveness of eco-labeling programs (Teisl et al., 2002). In addition to changes in consumer behavior the presence of eco-labeling may alter manufacturer behavior. That is, if a significant portion of the consumer population demands environmentally friendly products, the presence of an eco-labeling program may provide firms an incentive to differentiate and market their products along an environmental characteristic(s). An increase in supply of these environmentally friendly products may increase consumer purchases simply through greater availability without changes in individual awareness (Teisl et al., 2002).

METHODOLOGY

Hypotheses

Below we will explore the influence of consumer's awareness about the eco label on food products in Slovenia with respect to the use, the frequency of buying and the preference of eco labeled food products in stores. To define the consumer's awareness about the eco label we used the following predictors: care for personal health, quality perception, eco awareness, knowing what the eco label stands for and the trust in the eco label. That brings us to our three hypotheses.

The eco-labels are an instrument used in order to increase awareness of the higher ecological quality of a product compared to unlabeled goods. The eco-label is the only way for consumers to collect such information (Brécard et al., 2009). The use of eco-labels is mainly based on the assumption that a given good may be produced in varied ways and that these ways differ among them in terms of their environmental impact, and secondly, on assumption that cleaner production methods are more expensive, or require a reduction in attributes of the product that are appreciated by consumers (Bleda & Valente, 2009). Eco-labels are intended as means for consumers to make choices that will reduce environmental impact and enable them to influence how products are made (Rex & Baumann, 2007).

H1: The use of eco labeled food products in stores is positively affected by the perceptions of consumer's awareness about the eco label on food products.

Eco label information guides consumers by pointing out the environmentally preferable products among otherwise equal ones, while neutral information gives the consumer an opportunity to judge the products' environmental performance according to their individual priorities (Leire & Thidell, 2005). Consumer preference to purchase from "green" firms is well established and often revealed through increased willingness to pay for products viewed as "clean," i.e., produced with environmentally friendly production or abatement technologies such as recycling and use of less polluting inputs (Amacher et al., 2004).

H2: The frequency of buying of eco labeled food products in stores is positively affected by the perceptions of consumer's awareness about the eco label on food products.

The individual's awareness about importance of environmental protection has now reached the point where more expensive but environment-friendly products can be preferred to cheaper "common" products (Houe & Grabot, 2009) argue that. Consumers prefer environmental attributes in their products much like they prefer any other desirable product quality attribute in market goods (Hamilton & Zilberman, 2006).

H3: The preference of eco labeled food products in stores is positively affected by the perceptions of consumer's awareness about the eco label on food products.

Instrument and Variables

Participants in this study were selected randomly and participation was voluntary. The questionnaire was pre-prepared and given to interviewers whose assignment was to randomly select respondents and bring back the filled out questionnaires. The study was conducted in April 2010. A total of 631 complete responses were obtained.

The questionnaire was of a closed type and contained 2 questions (A and B) referring to the data on the respondents and 8 questions (C to J) referring to the respondent's awareness about the eco label on food products in Slovenia, the use, the frequency of buying and the preference of eco labeled food products in stores. Respondent's perceptions were measured on a scale ranging from 1 to 5 where: 1 – always false; 2 – mostly false; 3 – nor true, nor false; 4 – mostly true; 5 – always true.

1. General data
 - A. Age (individuals were asked about their age)
 - B. Gender (individuals were asked about their gender)
2. Eco labeled food products
 - C. The use of eco labeled food products
 - D. The frequency of buying of eco labeled food products in stores
 - E. The preference of eco labeled food products in stores
3. Consumer's awareness about the eco label
 - F. Care for personal health
 - G. Quality perception
 - H. Eco awareness
 - I. Knowing what the eco label stands for
 - J. The trust in the eco label

Sample

The sample consisted of 287 men and 344 women (n=631). The age range of the respondents was between 15 and 82 years. The average age of the respondents was 29.54 years.

For questions C to J we calculated the Cronbach's alpha coefficient. The value calculated is 0.808, which indicates great reliability of measurement. With regard to the composition and characteristics of the sample, we believe that it is representative.

Results

We begin by constructing the frequency tables for the variables that we have used in our research.

Table 1: Frequency tables for the variables

	n=631		Mean	Median	Std. Dev.	Min	Max
	Valid	Missing					
Eco labeled food products							
C	631	0	3.82	4	0.820	1	5
D	631	0	3.97	4	0.816	1	5
E	631	0	3.55	4	0.926	1	5
Consumer's awareness about the eco label							
F	631	0	4.11	4	0.862	1	5
G	631	0	3.23	3	1.021	1	5
H	631	0	2.95	3	0.992	1	5
I	631	0	2.69	3	1.073	1	5
J	631	0	3.57	4	1.133	1	5

Table 2: Pearson r Correlation Coefficients (n=631)

	C	D	E	F	G	H	I
D	,562**						
E	,426**	,473**					
F	,220**	,315**	,449**				
G	,252**	,210**	,330**	,361**			
H	,266**	,272**	,417**	,329**	,448**		
I	,301**	,287**	,415**	,276**	,495**	,764**	
J	,294**	,270**	,384**	,343**	,289**	,395**	,418**

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

We can see in Table 2 that there are positive correlations between all of the variables and they are also all statistically significant at the 0.01 level (2-tailed). All the variables were measured on an increasing scale.

