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THE ROLE OF RELIABLE INFORMATION AND PACKAGING ON SUSTAINABLE CONSUMPTION IN CHILE, A DEVELOPING COUNTRY

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1. Introduction

Since the first United Nations Conference on Environment and Development took place in Rio in 1992, there have been many attempts to stimulate the production of sustainable products. Most of them have been focused on the development of new sets of indicators to quantify and minimize the environmental impact of a product [Clark and Lund 2007] on its engineering phase [Behrisch et al. 2011] and its production stage [Hopwood et al. 2005].

Moreover, as any product in any economic system, the development of sustainable products goes through communication and promotion stages and, as it is well known, an increase in the demand of a product results in an increment on its supply and more companies will be willing to produce it.

In consideration to this basic economic fact and to stimulate the consumption of sustainable products, the International Standards Organization (ISO) developed a system of eco-labels as a tool to identify and differentiate these products on the market [Conesa 1997]. However, despite these initiatives, the increase in the consumption of these products has not been as expected [DeVries 2006], [Siegle 2006].

In an attempt to understand the reasons why the consumption of sustainable products has not massified, some authors as Paettie [2010], have directed their research efforts towards the analysis of consumer behaviour and consumption habits.

In this regard, authors such as McDonough and Braungart [2002] and Buenstorf and Cordes [2008] have come to the conclusion that the problem in sustainable consumption is to change what we are consuming, not the way we consume. Changing the products we consume is not an easy goal because it is a highly complex problem with too many factors to consider simultaneously [Van Kerkhoff and Lebel 2006]. These authors highlight political, economic and social factors as important actors involved.

On the other hand, regarding the relationships that occur among these actors, authors recognize the regulation of political-economic strategies and environmental norms, the demands of sustainable development, and the protection of the environment. Finally, the variables presented by the authors may be classified in three groups:

- One of these variables is the social behavior of consumers, where the challenge is to achieve a new pattern for local and global consumption [Buenstorf and Cordes 2008] as well as a social interest to improve the quality of life and care for the environment [Lilley 2009].
- Other issues are economic and social inequality [Davis et al. 2006], which have hindered the standardization of sustainable production systems and the use of a global strategy and a universal indicator for eco-labels [Volkery et al. 2006].

- The third group of factors deals with Legislative aspects, reflected in the absence of environmental regulations for eco-labels, and the indiscriminate use of ambiguous, self-declared and less-than-credible aspects [Furrow et al. 2010]. An example of this is the uncontrolled use of different quantitative indicators of environmental impact, which do not enable a comparison of performance and environmental care [Maneiro and Burjillo 2007].

1.1 Consumption and purchase of sustainable products

Historically, the manufacture of sustainable products has been limited by the low consumption of these products. Sustainable products tend to have higher prices, due to the fact that oftentimes it is necessary to undergo substantial investments to modify production systems and make them cleaner. Also, the development of new materials and suppliers requires time and effort. These investments tend to have long payback periods [McDonough and Braungart 2002].

Trying to understand how to increase the demand and stimulate the consumption and purchase of these products, many field studies reports on sustainable consumption have been written. For this paper we use three of them as references. We considered those reports that present their methodology in detail, the market in which the field study was conducted and the production clusters involved in the studies. The selected reports were the "Australian Food and Grocery Council summary report 2010", The USA Grocery Manufacturers Association and its "Sustainability trends and new shopper insights 2010" and the Sustainable Consortium, an eight country report "Consumer Science, Research Compendium 2010".

As a result of the analysis of these reports it was possible to find that one of the main reasons why consumers are not preferring a sustainable product at the moment of purchase, without considering its higher price of sale, it is because consumers do not believe or do not understand the environmental declarations on the eco labels, mainly because this information is ambiguous, not certified and self-declared. An example of this are the 80% of Australians who are worried about the wrong information on environmental labels, the 75% of the U.S. consumers that would prefer easier-to-understand environmental information and another 75% of the U.S. and 48% of the French consumers believe there is a high volume of eco-labels that use environmental statements and symbols that are not clear.

If the results of the previous paragraph are associated with the simultaneous use of quantitative and qualitative indicators for environmental performance comparisons [Lim and Moon 2009], it would be possible to infer some connection between the use of quantitative environmental information and the consumers' credibility level on a product.

It is also possible to find a connection between Lim & Moon's findings and the product category rules (PCR) of the Environmental Product Declaration (EPD) system established by the Swedish Environmental Management Council in 1998.

If we considered the specific rules of the EPD to quantitatively communicate the environmental impact of a product, it would be possible to think that this PCRs could help the consumption of sustainable products in three ways:

- First, this environmental impact information would allow the consumers to make environmental performance comparisons between sustainable and traditional products.
- Second, this information also may assist the consumers to make purchasing decisions.
- Third, the use of this kind of environmental information could help to understand the benefits of purchasing sustainable products and, eventually, would influence their decision.

