

RESEARCH ARTICLE

The Relationship between Ecological Affection, Ecological Concern and the Green Shopping Behaviour in Brazil

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Abstract

This research was to ascertain whether there is correlation between the following constructs: ecological affection, ecological concern and green purchase behavior. In pursuit of achieving the proposed objectives, a methodology characterized by exploratory search was used, adopting the simple transverse method in data collection process. Based on convenience sampling, the sample population consisted of women over 18 years old, and 500 responses were considered to be valid. We used Cronbach's alpha coefficients and the multivariate technique of exploratory factor analysis for data cleansing. The dimensions observed in the theory on the researched subject demonstrate theoretical support for the empirical results found in this study, showing similarities with the theoretical input, given the correlation between the independent variables and dependent variable.

Keywords: *Ecological concern, Ecological affection, Green shopping behaviour.*

Introduction

Pressures from environmental organisations, competition between firms and academic discussions are factors that have contributed to the emergence of environmental awareness from 1980, especially due to climate change, droughts and other events resulting from global warming [1]. According to Rasmussen [2], as we move into this new decade, the need for a transition to an environmentally friendly future becomes more evident every day. Thus, understanding these aspects is a key issue for the sustainability of marketing activities, which aim to develop and launch new products that meet consumers' needs, which, in the opinion of Costa and Jongen [3], is considered to be the wellspring for the survival of companies. It is noteworthy, however, that companies should not only be concerned with waste gases or wastewater, but also mindful of the environmental impact of the product lifecycle [4].

Amine [5], Gilg, Barr and Ford [6] and Thogersen and Olander [7] defend the idea that the adoption of such a standpoint by companies is not only a matter of adjusting to specific legislation issues, but also a marketing response to the pressures of consumer groups, which started in the early 1990s due to a greater concern about environmental aspects.

Wasik [8] suggest that for the advancement of a country's green revolution to be possible, consumers play an essential role in this process. According to Green-Demers, Pelletier and Menard [9], people contribute to environmental degradation in several ways (e.g. careless waste disposal, poor consumer habits etc.).

Maloney and Ward [10] as early as the 1970s, warned that current environmental problems stem from a crisis of people's bad behaviour. Thus, the solution to the problem, according to these authors, lies not only in traditional technological approaches, but also in changing human behaviour. Thus, several evaluations concerning environmental issues have been extensively reviewed and discussed in the literature as tools to help protect the environment [11].

It is from this perspective that this study investigates the Relationship between Ecological Affection (EA), Ecological Concern (EC) and the green shopping behaviour in Brazil. Understanding the consumers of green products (and their characteristics) has been the keynote of marketing studies [12]. Further, research studies that seek to investigate the relationship between environmental factors and consumer behaviour are still embryonic in Brazil. Therefore, this study

provides a unique opportunity to broaden the discussion related to the shopping behaviour of consumers with regard to environmental issues. To better organise this research, we arranged it as follows: this study begins with a literature review on the topic at hand in order to provide a theoretical basis for the proposed research. We then present the methodological aspects, results, discussion and closing remarks.

Green Consumers and Determinants of Environmentally Friendly Behaviour

According to Steg and Vlek [13], the effectiveness of behavioural interventions generally increases when they are aimed at important antecedents of the relevant behaviour and at removing barriers for change. Therefore, it is important to understand which determining factors of the environmental behavior.

The environmentally responsible behaviour (ERB) is defined by Lee, Jan and Yang [14] as the effort made by people to reduce environmental impacts and contribute to environmental preservation. The term ecological behaviour is used in a positive sense, meaning the same as eco-friendly, that is, acting for the environment. For Chan and Lau [15], the ecological behaviour of an individual is highly dependent on his or her knowledge, affection and ecological intention. According to Kollmuss and Agyeman [16], when people are

educated about environmental issues, more environmentally friendly behaviour is produced.

