An empirical study on the influence of environmental labels on consumers

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Abstract

Purpose – Despite research studies indicating strong support for labelling information, uncertainty remains with respect to how labels influence consumers. This paper attempts to empirically investigate how consumers who differ in terms of environmentalism respond to labels.

Design/methodology/approach – The data were collected on an Australian sample using a structured questionnaire administered on the phone using quantum research (CATI) data collection services. A total of 155 questionnaires were completed and used for data analysis. The data were analysed using both descriptive measures and correlations between variables.

Findings – There appears to be a proportion of consumers that find product labels hard to understand. The research found that there are consumers who will buy green products even if they are lower in quality in comparison to alternative products, but would look for environmental information on labels. With respect to price sensitive green consumers, there appears to be a relationship between price sensitivity and “always” reading labels as well as indicating that there is “sufficient” information on product labels to make informed purchase decisions.

Research limitations/implications – It was beyond the scope of the research to account for some of the utilitarian approaches to interpretation or in-depth comprehension of label information. The sample size of 155, although selected using a probability method, may, to some extent, limit the overall accuracy of the results.

Practical implications – The research offers some important information on different green consumer segments that would alert managers on how best to position environmental labels. Findings such as “Satisfied with labels” correlates with “Labels are accurate”, which suggests that businesses need to provide a clear, accurate and easily legible label design to encourage satisfaction with the accuracy of content and the communication aspects of a label.

Originality/value – The paper contributes to better understanding of green customers purchase intentions and the usefulness of ecological product labels. It offers some insights and assistance to businesses in planning their green product/labelling strategies.

Introduction
Social environmental responsibility is a vital management function and appears to be important for the success of any business. The last decade or so has witnessed a radical change in consumer preferences towards green products with the emergence of green consumers provoking market mechanisms for environmentally friendly organisations and new product innovations (Ottman, 1993). The net result is that technically, the green market segment exists and firms are responsive to this green consumer demand. Now it is the consumer who has to identify between competing products or processes on the basis of their preferences. How do consumers identify environmental alternatives? Although, consumers make choices based on other decision criteria, product labels provide an informative base for a consumer to make choices. Environmental labels are increasingly being recognised as an important market tool for identification of green products.

With businesses questioning the role served by environmentalism and in light of the rapidly accelerating number of green consumers, marketers have continued to grapple with the question of understanding consumers' comprehension on green labels. What do consumers look for with respect to label information? What influence does labels have on consumers? How best can labels assist to serve consumers in different segments? To answer these questions businesses would have to have clarity on consumers' understanding about green labels. This paper attempts to empirically investigate how consumers who differ in terms of environmental attitude respond to product labels. In the following sections, we investigate consumer's comprehension of labels and lastly discuss the usefulness of environmental labels for businesses.

**Background**

While consumers' environmental concerns have moved into mainstream marketing, it is useful from a marketing perspective to investigate how consumers make informed choices about green products. Arguably, the initial perception that one forms about a product is, in part, by exposure to information initiated by the marketer including media advertising and/or the information provided on product labels. There are existing studies that indicate a demand for, and an awareness of, information regarding environmental product attributes (Wessells et al., 1999). It is also suggested that consumers perceive product labels as necessary requirement and demand appropriate and accurate information on labels yet, consumers appear to be somewhat confused about the green terminology used on product labels (Caswell and Mojduzska, 1996; Muller, 1985; Robertson and Marshall, 1987). Despite research studies indicating strong support for labelling information, uncertainty remains with respect to how labels influence consumers and how well consumers comprehend the information provided on product labels.

There are different categories of labels. In Australia, the report prepared by a sub-committee of the Strategic Advisory Group on the Environment (SAGE, 1993) developed a classification system to distinguish between third party eco-labelling schemes. Some of the credible third party schemes are Blue Angel, Nordic Swan and Australian Choice labelling.

During the course of the SAGE investigations it became clear that the issues were wider than just those associated with the eco-labelling schemes. In the report of SAGE, it was recommended that a classification system be developed to differentiate between labels that were part of a third party eco-labelling scheme and claims that were put on products by manufacturers. These categories included types I, II and III environmental labelling.
Consumers on a daily basis are exposed to type II labelling with messages on labels, such as, environment-friendly, ozone-friendly, earth-friendly, degradable, recycled, recyclable, renewable, reusable or for that matter biodegradable. Unlike other physical attributes of a product, environmental attributes are difficult to detect unless there is sufficient information about them. Owing to this difficulty in detecting green attributes, consumers rely on outside factors such as media advertising and/or information provided on product labels. The general consensus is that consumers' comprehension on labelling is arguably, determined by three factors:

1. the accurate and clear meaning of these labels;
2. the knowledge of labels; and
3. the perception of businesses with respect to the environment.