Another finding from these reports is that the packaging of a sustainable product could be used as a second tool to identify and differentiate these products on the market. Some consumers recognize the environmental impact of a product on the waste its packaging generates and on its disposition at the end of its lifecycle.

According to the analysed information, it is possible to state three main hypotheses about the increase in the consumption of sustainable products:

- First, an increase in the purchase of a sustainable product requires the use of believable and understandable environmental information on eco-labels.
- Second, the use of specific, quantitative and certified environmental information would help the consumers to understand the eco-labels.

- Third, a packaging with natural and "eco-friendly" materials plays a fundamental new role in the perception and environmental communication of a sustainable product.

2. Purpose of the study, scope and Methodology

The purpose of this study is to evaluate if there is a relationship between the increase of purchase intentions and the simultaneous use of quantitative environmental information and a qualitative environmental certification on packaging with ecological characteristics in a sustainable product.
The scope of this research was limited to a specific packaging prototype for a 10-count pack of plastic garbage bags, which was the most competitive sustainable product category identified at the Chilean sales room of an international retail company.
A five-step methodology was adopted for this study as follows:

1. A field inventory to identify the offer of sustainable products and the most competitive sustainable product category at the Chilean sales room of an international retail company.
2. Recognize the communication strategy for environmental aspects used with products identified in the first step.
3. A field survey at the same sales room to detect: First, the consumer perception about the communicational strategy recognized at the second step. Second, the role of environmental quantitative information. Third, the influence of qualitative environmental certification and fourth, which institution would be considered as a valid certifier by local consumers.
4. To analyse the data collected on previous steps and to design: First, an environmental qualitative governmental logo certification. Second, a specific category product quantitative eco-label as a Chilean environmental norm. Third, to design an ecological characteristics packaging and to apply both eco-labels on it.
5. A field survey to evaluate the performance and the consumers' preferences of the prototype at the same sales room were the inventory of the first step was made.

3. Results

3.1 Inventory of sustainable products on an international retail company sales room at Chilean market

As a main result, we found 264 products with declarations of environmental aspects. These were organised into nine productive sectors and divided into 92 categories, where the food sector had the largest share, with eight categories, 23 sub-categories and 101 products, followed by the electrical appliances sector, with seven categories and 58 products (Figure 1).

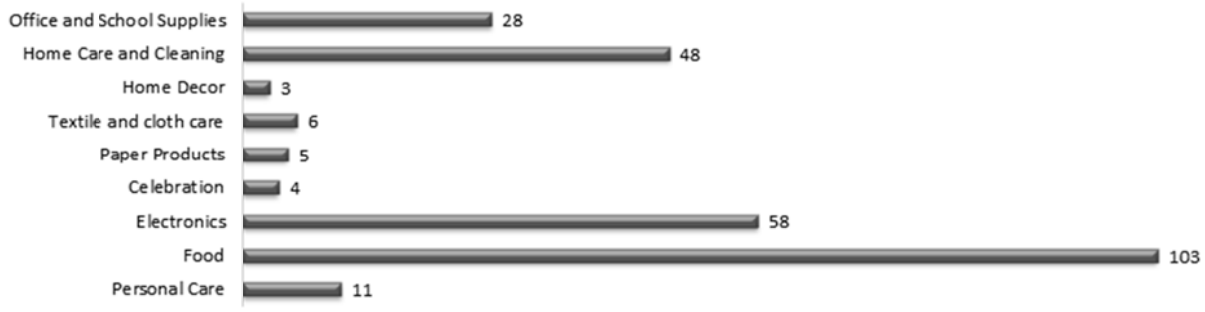

Figure 1. Sustainable products found on the Chilean sales room of an international retail company

The "home care and cleaning" was the third largest sector with 48 products and it also was the most competitive sector due to the variety of products on its 18 categories, where the most competitive category was the plastic garbage bags with 19 products.

3.2 Communication strategy of environmental aspects for sustainable products on an international retail company sales room at the Chilean market

In a cross-sectional analysis of the data obtained in the inventory, we found that most of the labels were self-declared eco-labels with ambiguous declarations of environmental aspects focused on the use of natural raw materials.

It was also possible to identify the use of a "leaf" as a prevalent eco-image and the use of the green colour and the "100% Natural" declaration as the most common practices in eco-labels.

For the sustainable products that were inventoried, we found that 78% of them used qualitative ambiguous aspects in their declarations of environmental aspects.

Only 44% of the total inventoried products had quantitative indicators and a 43% of these were found in the "electronics and electrical appliances" product category, where 46% of the indicators used were associated to savings in energy consumption.