According to Mackenzie [17], the terms environmentally friendly and green consumers, uncommon until recent times, have reached high proportions and connotations, particularly for those involved in the production process. Because this is considered to be a relatively new area, few studies bear the definition of "green consumer" [6, 18]. Within this approach, Hopwood, Mellor and O'Brien [19] add that although the phrase "sustainable development" (emphasis added) has different meanings and generates different standpoints, deep inside, its concept is presented as an attempt to combine questions about socioeconomic and environmental issues.

Zimmer, Stafford and Stafford [20], when reviewing this issue, made a chronology that follows this sequence. The 1970s are considered to be the years when ecological importance rose due to environmental pollution and energy consumption. The 1980s brought to light the importance of discussing environmental issues because of the worsening air pollution. Finally, the 1990s showed the emergence of "green trends", when marketers realised that consumers would respond to efforts towards the environment. It is based on these discussions that the concept of green consumer surfaces, as shown in Table 1.

Table 1: Green consumer concept

Author	Concept
Ottman	The one that seeks to consume products that cause little impact to the environment: so-called green or eco-products.
Layrargues	The individual who chooses what to buy based not only on price and quality, but also on the fact that the product is environmentally friendly.
Portilho	The one who, in addition to the variable quality/price, includes in his or her "power of choice", the environmental variable, preferring products that will not harm the environment.
Dias	The one who is concerned with the environment and adopts behaviour consistent with such values.

Source: The authors, based on Dias [21], Layrargues [22], Ottman [23] and Portilho [24]

Elkington and Hailes [25] admit that everyone is increasingly aware of the threats to the environment, but according to Kleef, Trijp and Luning [26], the consumer does not always carry out a critical consideration before engaging in a shopping activity. The solution to pollution and environmental degradation problems depends not only on the actions of companies and government bodies, but also on changing human behaviour [10]. The following section seeks to address the determinants of environmentally friendly behaviour.

The first empirically tested study that sought to examine the relationship between EA, EC and the shopping behaviour of consumers was developed by Maloney and Ward [10]. This served as the basis for implementing further research studies that investigated the shopping behaviour of consumers, seeking to establish a relationship between issues such as this and environmental concerns, such as EA and EC [17, 26-30]. The description of the constructs selected in this research is presented in the following section.

Ecological Affection

The affective component, according to Karsaklian [31], corresponds to the rating of the image formed. He summarises the positive or negative feelings and consequent emotions, meaning that these are stimulated by the emotions used in advertising and marketing arguments. Affection is related to the emotions and feelings caused by an object to someone. The emotional factor, according to Schouten [32], is one of the most interesting components of human behaviour and, in particular, of the consumer.

Arnold and Reynolds [33] reinforce the idea that research studies of this subject have contributed to an improved understanding of the effects of affection, showing that mood, feelings and emotions are related to nearly all aspects of consumer consumption behaviour. This is particularly evident in retail environments, where mood has been a core issue in studies of environmental influences on consumption, such as the retail atmosphere. Thus, the second hypothesis of this research is assumed:

Hypothesis 2: EA leads the consumer towards adopting pro-environmental shopping behaviour (environmentally friendly).

Ecological Concern

Ecological concern, also called ecological or green concern [34], has been the subject of several studies abroad [27, 28, 35]. Zimmer et al. [20] suggest that understanding the dimensions related to EC within the consumer market is the first step towards the development of green marketing strategies. Thus, Ling-Yee [36] adds that EC can be measured in different ways.

Complementing this line of reasoning, Brehm, Eisenhauer and Krannich [37] suggest that some studies show low levels of EC on the part of American consumers, but that such conclusions are inaccurate, as they have been presenting environmentally aware behaviour compared with the world population in general. The results of a survey conducted by Xiao and Dunlap [38] suggest that, in general, the attitudes of respondents are relatively related to the EC. Based on the aforementioned, the second investigation hypothesis was formulated:

Hypothesis 1: EC leads the consumer towards pro-environmental shopping behaviour (environmentally friendly). The question, however, lies in knowing what the issues related to

"environmentally friendly" products really mean to the consumer [39]. According to Kim and Choi [40], consumer concern about environmental issues may not be translated into pro-environment behaviour, but consumers with a strong concern for the environment are more likely to purchase eco-products than those less concerned about such issues. Based on the above, it was possible to formulate the hypotheses presented here and propose the following conceptual model to explain the green shopping behaviour of Brazilian consumers, as shown in Fig. 1.