Table 3: Regression Analysis for the Dependent Variable "The use of eco labeled food products" and independent variables representing "Consumer's awareness about the eco label" (n=631)

$R=0.541$; $R^2=0.292$; $\Delta R^2=0.287$

Predicators	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.244	.215		1.133	.257
Care for personal health	.051	.051	.042	1.005	.315
Quality perception	.053	.053	.044	1.014	.311
Eco awareness	.251	.045	.234	5.530	.000
Knowing what the eco label stands for	.099	.045	.086	2.185	.029
The trust in the eco label	.311	.036	.320	8.607	.000

Dependent Variable: The use of eco labeled food products.

With the predictors that we have used to describe "Consumer's awareness about the eco label" 28.7% variance of the variable "The use of eco labeled food products" is explained. "The trust in the eco label" ($\beta=0.320$) has the most influence.

Table 4: Regression Analysis for the Dependent Variable "The frequency of buying of eco labeled food products in stores" and independent variables representing "Consumer's awareness about the eco label" (n=631)

R=0.571; R²=0.326; Δ R²=0.321

Predicators	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.227	.227		-1.000	.318
Care for personal health	.097	.054	.074	1.801	.072
Quality perception	.073	.055	.056	1.321	.187
Eco awareness	.265	.048	.229	5.532	.000
Knowing what the eco label stands for	-.001	.048	-.001	-.020	.984
The trust in the eco label	.410	.038	.390	10.757	.000

Dependent Variable: The frequency of buying of eco labeled food products in stores.

With the predictors that we have used to describe "Consumer's awareness about the eco label" 32.1% variance of the variable "The frequency of buying of eco labeled food products in stores" is explained. "The trust in the eco label" ($\beta=0.390$) has the most influence.

Table 5: Regression Analysis for the Dependent Variable "The preference of eco labeled food products in stores" and independent variables representing "Consumer's awareness about the eco label" (n=631)

R=0.464; R²=0.216; Δ R²=0.209

Predicators	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.518	.259		2.003	.046
Care for personal health	.173	.061	.126	2.838	.005
Quality perception	.034	.063	.025	.543	.587
Eco awareness	.244	.055	.200	4.482	.000
Knowing what the eco label stands for	.228	.054	.173	4.198	.000
The trust in the eco label	.138	.043	.124	3.171	.002

Dependent Variable: The preference of eco labeled food products in stores.

With the predictors that we have used to describe "Consumer's awareness about the eco label" 20.9% variance of the variable "The preference of eco labeled food products in stores" is explained. "Eco awareness" ($\beta=0.200$) has the most influence.

Discussion

Our research confirmed the H1 hypothesis that the variables representing consumer's awareness about the eco label have a positive effect on the variable representing the use of eco labeled food products. 28.7% variance of the variable "The use of eco labeled food products" is explained using the predictors to describe constructing "Consumer's awareness about the eco label".

Research also confirmed the H2 hypothesis that the variables representing consumer's awareness about the eco label have a positive effect on the variable representing the frequency of buying of eco labeled food products in stores. 32.1% variance of the variable "The frequency of buying of eco labeled food products in stores" is explained using the predictors constructing "Consumer's awareness about the eco label".

And we have also confirmed the H3 hypothesis that the variables representing consumer's awareness about the eco label have a positive effect on the variable representing the preference of eco labeled food products in stores. 20.9% variance of the variable "The preference of eco labeled food products in stores" is explained using the predictors constructing "Consumer's awareness about the eco label".

Several limitations of this study need to be considered before interpretations of the results can be explored. First; the discussed findings and implications were obtained from a single study; generalizing the results should be done with caution. Second; the whole research was focused mostly on how consumer's awareness about the eco label affects one's use, buying and preference of eco labeled food products.

We have had that in mind already in the beginning when we were defining the goal of the study so that it is relatively simple with a concept that is influenced by many other variables that are not included in this study.

Another very important point to add here is that the respondents answered the questionnaire the way that they evaluate themselves. When answering questions people often answer the way that they suppose that their surroundings would find as appropriate, which is not always truthful. However, in this case using this method of open random survey we have to be aware of this but still allow the potential affect of it on our study results.

For future research we suggest to researcher to use a combination of open random surveys with closed surveys on samples combined with the use of qualitative research where data on other predictors not included in this study could be noticed and observed.

CONCLUSION

People all around the world are becoming more and more eco conscious which means that we as consumers find the environmental characteristics of products to be more and more important. That is especially the fact in food products which is why in respond to this the companies that produce food label them with "eco" or "bio".

Consumer's decision-making process depends on the information processing style employed. In order for eco-labels to achieve policy objectives, consumers must hold preferences for certain environmental amenities and respond to the information presented on eco-labels by altering purchases toward eco-labeled goods.

This study provides basic insights into the connection between consumer's awareness about the eco label on food products on the use, the frequency of buying and the preference of eco labeled food products in stores and it can be summarized as follows: consumer's awareness about the eco label on food products is an important part in understanding why consumers use, how frequently they buy and if they prefer eco labeled food products in stores as we have concluded based on our research.

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