3.3 Chilean consumers' perception survey of the communication strategy of environmental aspects for sustainable products at a local sales room of an international retail company

Regarding the communication strategy identified for local sustainable products, it is possible to conclude that more than a half of the local consumers (57%) would prefer the use of quantitative indicators with numbers and concrete data.

Another 48% of the surveyed consumers indicate a preference for the use of a "leaf" and the green colour (93%) as icons that represent environmental care. In terms of ecological statements, the highest preference was for "biodegradable" (30%), followed closely by "100% Natural" (25%) (Figure 2).

The use of qualitative aspects in the declarations of environmental aspects in the sustainable products used in the survey, 78% of the participants identified the use of ambiguous environmental aspects like "earth friendly", "environment friendly" and "eco-friendly" (Figure 3).

Figure 2. Details of the use of a "leaf" and "green" colour in sustainable products at a local market

Figure 3. Detail of the use of ambiguous qualitative aspects in sustainable products at a local market

Related to the use of believable environmental information, 97% of the surveyed consumers think this kind of product must be certificated and that the government must issue this certification (62%). Eigthy-five percent of the consumers would like to have eco-labels with clear information and 57% of the customers would prefer eco-labels that had quantitative information on them.

Finally, 68% of the consumers recognize the environmental impact of a product by the waste the product and its packaging generate. Fifty-four percent of the consumers would prefer a product with recyclable characteristics.

3.4 Prototype definition

According to the results of the survey, we conclude that the strategy to design the prototype to prove the relevance of the environmental reliable information and the new role of the packaging to increase the sustainable product consumption must include:

A. A governmental qualitative certification, as it has been employed in industrialised countries.
B. The use of a specific, clear and quantitative environmental certification, adjusted to a category-based environmental impact indicator to evaluate the response of the local consumers to the use of PCR's in the local market.
C. A packaging with recyclable material and ecological characteristics to validate if the perception of the "sustainability" of a product could be influenced by its packaging.

In response to the A and B point and to check the effectiveness at the local market of the mixed indicators presented by Lim & Moon in 2009, two eco-labels were designed and applied into the prototype packaging.

Figure 4. Qualitative eco label with an environmental certification designed to validate the strategy applied in the prototype

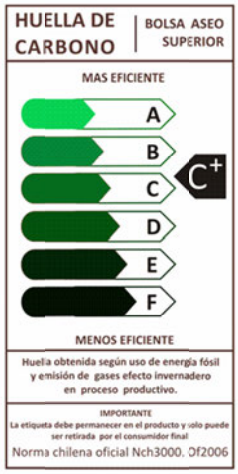

Figure 5. Qualitative Eco Label for environmental certification purposes designed to validate the strategy applied to the prototype

The first was a governmental qualitative eco label certification designed using a green colour, the image of a "leaf" and the words "Ministry of Environment – sustainable product" (Figure 4).
The second was a quantitative eco label, designed as a Chilean environmental norm according to the carbon footprint indicator defined by the EPD system for the product category used for the prototype.
The same strategy used to communicate the energy efficiency on electrical appliances was applied to the design of this eco-label, because the consumers already know how to read that kind of label and this fact could facilitate the consumers' comprehension (Figure 5).

Giving response to C, we used a cellulose material for the construction of the packaging prototype due to its well known recyclable and ecological characteristics.
We selected the product with the largest participation from the most competitive category among the 92 categories identified in the inventory as the one to be used as a prototype. According to this definition, the product selected to implement the prototype was the “10-pack classic 50 x 70 cm plastic garbage bags made with recycled material” by the "Basulip" brand of the local "Cambiaso Hermanos" Company.

3.5 Survey of the environmental performance of the prototype

To define and validate the defined strategy presented in section 3.4 and to prove that such strategy would effectively increase consummer preference and the consumption of a sustainable product, two surveys were designed based on the principles exposed by Sampieri et al. [2010], who defines that the sample should be “*correlational*” because we wanted to establish the relationship between two or more variables in a given context, “*probabilistic*” because in the universe or population where the sample was taken everyone has the same probability to be selected, “*average*” in a random selection framework and “*transversal*” because the research will pick up data about the existing variables in a specific timeframe when the study is taking place.
The surveys were applied in the city of Concepción, capital of the Bío Bío region. This city belongs to the County of Concepción and has a population of 212.003. The total number of surveys applied was 400, over an average of 160.000 in registered monthly sales in an international retail company where the universe of products was defined and the surveys were held.
In order to validate the strategy a comparative method was employed between the prototype and other sustainable products from the competition in the same category. The selected products used for the comparative survey were the "10-pack white 50 x 70 cm / 30 litters, garbage bag made with recycled and Oxo-degradable materials" from the brand "Virutex " and a “10-pack classic 50 x 70 cm, 100% organic polymer waste bag” from the local brand "Basulip" (Figure 6).