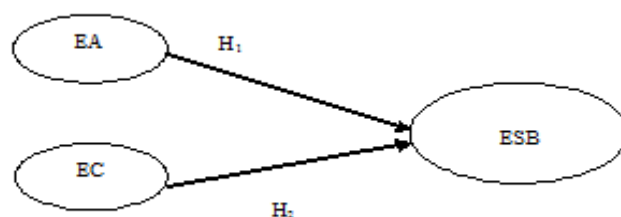


Fig.1: Interrelationship between the investigation hypotheses

Source: The authors, based on the literature review

While pursuing the proposed goal, field research was designed and executed, and subsidised by a methodological approach specifically fit for the object under study. The methodological aspects used in this research are presented in the next section.

Methodological Design of the Research

To ascertain whether there is correlation between the following constructs: ecological affection, ecological concern and green purchase behavior, the women were defined as potential respondents of the study, because they represent the major consumer group in terms of cosmetics [41].

Female consumers were surveyed, aged 18 and over, living in the urban area of Ribeirão Preto-SP. The choice of this age group was because accurate data on the female population of other age groups could not be found. The data from the Secretaria Municipal da Saúde [42] concentrate on the following categorisation: less than 1 year; between 1–4 years, 5–9 years, 10–14 years and 15–19 years. The sample population was selected because women over 18 represent 34.9% of the district's population.

Thus, this research was based on a convenience sample because there was no way to determine the participants in the sample. In this case, the recommendation by Richardson, Peres,

Wanderley, Correia, and Melo [43] is that the population should be divided into heterogeneous, exclusive and exhaustive subsets according to the variables that characterise the universe and comprising approximately the same number of elements.

Altogether 800 questionnaires were distributed. Of this total, 500 questionnaires were considered in the research, which corresponds to a rate of 62.5%. Some questionnaires received had to be omitted due to the following reasons: a) 21 questionnaires were incomplete, b) 68 were returned blank and c) 211 were not returned. Data collection was conducted between late 2010 and early 2011, through the personal application of self-filling questionnaires, in places of general circulation, as suggested by Cooper and Schindler [44].

Data analysis was initiated by the cleansing of the items from the scales that mediate the constructs and the examination of their reliability and dimensionality in order to ensure that the measures used to quantify the constructs were statistically reliable. Firstly, we analysed the outliers or extreme cases, according to Hair, Anderson, Tatham and Black [45] and Malhotra [46]. Then, the analysis of reliability and internal consistency and an exploratory factor analysis were conducted.

For measuring the independent variables (AE and EC) and the dependent variable (ECSB), the scales used in the study were based on those

proposed in previous studies, but duly adapted to the object of study of this research. Therefore, we prepared the survey instrument based on the adaptations of the scales proposed in the models of Maloney, Ward and Braucht [47].

To measure the dependent variable (ECSB), questions were based on the model proposed by Kim and Choi [40]. The metric scales used were interval-based, since the goal at this stage was to measure the degree of the EA and EC of respondents. Questions were adapted from these authors, whose data had been collected based on 10 questions, measured by a Likert scale, with responses ranging from 0 (Strongly Disagree) to 10 (Strongly Agree). This kind of scale, according to Ling-Yee [36], has proven to be a highly reliable assessment criterion. It is noteworthy that there were no uniform scales in the studies analysed, as some researchers chose one to five levels and others one to seven.

Result and Discussion

The original sample had the following socioeconomic profile. Of the 500 women studied, 41.8% are in a stable relationship. Most respondents range between 21 and 30 years (42.6%), are currently working (63%) and have a good educational level (e.g. completed high school and/or higher education; 50.0%). Further, most belong to classes "B" (56%) and "C" (34.2%). Table 2 brings the crossover frequency regarding the classification (1st and 2nd places) of the features that the respondents value in beauty products, personal care and perfumery.