Accurate and understandable meaning of labels

Environmental labels act as a guide for consumers to choose products that are environmentally friendly. It is often used by businesses to differentiate their products, position them and communicate the environmentally friendly message (D'Souza, 2000). There are a number of ways by which marketers convey environmental benefits of products, one is through general or specific product claims on product labels, for example, “eco-friendly”, “environmentally safe”, “recyclable”, “biodegradable” and “ozone-friendly” (Morris et al., 1995). Very often, over exaggeration of these terms could result in negative attitudes of consumers towards label claims, thus creating a negative green attitude for the product. Extant research indicates that some environmentally safe claims have been misinterpreted by the customer or were identified as being misleading and false (Chase and Smith, 1992). Additionally, it had been observed that while some products had given the impression that the whole product was eco-friendly, only a small component of the product had an environmentally benign attribute (West, 1995). At the same time, some of the environmentally safe claims seemed misleading because the interpretation of the claims varied depending on the context it had been presented (Hastak et al., 1994).

A survey reported that 70 per cent of the respondents' purchase decisions were often influenced by environmental messages in advertising and product labelling (Chase and Smith, 1992). In another survey 83 per cent of the respondents indicated they preferred buying environmentally safe products. However, only 15 per cent said that environmental claims were extremely or very believable (Dagnoli, 1991). Thus, accurate and clear meaning of labels would, arguably be helpful to promote the positive green product's value.

Knowledge

In addition, consumers lacked knowledge of the types of labelling procedures adopted by organisations. Environmental knowledge evolves in two forms, one being that consumers have to be educated to understand the general impact of the product on the environment and the other is consumer knowledge in the product itself being produced in an environmentally friendly way. As long as there is consumption there will be pollution, zero pollution is not possible, but pollution is allowed within permissible limits. If a consumer has knowledge about the environment and pollution promulgation, the causes and impact on the environment, then their awareness levels would increase and thus would, potentially, promote a favourable attitude towards green products. It is the duty of the marketer to
disseminate that information either through symbols or claims on labels as to the type of environmental benefits the product has to offer.

A major difficulty in disseminating this information lies in the assumption that marketers have not yet satisfactorily delivered this knowledge component that are precursors to the perception of label information. Yet, the more literate a consumer is about environmental issues does not necessarily mean that they would make a green purchase. A green purchase intention, arguably, depends on consumer's altruism and the way they can be motivated. Knowledge on environmental issues tends to create awareness in brands and possible positive attitudes towards green brands, while environmental labels may assist in identifying green product attributes.

**Corporate perception**

In addition to labelling information it is also corporate reputation that lends itself to determining social and environmental responsiveness of businesses (D'Souza et al., 2004). The consumer's perception of the business's corporate strategies towards environmental issues is expected to contribute to the formation of the overall perception about green products.

As in this era of corporate reputation, researchers have found that “consumers increasingly make purchases on the basis of a firm's role in society” (Forte and Lamont, 1998). Dagnoli (1991) found that, 77 per cent of those surveyed also reported that a company's environmental reputation influenced their choice of brands. Green corporate perception, therefore, may, potentially act as a catalyst towards environmental labelling.

**Conceptual development and hypotheses**

While the three elements of knowledge of labels, accuracy of labels and consumer perception of the company from consumer perspective may add to the development of green consumption, from a marketer's perspective, market segmentation issues becomes critical. Recognising customers' differences are the key to successful marketing.

The criteria used by marketers for segmentation is that each segment should be able to be identified, capable of being described by a set of descriptors; have a potential size; each segment should have relevance to its purchase situation and the marketer should be able to effectively reach those segments (McDonald and Dunbar, 1998).

A two-dimensional model that was proposed to understand the complexity of consumers' behaviour with respect to their choice in environmental products, classified consumers into four segments: environmentally green consumers, emerging green consumers, price sensitive green consumers and conventional consumers (D'Souza, 2004).

The model (Figure 1) segmented consumers into four groups, namely, the conventional consumer, the emerging green consumer, environmentally green consumer and the price sensitive green consumer.