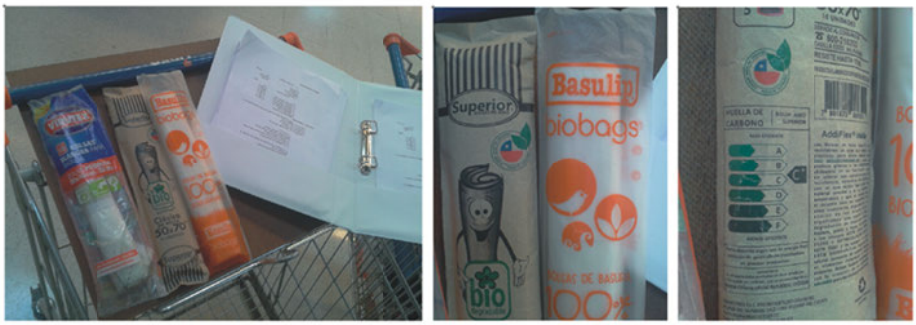

Figure 6. The protoype and the selected brands used for the comparative survey

Related to the use of reliable information, 85% of the surveyed consumers would prefer the use of a clear and specific eco-label with quantitative environmental information like the one used at the prototype.
About the use of a governmental qualitative eco label on the prototype, 88% of the surveyed consumers found that this eco-label made the product more reliable.
As a result of the use of mixed quantitative indicators and qualitative aspects on a communicational environmental declaration strategy for sustainable products in Chilean market, the 84% of the consumers declare to understand the way the prototype cares about the environment.
Regarding the use of the carbon footprint as a quantitative indicator, 53% of the surveyed consumers declare to know the meaning of that indicator and 59% could understand the label designed for that indicator on the prototype.
In relation with the use of a packaging as a tool to communicate the environmental aspects of sustainable products, 78% of the consumers thought the prototype was the most "sustainable" product between the three products compared in the survey, because they find it more ecological (52%) and recyclable (23%).

Also, 56% of the surveyed consumers declare to recognize a sustainable product by the information on it and another 32% recognize them by its packaging. About the influence of the strategy applied on the prototype, 53% of the consumers would purchase the prototype and recognizes an influence of the strategy.

4. Findings and Conclusions

4.1 Findings

Chilean consumers would prefer a sustainable product if it had quantitative environmental information on its packaging. The use of such information on sustainable products could help Chilean consumers to understand the benefits of acquiring them and could increase their willingness to buy them.
The use of an environmental certification issued by the government on sustainable products could increase the credibility of this type of products for the consumers.
In spite of the lack of knowledge that the consumers express toward the meaning of the carbon footprint, this indicator is recognised as something related to the environment. On the other hand, the use of the carbon footprint as an indicator of environmental impact, used in a Chilean norm specific for garbage bags, proved to be a believable indicator for consumers, helping them to understand such impact. Finally, a product in a packaging with ecological characteristics, made of cellulose and highly recyclable, proved to be more competitive amongst similar products because the consumers expressed their preference towards it.

4.2 Conclusions

In terms of the role that the use of reliable information as well as the packaging plays in the consumption of sustainable products in Chile, we may draw the following conclusions:
The use of quantitative, credible, clear and certified information in the environmental statements of sustainable products may aid to increase the consumption of these products by helping Chilean consumers to understand the benefits of acquiring these products.
The use of packaging made of ecological materials in a sustainable product helps local consumers to identify this type of products in the Chilean market. Also, it could help to improve credibility on the environmental care as well as the willingness to acquire this type of products.
Even though price is still a barrier for the consumption of sustainable products in Chile and in the world, if we consider the previous conclusion and the fact that an increase in the demand generates an increment on the supply side, it would be possible to state that packaging plays a fundamental role in the consumption of sustainable products in Chile.
It is also possible to establish that the environmental information presented in the packaging of a product will be more credible if it comes from a neutral third party and its is certified by a governmental agency.
From the data related to sustainable consumption gathered from the Chilean customers that were surveyed, it is possible to state that the change in the products we are consuming (proposed by McDonough and Braubgart [2002]) will not start in Chile until the government issues an environmental regulation and certification based on quantitative indicators and qualitative aspects obtained from a serious, credible and rigorous lifecycle research.
It can be safely said that these findings establish a baseline, or a starting point for a definition of a national strategy of environmental declarations to increase the consumption of sustainable products avoiding the ambiguity and asymmetries found in this type of information at local markets.
To make this strategy really effective, further research about the use if environmental indicators specific for each type of products has to be done, as well as the construction of a more understandable and believable communication strategy for the consumers
Finally, to make this strategy viable, it is necessary to conduct research in the manufacturing companies to evaluate the current state of production systems as well as future programs to change into more efficient productive matrices and the use of raw materials that pollute less and are more recyclable.

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