Table 2: Crosstable between the features prioritized in 1st x 2nd place

		Features prioritized in 2 nd place								Total
		C1	C2	C3	C4	C5	C6	C7	C8	
Features prioritized in 1 st place	C1	0	23	11	9	5	2	4	0	54
	C2	6	0	20	4	3	1	0	1	35
	C3	3	18	0	14	28	7	21	3	94
	C4	15	13	14	0	6	4	8	0	60
	C5	5	3	7	5	0	14	35	1	70
	C6	1	2	3	3	8	0	3	3	23
	C7	3	4	32	6	38	17	0	6	106
	C8	0	1	0	1	1	0	1	0	4
	Total	33	64	87	42	89	45	72	14	446

Legend:

C1 - Biodegradable products C2 - Products with recyclable packaging

C3 - Products with refill

C4 - Products whose production company does not harm the environment

C5 - Branded products

C6 - Cheaper products

C7 - Better products

C8 - Fashion trends

Firstly, these data seem to indicate that consumers highly value the quality issue when buying cosmetics (feature “better products”, chosen in the first place), and that it seems to be associated with branded products. Secondly, it is possible to observe that the feature “products with refill” is also equally valued by the respondents:

Approximately 17.4% of them chose this as the most valued feature. It is also noted that products with recyclable packages (C2) also represent another feature valued by the respondents. Table 3 presents the results on the knowledge of respondents about ecological cosmetics, disclosure of the production of such products and awareness campaigns related to their consumption.

Table 3: Perceptions of the knowledge of ecological products, disclosure and awareness campaigns related to their consumption

Grade	CR11	%	CR12	%	CR13	%	CR14	%	CR15	%
0	6	1.2%	13	2.6%	2	0.4%	2	0.4%	2	0.4%
1	7	1.4%	9	1.8%	0	0.0%	0	0.0%	0	0.0%
2	15	3.0%	27	5.4%	4	0.8%	4	0.8%	3	0.6%
3	13	2.6%	18	3.6%	2	0.4%	2	0.4%	2	0.4%
4	17	3.4%	24	4.8%	3	0.6%	0	0.0%	2	0.4%
5	35	7.0%	41	8.2%	9	1.8%	3	0.6%	5	1.0%
6	29	5.8%	30	6.0%	10	2.0%	10	2.0%	7	1.4%
7	40	8.0%	60	12.0%	19	3.8%	21	4.2%	14	2.8%
8	100	20.0%	92	18.4%	48	9.6%	46	9.2%	43	8.6%
9	82	16.4%	86	17.2%	85	17.0%	82	16.4%	86	17.2%
10	156	31.2%	100	20.0%	318	63.6%	330	66.0%	336	67.2%
Total	500	100.0%	500	100.0%	500	100.0%	500	100.0%	500	100.0%

CR_11 Ecological cosmetics are still little known

CR_12 I know little about ecological cosmetics

CR_13 Cosmetic companies could disclose more information about the ecological products they produce

CR_14 Cosmetic companies could make more campaigns about the benefits of consuming ecological products

CR_15 Cosmetic companies could implement more awareness campaigns about the consumption of ecological products

Source: Field research results

These findings bring to the fore the need to rethink the interaction between the agents ‘ecological products’ and the agents ‘consumers’. The determination of the levels of EA, EC and ECSB is presented in the next section.

Determination of EA, EC and ECSB

In order to analyse the general level of ECSB, EA and EC, it was necessary to create composite scales that represented, in only one single variable, the underlying construct. The sample of respondents who had fully completed the 10 items (questions 1 to 10 of the questionnaire) comprising the construct ECSB amounted to 500 valid cases, and the Mahalanobis distance was calculated for each one of them.

The size of the sample of respondents who had fully completed the 10 items (questions 25 to 34 of the questionnaire) comprising the construct EA

amounted to 500 valid cases, and the Mahalanobis distance was calculated for each one of them. The sample of respondents who had fully completed the 10 items (questions 35 to 44 of the questionnaire) comprising the construct EC amounted to 498 valid cases, and the Mahalanobis distance was calculated for each one of them.