The *conventional consumers* are defined as being non-green consumers and do not have any regard for environmentally friendly products. This group of consumers perhaps would not
see environmental risks associated with products they buy. They largely ignore the potential benefits of green products. This group of consumers would not consider green labelling (D'Souza, 2004). However, this segment cannot be totally dismissed, as they could still be potential future market participants.

The emerging green consumers are defined as those consumers that regard the benefits of green product but may not have any motivation to purchase them. For these consumers any brand will do, hence there is no environmental information search involved when it comes to choosing their brands and green product labelling may not be meaningful to them (D'Souza, 2000). These consumers would perhaps trade off product attributes such as quality, warranty and performance in their product alternatives evaluation and selection process.

Since, these consumers’ segments do not demonstrate need or interest in ecological product labels they were excluded from this study. Our attention was mainly directed to the following two consumer segments as they contribute to the demand for green products.

The environmentally green consumers are defined as those consumers that are highly environmentally concerned and are characterised as buying green products whenever they see an opportunity to do so. They are consumers who will check through label information seeking environmental justification for the product (D'Souza, 2004). In other words, it has been suggested that these are the consumers who would be motivated to buy green products even if they were somewhat lower in quality and higher in price in comparison to alternative products. These are consumers who will make an effort to buy products that favour the environment. These consumers are often known as “ultra-green” who are the driving force of environmentalism (Volsky et al., 1999). Although consumers do not always base product decision on environmental attitudes, it appears that it is gradually becoming a more prominent factor among other selection criteria (Irland, 1993). At the same time, it has been suggested that the more involved consumers become with the environment, the more likely they would purchase green products (Schuhwerk and Lefkokk-Hagius, 1995).

Based on this suggestion, it can be anticipated that while environmentally green consumers will be inclined to buy green products even if lower in quality, they will be intentionally in search of environmental justification (such as biodegradable, recyclable) on product labels. Thus, we propose that: H1. There is an association between customers’ search for green justification on product labels and the tendency to purchase green products even if they are somewhat lower in quality. The price sensitive green customers are defined as those customers that are aware of the risks that some products pose to the environment, they are aware of environmental labels, may read green product labels thoroughly, but they are inherently price sensitive customers. They tend not to be willing to pay more for environmentally friendly products (D'Souza, 2004). There have been many studies that examined price effects on consumers’ perception of quality (Leavitt, 1954; Rao and Monroe, 1988). Consumers’ perception about green product may be that they are more expensive in comparison to the alternative products. Therefore, it may be suggested that while the price sensitive consumers read product labels and may be satisfied with the information provided, they are unwilling to pay the perceived higher price. Therefore, it may be suggested that: H2. There is a relationship between “always reading labels” and purchase intention if the product is somewhat more expensive in comparison to the alternative products. H3. There is a relationship between “there is sufficient information on product
labels” and purchase intention if the product is somewhat more expensive in comparison to alternative products.

**Methodology**

In order to test consumers' use and their comprehension of environmental labelling a descriptive research was designed and implemented. The unit of analysis was identified as the main buyers of food in the household from supermarkets irrespective of gender. It was considered that the person responsible for buying from supermarkets would, arguably, represent the perception of the other family members about green products in their purchase behaviour. The sampling frame used was the telephone directory of Victoria (Australia) including both metropolitan and regional areas. The data were collected using a structured questionnaire administered on the phone over a weekend using quantum research (CATI) data collection services. A total of 155 questionnaires were completed and were used for data analysis.

The research instrument used in this study was structured based on prior qualitative research and the literature review. The instrument was pre-tested using a group of 25 undergraduate business students and it was modified, where necessary, prior to the commencement of the fieldwork. The final research instrument included variables contributing to the customers’ information processing on different dimensions contributing to the formation of the overall perception about green products, as well as product labels. All measurements were subjective assessments by the respondents using a seven-point Likert-type scale (Wrenn, 1997).

The sample selection was based on random telephone dialling and it was, consequently, expected to be representative of the supermarket shoppers' population. No non-response rate has been reported, as the automatic telephone dialling would select the next call to replace the unsuccessful calls.

**Findings and discussions**

The selected sample's main characteristics were female (79 per cent), 35-54 years old (49 per cent), married (65 per cent) with children (47 per cent), secondary school educated (60 per cent) and employed (50 per cent).

While there is a large percentage of respondents (67.7 per cent) indicating that they always read product labels, a smaller percentage (55.4 per cent) reported satisfaction with the information in product labels. Those who are satisfied with the labels appear to be more in respect of the accuracy of the information (63.7 per cent) than finding them easy to read (45.5 per cent).

