

DO ECOLABELS AFFECT CONSUMER BEHAVIOUR? EVIDENCE FROM THE AGRIFOOD SECTOR

Domenico Morrone*, Margaret Antonicelli*, Donato Calace*, Angeloantonio Russo*, Vincenzo Vastola*

*Lum Jean Monnet University, Department of Management, S.S. 100 Km. 18, 70010 Casamassima (Ba), Italy, e-mail corresponding author: morrone@lum.it

Abstract

The effort to design and implement sustainable development paths is clear and concrete in different sectors of the productive system. Many companies have decided to re-project their value proposition in a green way, considering the new environmental, social and economic concerns. However, this is not a simple evolution, since it needs a deep change in strategic and operative contexts. One evidence can be the adoption of specific standards, not obliged by law. Standards that demonstrate, for example, the voluntary application of processes for a reduced environmental impact, preserving the ecosystem. A very important sector, considering not only the economic perspective, is the agribusiness. The production of food is always under a deep analysis since it is correlated with very sensitive issues such as human health and well-being. This study focuses on ecolabels in agrifood, through an empirical analysis. In the last decades, there has been an exponential increase of these labels in general and it generated confusion among consumers but also more information. Anyway, it is possible to affirm that there is a well-known group of ecolabels. The present investigation aims to demonstrate a positive correlation between their presence and consumer behaviour.

Key words: sustainability, consumer, ecolabel, agrifood

INTRODUCTION

Over the last decades, it is possible to register a constant and continuous evolution of the identity of companies. From the first half of the last century there is a clear attempt to assign a role not only economic to business activity. Proponents of this idea are well known authors as Barnard C. (1938), Simon H. (1945) and Bowen H. (1953), considered one of the fathers of the so-called Corporate Social Responsibility (CSR). CSR became recently a paradigm incorporated in public policies too, since it is possible to read an official definition by European Commission. Therefore, CSR can be one of the key factors of this global change (Vastola et al., 2016), considering that it has also a positive impact on consumer trust (Pivato et al., 2008; Russo et al., 2015). Marketing, with green evolution (Calace et al., 2014; Polonsky, 1994), gave another important contribution in projecting and delivering new value propositions based on environmental features. Actually it is widening accepted the model of sustainable development (Brundtland, 1987), that has to reach environmental, economic and social objectives (Elkington, 1997).

Considering all productive sectors and specifically the agrifood, one of the best evidence of a sustainability choice is the adoption of voluntary actions, to improve products and services with higher quality standards. These standards can be summarized in the ecolabels.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The presence of ecolabels on agrifood products means a concrete work to offer better features from different points of view, since they are also an answer to an increased interest in product details (Zepeda et al., 2013). Ecolabels could be referred, for example, to environmental, ethical, social, economic or other aspects too, following different schemes in the macro view of sustainability. They can be grouped into three types, adopting the indications of International Standard Organizations (ISO). Type 1 is voluntary, multiple-criteria-based, third-party program that awards a license that authorizes the use of environmental labels on products indicating overall environmental preference of a product within a particular product category based on life cycle. Type 2 is informative environmental self-declaration claims. Type 3 are voluntary programs that provide quantified environmental data of a product, under pre-set categories of parameters set by a qualified third party and based on lifecycle assessment, and verified by that or another qualified third party. The growing number of ecolabels in recent years has generated both information (Vermeir and Verbeke, 2006; Pirotte, 2007; Padel et al., 2010; Zander and Hamm, 2010) and confusion (Hoogland et al., 2007; Gadema and Oglethorpe, 2011) among consumers. However, consumers may also expect to benefit from third-party certification systems (Hatanaka et al., 2005; Schena et al., 2015). The present work is focused on three of the most popular ecolabels, “organic farming¹”, “fair trade²” and “rainforest alliance³”.

¹ Put simply, organic farming is an agricultural system that seeks to provide you, the consumer, with fresh, tasty and authentic food while respecting natural life-cycle systems” (source: European Commission - http://ec.europa.eu/agriculture/organic/organic-farming/what-is-organic-farming_en).

² Fairtrade is an alternative approach to conventional trade and is based on a partnership between producers and consumers. When farmers can sell on Fairtrade terms, it provides them with a better deal and improved terms of trade. This allows them the opportunity to improve their lives and plan for their future. Fairtrade offers consumers a powerful way to reduce poverty through their every day shopping” (source: Fairtrade Labelling Organizations International - <http://www.fairtrade.net/about-fairtrade/what-is-fairtrade.html>).

³ The Rainforest Alliance is a growing network of people who are inspired and committed to working together to achieve our mission of conserving biodiversity and ensuring sustainable livelihoods. Through creative, pragmatic collaboration, we aim to rebalance the

The hypothesis of this work is:

Hypothesis 1: Consumers do reveal a positive behaviour towards most popular eco-labels

MATERIAL AND METHOD

1. Data

This research is based on data deriving from a questionnaire, adopting a random sampling. The questionnaire has been composed after a pre-test performed on 120 persons (60 women and 60 men), in order to avoid misinterpretation or unclear questions.