The sample of respondents who had fully completed the 10 items (questions 45 to 54 of the questionnaire) comprising the construct EC amounted to 498 valid cases, and the Mahalanobis distance was calculated for each one of them. For each of these constructs, the process of identifying outliers used the Mahalanobis distance measure, with $p = 0.0001$. The results concerning the final structure of the constructs analysed are shown in Table 4.

Table 4: Summary of the constructs analysed

Constructs	Cases examined	Outliers	Number of factors	Number of items	Total Explained Variance	Cronbach's Alpha
ECSB	484	16	1	8	66.31%	0.925
EA	472	28	1	8	60.8%	0.903
EC	494	4	2	8	55.96%	Global: 0.789 Factor 1: 0.787 Factor 2: 0.610

Source: Field research results

It was found that the construct ECSB has a one-dimensional structure, characterised by a single factor (composed of the items ECSB1, ECSB2, ECSB3, ECSB4, ECSB5, ECSB7, ECSB9 and ECSB10). The final construct had a mean of 6.70 and a standard deviation of 2.35, and the coefficient of variation was 35.1%. These results show that most respondents (52%) have a high degree of green shopping behaviour (score on the composite scale greater than or equal to 7).

The construct EA has a one-dimensional structure, characterised by a single factor (composed of items EA25, EA26, EA27, EA28, EA29, EA30, EA31, EA32 and EA33). The final construct had a mean of 9.33 and a standard deviation of 0.897, and the coefficient of variation was 9.6%. These results show a low score dispersion; the vast majority of respondents (95.2%) has a high degree of EA (score on the composite scale greater than or equal to 7), 74.4% of whom have scores above 9 and 33.6% with the maximum score (value of 10 on the scale).

The construct EC, in turn, has a structure composed of two factors: Factor 1 (EC1), composed of items EC37, EC39, EC40, EC41, EC43 and EC44, and Factor 2 (EC2), composed of items EC35 and EC36. It is noteworthy that Factor 1 has a mean of 7.20, a standard deviation of 2.112 and a coefficient of variation of 29.3%.

These results show that the scores are relatively dispersed on the scale; however, most respondents (61.5%) have a high degree of Factor 2 (score on the composite scale greater than or equal to 7). Factor 2, in turn, has an average of 8.77, a standard deviation of 1.628 and a coefficient of

variation of 18.6%. These results show a low score dispersion; the vast majority of respondents (89.3%) has a high degree of Factor 2 (score on the composite scale greater than or equal to 7), 66.8% of whom have scores above 9 and 42.9% with the maximum score (value of 10 on the scale). In the following section, we present the testing of the hypotheses regarding the influence of the independent variables (EA and EC) on the dependent variable (ECSB).

The Pearson's linear correlation test was carried out between the scores of the composite scale of EC1 and the scores of the ECSB composite scale with the same sample of respondents. The results show that Pearson's *r* correlation was only 0.170. Although small, this correlation at the two-tailed 0.01 significance level was deemed to be statistically significant (sig.= 0.000), thus leading to the rejection of the null hypothesis of no correlation between the two variables.

Relationship between EA and ECSB

Pearson's linear correlation test was then carried out between the scores of the composite scale of EA1 and the scores of the ECSB composite scale, considering a sample of 472 respondents after the elimination of outliers (discussed in the previous section). The results of Table 5 show that Pearson's *r* correlation between EA and ECSB was 0.276. Although not strong, this correlation at the two-tailed 0.01 level of significance is statistically significant (sig.= 0.000), thus leading to the rejection of H_0 , which states that there is no correlation between the two variables, and the acceptance of H_1 (there is a correlation between both variables).