At the same time, a relatively large percentage of respondents (69.7 per cent) indicated that they would purchase environmentally safe products even if they were more expensive than the alternative products, while 58.7 per cent indicated that they perceive the environmentally safe products to be more expensive than alternative products. In comparison, a smaller group (51.7) indicated that they would be willing to compromise in terms of quality. However, only 25.7 per cent of respondents reported that they perceived the green products to be of lower quality than alternative products (Table I).
The results indicate that there is no association between “Always reading labels” and purchase intention even if the product is somewhat lower in quality, therefore, $H1$ is rejected ($r=0.10$, $p>0.05$). This result may indicate that those customers who always read product labels are, arguably, more environmentally concerned and demonstrate a higher tendency to be, less forgiving in respect of somewhat lower quality of products. It may be suggested that consumers’ expectation of quality remains unchanged. It would be interesting, however, to indicate that the results show a relationship existing between “always read labels” and purchase intention even if the product is somehow more expensive ($r=0.27$, $p<0.01$). Therefore, $H2$ is supported. The suggestion is that customers appear to be more forgiving in terms of somewhat higher prices, while not being compromising in relation to quality (Table II).

The results reveal no association existing between “Satisfied with the information on product labels” and purchase intention if the product is somewhat more expensive. Therefore, $H3$ is rejected. Consequently, it may be suggested that providing satisfactory product labels will result, potentially, in more informed customer decision and product selection, but will not overcome consumers’ price sensitivity.

Consumers appear to be somewhat less inclined (31.6 per cent) to consider known brands as being environmentally safe and seem to rely more on their own experience (66.5 per cent) in selecting environmentally safe products.

Based on these findings it may be suggested that ecological label is an important way of reaching and communicating environmental justifications of products to the consumer since a relatively large number of consumers always read labels and consider the information provided to be accurate. However, it would be important to investigate the reasons that some customers believe labels are hard to read. The difficulty in reading labels may be, arguably, with respect of the terminology used in the text, the layout of the label, or even its size and legibility, etc.

**Managerial implications**

With reference to managerial perspectives, environmental issues have shaped businesses to be responsive. At the corporate dimension, Rugman and Verbeke (1998) provided new managerial framework on environmental regulations and corporate strategy; whilst Menon and Menon (1997) discussed the concept of an enviropreneurial marketing strategy that reflected the confluence of social performance goals, corporate entrepreneurship orientations and marketing strategy. Researchers also drew conclusions suggesting that corporations should integrate environmental concerns when developing marketing policies and practices (Shrivastava, 1995; Lecomber, 1975). While these researchers have made strong suggestions that support the integration of environmental concerns into corporate strategies; not many have determined the question of how to enhance marketing strategies. Since, our results have indicated that the overall corporate image with respect of doing a good job in helping to protect the environment is rather low (51.6 per cent), the marketing task is to further enhance this aspect and more strongly and specifically address the issue of corporate image and promote the organisational cultural transformation to a more demonstrable environmentally supportive nature. On the other hand, consumers indicated that they believe companies should place higher priority on reducing pollution than on increasing profitability even if jobs were at risk (65.8 per cent). While this may be a difficult
point to implement, the management need to recognise the expectation of the customer and allow for the justification of prices without compromising on quality of the product.

With respect to less price sensitive consumers, there appears to be an association between this group and always reading labels, while they seem to be unclear as to their satisfaction with information on labels. This is an important green market segment as they are seeking information from product labels and appear to be doubtful with respect of the information provided on product labels. It can therefore, be suggested that to achieve effective communication of product features sufficient and useful information needs to be provided on product labels.

Furthermore, while green consumers, will not compromise in terms of product quality management needs to enhance quality and focus on environmental benefits of a product and communicate this aspect to achieve the recognition in the market.

Additionally, since consumers do not consider well known brands as being, necessarily, environmentally safe, green corporate image and product positioning may be important in promoting consumers' support for the product.

These results indicate that more needs to be done to maximise the existing and perhaps growing consumers' education with respect of communicating important environmental safety messages of green product features to consumers.

Businesses should not overlook the significance of environmental labelling as it acts as a powerful tool for achieving and maintaining green product positioning and creating an effective competitive advantage. Green product labels can be used for positioning the product’s image and as product differentiator. Our study indicates that there is evidence to suggest consumers are seeking environmental information about products read product labels for relevant information (Carlson et al., 1993). Managers can benefit from ensuring that environmental label information is accurate and adequate.