Therefore, a cross-sectional survey has been realized and, considering the absence of anomalies during the pre-test phase, the questionnaire has been handed out to a sample of no less than 2,000 units, on the entire Italian territory.

The final work can be the result of four steps, during both the pre-test phase and the subsequent:

1. preparatory phase: review and integration of the literature concerning ecolabels
2. administration of the questionnaire;
3. tabulation data and model building: econometric analysis and subsequent economic analysis of the data collected;
4. analysis of the model obtained: formalization of the reference positive model - theoretical and practical.

The main topics analysed are focused on knowledge of the selected ecolabels and the propensity to purchase food products marked with them.

Following the aim of this work, exogenous factors have been considered to observe their influence on purchase behaviour.

2. Method

The research is focused on three econometric models. The independent variables are fixed while the dependent variables are respectively:

1. the purchase behaviour related to the “organic farming” eco-label;
2. the purchase behaviour related to the “fair trade” eco-label;
3. the purchase behaviour related to the “rainforest” eco-label.

The first step is the analysis of the correlation index, to observe the existing links among the different variables took into consideration.

planet by building strong forests and healthy communities around the world” (source: Rainforest Alliance - <http://www.rainforest-alliance.org/about>).

In particular, observing the results regarding to direct and indirect linear correlation, in all three models there are some remarkable values. Considering the high values exposed in the correlation index, it has been necessary to make the test about the variance inflation factor (VIF).

The results are summarized as follows, excluding the dependent variable (that is not included into the test):

Table 1

Results of multicollinearity test

	Organic farming	Fair trade	Rainforest alliance
Gender	1.315	1.326	1.382
Age	3.669	3.917	3.699
Education	2.898	2.889	2.855
Job	5.101	4.564	4.621
Housing unit	1.476	1.503	1.523
Children less than 5 years old	2.123	2.301	2.169
Income	1.451	1.669	1.519
Level of food information	1.359	1.287	1.335
Knowledge related to ecolabel symbols	1.386	1.759	1.529

The values presented above express that there are no multicollinearity problems.

The following step is the building and the elaboration of the regression model.

In this case, there is a linear probability model, and in particular a probit regression with multiple regressors.

The dependent variables are the purchase behaviours related to the “organic farming”, the “fair trade” and the “rainforest alliance” eco-labels, expressed as a percentage.

The independent variables are: gender, age, education, job, housing unit (the total number of persons residing in the same house), presence of children with age less than 5 years (dummy variable), income, food information (about product and its features) and knowledge related to ecolabel symbols.

Therefore, the models are presented in the following table 2.

The hypothesis of this research (a positive behaviour is associated with most popular eco-labels) is verified in all three models, observing the “knowledge related to ecolabel symbols”, with the following results:

- Organic farming: $r = 2.006$, $p < 0.1$;
- Fair trade: $r = 0.756$, $p < 0.05$;
- Rainforest alliance: $r = 0.079$, $p < 0.1$.

Table 2

	Probit models					
	Organic farming		Fair trade		Rainforest alliance	
	<i>Coef.</i>	<i>P-Value</i>	<i>Coef.</i>	<i>P-Value</i>	<i>Coef.</i>	<i>P-Value</i>
Const	5.001	0.037**	2.004	0.063*	0.543	0.174
Gender	−1.319	0.007***	0.505	0.054*	0.101	0.089*
Age	0.207	0.048**	0.116	0.081*	0.022	0.095*
Education	0.896	0.019**	0.225	0.046**	−0.074	0.085*
Job	2.107	0.041**	1.134	0.039**	1.286	0.059*
Housing unit	1.003	0.092*	0.109	0.116	0.274	0.106
Presence of children with age less than 5 years	2.056	0.002***	−0.785	0.079*	−1.754	0.067*
Income	0.058	0.029**	0.673	0.039**	0.607	0.048**
Food information	1.027	0.038**	0.406	0.103	0.175	0.086*
Knowledge related to ecolabel symbols	2.006	0.024**	0.756	0.045**	0.079	0.093*

N = 2,000

RESULTS AND DISCUSSION

Surely there is a wide literature related to the large number of ecolabels currently existing on food production. This last element is often considered as a real obstacle in the acceptance of these new standards, since it could produce a general confusion among consumers.

However, good information can create a different and virtuous process of understanding and acceptance of ecolabels.

It suggests that in this framework it is not impossible to improve the consumer behaviour. The three ecolabels analysed in this work are a concrete examples. “Organic farming” is sure the best accepted ecolabels with the higher preference and it is also confirmed from the growing supply of food with these “brand”. An important aspect is also that organic farming is preferred by female gender, while male gender is more attracted by fair trade and rainforest alliance, paying more attention to social and ethical features.

There is a positive effect between education and the purchase behaviour related to “organic farming” and “fair trade” products. Regarding to this last aspect there is no significant evidence with “rainforest alliance” products. Moreover, an important finding is, about “organic farming” products, the positive effect played by the presence, in the family context, of children with age less than 5 years.