Table 5: Pearson's correlation test- ECSB × EA

Correlations		ECSB_ Mean
ECSB_Mean	Pearson Correlation	1
	Sig. (two-tailed)	
	N	472
AE_ Mean	Pearson Correlation	,276**
	Sig. (two-tailed)	,000
	N	472

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

Source: Field research results

Relationship between EC and ECSB

Considering that the second core research issue was to verify if EC led consumers towards pro-environmental behaviour (environmentally friendly), Pearson's linear correlation test was

carried out between the composite scale scores of EC1 and the ECSB composite scale scores, considering a sample of 494 respondents after the elimination of outliers (discussed in section 5). The results are presented in Table 6, where Pearson's *r* correlation was 0.540.

Table 6: Pearson's correlation test- ECSB × EC

Correlations		ECSB_Composite	EC_Composite1	EC_Composite2
ECSB_Composite	Pearson Correlation	1	,540**	,229**
	Sig. (two-tailed)		,000	,000
	N	494	494	494
EC_Composite 1	Pearson Correlation	,540**	1	,380**
	Sig. (two-tailed)	,000		,000
	N	494	494	494
EC_Composite 2	Pearson Correlation	,229**	,380**	1
	Sig. (two-tailed)	,000	,000	
	N	494	494	494

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

Source: Field research results

This correlation at the two-tailed 0.01 significance level is statistically significant (sig. = 0.000), thus leading to the rejection of the null hypothesis of no correlation between the two variables. A second Pearson's linear correlation test was carried out between the scores of the composite scale of EC1 and the scores of the ECSB composite scale, with the same sample of respondents. These results show that Pearson's *r* correlation was 0.229.

Although small, this correlation, at the two-tailed significance level of 0.01, is considered statistically significant (sig.=0.000), thus leading to the rejection of the null hypothesis of no correlation between the two variables and the acceptance of hypothesis 4 formulated above. It is noteworthy, however, that these results do not eliminate the ambiguity of the dimensionality of the "environmental concern", pointed .

These are results that, however, do not agree with the fact that the concern about environmental issues does not necessarily translate into a pro-environmental behavior [40, 48]. These are results that, if analyzed from the standpoint of the arithmetic mean of the level of ecological concern (7.20 and 8.77 for EC1 and EC2, respectively), can be considered as very positive because, on average, the purchase behavior of ecological cosmetics of the sample surveyed is lower (6.70).

Conclusion

By the end of this research, it was possible to note that the proposed scope had been achieved, we found a similarity between the results obtained in the measurement of the multiple correlation between the independent variables (ecological knowledge, ecological concern, ecological affection and subjective norms) and the dependent variable (purchase behavior of ecological cosmetics) and those observed in the theory on the influence of the first over the purchase behavior of environmentally friendly products.

By analysing the results concerning the correlation between EC and ECSB, it was noted that they do not eliminate the ambiguity of the dimensionality of EC remarked by Xiao and Dunlap [38]. If analysed from the perspective of the arithmetic means of EC (7.20 and 8.77 for EC1 and EC2, respectively), it can be said that such results are very positive, because, on average, the ECSB of the searched sample is not as much (6.70).

The results of the correlation between EA and ECSB were in line with the premises of Disputo [49] and Maloney and Ward [10], as explained in the theoretical references. According to these authors, even with little knowledge about the environment, people have a strong emotional connection with it. The congruencies herein are also extended to the premises of Schouten [32], which conceives emotional factors as one of the most interesting components of consumer behaviour.

An important contribution glimpsed in this study refers to the references that can serve as an inspiration for future research studies in the marketing area, more specifically, strategic planning, consumer behaviour and marketing compound management, among others. However, there were some limitations that may be overcome in future studies.

First, although the indicators used were based on the literature and duly adapted to the specific object of this study, the 11-point scales used, which ranged from 0 to 10, were grounds for complaints by some respondents who felt they were too extensive. Thus, some assumptions may be proposed in future studies in order to broaden academic knowledge and obtain different results. Second, future studies could establish an analysis that also considers men as consumers, since that literature indicates that the male audience is a potential cosmetics consumption group. Third, future works could research certain issues related

to the level of the ecological awareness of consumers who participate in the production process of ecological goods and services. Finally, researchers could examine the production of green

products and eco-friendly services rendered by the city of Ribeirão Preto, or even in other cities in the State of São Paulo.

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