Proposal for future research and conclusions

This study has provided some insights for basically two types of environmental segments as against the four suggested in the model (D’Souza, 2004). There is a market segment that will not support green products if low in quality and would look for environmental information on labels. While there is another market segment that is price sensitive and is somewhat informed by way of green product labels and may consider supporting green products at somewhat premium prices. Suggestions are provided as to how marketers can best adjust their strategies to address these market segments.

The study, however, has some limitations, for instance, a larger sample size would perhaps demonstrate a more plausible results. The results in this study were based on self-reported subjective measures, while, potentially, observational or behavioural measures would strengthen the findings. To determine market power researchers could compare other brands, since green consumers are likely to include green brands in their repertoire, they are also likely to purchase a range of other brands. What different type of environmental label information is required? To investigate consumers' behaviour further, it is necessary to consider actual behaviour rather than intentional behaviour, there could be other attributes
manifested in actual behaviour, whether the average purchase frequency of green brands is higher than other brands and whether green brands can, potentially, generate greater consumer loyalty.

Thus, while this study provides some new insights into environmental labelling issues and its affect on consumers there is further scope to address broader cognitive constructs. Such as consumers’ sense of social responsibility, their self-reported efficacy at buying green products despite being low quality and whether or not they are actually prepared to pay premium prices.

It was beyond the scope of this research to account for some of the utilitarian approaches to interpretation or in-depth comprehension of label information. Gaining an understanding on this information would provide insights into positioning strategies, which would present a more formidable challenge to marketers and product innovations.

![Diagram](image)

**Source:** D’Souza (2004)

*Figure 1A two-dimensional model of the cognitive perspective of environmental products*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Per cent of total respondents</th>
<th>Mean score</th>
<th>Standard deviation</th>
<th>Standard error of the mean</th>
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<tbody>
<tr>
<td>Always read labels</td>
<td>67.7</td>
<td>5.19</td>
<td>1.91</td>
<td>0.15</td>
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<tr>
<td>Satisfied with information on labels</td>
<td>55.4</td>
<td>4.50</td>
<td>1.93</td>
<td>0.16</td>
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<td>Green products are lower in quality</td>
<td>25.7</td>
<td>3.43</td>
<td>1.79</td>
<td>0.14</td>
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<tr>
<td>Green products are more expensive</td>
<td>58.7</td>
<td>4.81</td>
<td>1.85</td>
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<tr>
<td>Labels are hard to read</td>
<td>39.4</td>
<td>3.97</td>
<td>1.88</td>
<td>0.33</td>
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<tr>
<td>Information in labels are accurate</td>
<td>63.7</td>
<td>5.15</td>
<td>1.80</td>
<td>0.31</td>
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<tr>
<td>Will purchase if more expensive</td>
<td>69.7</td>
<td>5.11</td>
<td>1.77</td>
<td>0.14</td>
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<tr>
<td>Will purchase if lower in quality</td>
<td>51.7</td>
<td>4.30</td>
<td>1.99</td>
<td>0.16</td>
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<tr>
<td>Known brand is safe</td>
<td>31.6</td>
<td>3.56</td>
<td>2.10</td>
<td>0.17</td>
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<tr>
<td>Rely on past experience</td>
<td>66.5</td>
<td>5.16</td>
<td>1.60</td>
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**Table I** Descriptive statistics
Table II Correlations between intention to purchase and label variables

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<tr>
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<th>Always read labels</th>
<th>Satisfied with information on labels</th>
<th>Green products are lower in quality</th>
<th>Green products are more expensive</th>
<th>Labels are hard to read</th>
<th>Information in labels are accurate</th>
<th>Will purchase if more expensive</th>
<th>Will purchase if lower in quality</th>
<th>Known brand is safe</th>
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<td>Always read labels</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.07</td>
<td>-0.31</td>
<td>-0.31</td>
<td>0.04</td>
<td>0.04</td>
<td>-0.09</td>
<td>0.03</td>
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<tr>
<td>Known brand is safe</td>
<td>-0.11</td>
<td>0.07</td>
<td>0.28**</td>
<td>0.30**</td>
<td>0.31</td>
<td>-0.13</td>
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<tr>
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<td>0.12</td>
<td>0.24**</td>
<td>0.19*</td>
<td>0.25</td>
<td>0.05</td>
<td>-0.11</td>
<td>-0.14</td>
<td>0.00</td>
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Notes: "Significant at the 0.05 level; **significant at the 0.01 level

References


**Further Reading**


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