Ultimately, it is possible to affirm that, generally, the propensity to buy, considering the three selected ecolabel, is higher for products coming from organic farming, confirmed by the pseudo R² value that is 0.48, compared with 0.36 and 0.29 respectively of "fair trade" and "rainforest alliance" products labelled.

This research is a concrete evidence of the presence and the importance of food products marked with ecolabels. Surely not all ecolabels can register the same effects on consumer behaviour but, considering the three ecolabel of this research, the results are positive. The approach can be different, following the different meanings of these last, but there is, overall, an interesting trend to observe.

CONCLUSIONS

The very remarkable conclusion of this work is related to the growing importance that an ecolabel can play in the composition of a value proposition.

This research specifically analysed food products, considering ecolabels with different features, from technical aspects to social and ethical instances. This could be really, from a strategic point of view, a chance for a better differentiation. Actually is more evident an increased attention of consumers to sustainability issues and it is necessary to express real solutions.

Even if in the last decades it is possible to register a continuous development of ecolabels, often creating disorientation, they are good tools to re-think the entire food productions, generating new and stronger relationships with customers and stakeholders too.

The next step of this work could be to research the value that these eco-labels are reaching, becoming true "brands".

REFERENCES

1. Barnard C. I., 1938, *The Functions of the Executive*. Cambridge, Harvard University Press.
2. Bowen H. R., 1953, *Social responsibilities of the businessman*, New York. Harper & Row.
3. Brundtland G. H., 1987, *Our common future: Report of the 1987 World Commission on Environment and Development*. United Nations, Oslo, 1-59.
4. Calace D., Morrone D., Russo A., 2014. Corporate sustainability, green marketing and reporting: where are we going? *Annals of the University of Oradea*, 59-68.
5. Elkington J., 1997, *Cannibals with forks. The triple bottom line of 21st century*.
6. European commission, 2011, *A renewed EU strategy 2011-14 for Corporate Social Responsibility*. Brussels.

7. Gadema Z., Oglethorpe D., 2011, The use and usefulness of carbon labelling food: a policy perspective from a survey of UK supermarket shoppers. *Food Policy*, 36, 815–822.
8. Galarraga Gallastegui I., 2002, The use of eco- labels: a review of the literature. *European Environment*, 12(6), 316-331.
9. Hatanaka M., Bain C., Busch L., 2005, Third-party certification in the global agrifood system. *Food policy*, 30(3), 354-369.
10. Hoogland C. T., de Boer J., Boersema J. J., 2007, Food and sustainability: do consumers recognize, understand and value on-package information on production standards? *Appetite*, 49, 47–57.
11. Padel S., Zander K., Gossinger K., 2010, Regional Production and ‘Fairness’ in Organic Farming: Evidence from A CORE Organic Project. Proceedings of the 9th European International Farming Systems Association Vienna. Austria, 4–7 July 2010. [WWW document]. URL http://ifsa.boku.ac.at/cms/fileadmin/Proceeding2010/2010_WS4.3_Padel.pdf (accessed on 4 July 2013).
12. Pirotte G., 2007, Consumption as a Solidarity-based Commitment, The Case of Oxfam Wordshops’ Customers (ed. by E. Zaccai). Routledge, London.
13. Pivato S., Misani N., Tencati A., 2008, The impact of corporate social responsibility on consumer trust: the case of organic food. *Business ethics: A European review*, 17(1), 3-12.
14. Polonsky M. J., 1994, An introduction to green marketing. *Electronic Green Journal*, 1(2).
15. Russo A., Morrone D., Calace D., 2015. The Green Side of the Automotive Industry: A Consumer-Based Analysis. *Journal of Marketing Development and Competitiveness*, 9(2), 59.
16. Schena R., Netti G., Russo A., 2015. Consumers’ Behavior toward Green Products: A Signalling Theory Approach. *International Journal of Business Administration*, 6(6), 44.
17. Simon H.A., 1945, *Administrative Behavior*. New York, Free Press.
18. Vastola V., Russo A., Vurro C., 2016, Dealing with Cultural Differences in Environmental Management: Exploring the CEP-CFP Relationship, *Ecological Economics*, Available online 15 November 2016, ISSN 0921-8009, <http://dx.doi.org/10.1016/j.ecolecon.2016.11.006>.
19. Vermeir I., Verbeke W., 2006, Sustainable food consumption: exploring the consumer ‘attitude-behavioural intention’ gap. *Journal of Agricultural and Environmental Ethics*, 19, 169–194.
20. Zander K., Hamm U., 2010, Consumer preferences for additional ethical attributes for organic food. *Food Quality and Preference*, 21, 495–503.
21. Zepeda L., Sirieix L., Pizarro A., Corderre F., Rodier F., 2013, A conceptual framework for analyzing consumers' food label preferences: An exploratory study of sustainability labels in France, Quebec, Spain and the US. *International Journal of Consumer Studies*, 37(6), 605-616.