

Greenwashing effect, attitudes, and beliefs in green consumption

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Abstract

Purpose – The purpose of this paper is to analyze the perception of the influence of greenwashing and of attitudes and beliefs in the decisions of purchase of green products in the retail.

Design/methodology/approach – A quantitative research was carried out by means of a survey with a sample of 880 consumers living in São Paulo city, Brazil, who buy in supermarkets weekly or biweekly.

Findings – It was possible to evaluate a model that analyzed the aspects that greenwashing carries and the aspects that the attitudes and beliefs of the consumer present. As a result, it is inferred that when greenwashing is identified in the product, it loses the aspects of loyalty, satisfaction and benefits, as well as becoming a product that causes confusion of consumption. Further, consumer attitudes and beliefs show that they are guided by the aspects of perceived loyalty, satisfaction and benefits and that the perceived risk aspect is practically ignored.

Originality/value – The originality of this study is in evaluating consumer perception focusing on several aspects of purchase intention simultaneously, considering perception and behavior of consumer before greenwashing and green consumption and using all aspects together (satisfaction, loyalty, subjective and control forces, risk and benefits perception). Besides complementing with other determinants like consumer attitudes and beliefs, confusion of green consumption, behavior controlled in relation to green consumption and greenwashing. Thus, it contributes with an interdisciplinary study whose scale and methodology can be used by analogous studies.

Keywords Consumer behavior, Marketing, Retail, Green product, Sustainability, Greenwashing

Paper type Research paper



1. Introduction

The environmental practices of companies have been discussed from the perspective of justifying whether they are real or merely greenwashing used as a marketing strategy (green marketing) (OECD – Organisation for Economic Co-operation and Development, 2010). To analyze these practices in general, we need to get to the “heart” of companies or wait for something wrong to happen so that society gains access to the actual procedures adopted by organizations.

Pressurized by shareholders for greater profitability, some organizations may be in doubt whether to keep their image untarnished or fall to the temptation of practicing greenwashing, that is, deceiving consumers intentionally with false propaganda about their environmental practices (Choice, 2010). Many companies also try to show that they do not practice greenwashing, and that their practices are transparent and obvious in their Corporate Social-Environmental Responsibility statement (Porter & Kramer, 2006).

In many cases, an individual’s purchase decision is based not on what he/she wants, but on how he/she adapts to his/her needs at that moment (Braga, Silva, Gabriel, & De Oliveira Braga, 2015; Braga & Silva, 2014). The evaluation of consumer perception about an aspect of the purchase intention and intention to buy green products becomes particularly relevant when the environmental concern in the purchase is not established (Braga et al., 2015). In general, when a consumer makes a retail purchase, he/she generally believes in it and considers his/her satisfaction and loyalty (Wu & Chen, 2014), the risk and benefits (Correa, Junior, & Da Silva, 2017; Wu & Chen, 2014) and the subjective and control forces (Hsu, Huang, Hsu, & Huang, 2016; Wu & Chen, 2014) as the compositional aspects of his/her buying behavior.

In this sense, the aforementioned studies evaluate the consumer’s perception by focusing on any one of the aspects presented herein, and not on all of them at the same time. However, with regard to the previous studies, Braga et al. (2015), Chen and Chang (2013), Correa, Junior, and Da Silva (2017), Hsu et al. (2016) and Wu and Chen (2014) considered the consumers’ greenwashing perception and green product consumption behavior using the aspects presented, in addition to other determinant relationships, for a more complete evaluation of issues such as consumer attitudes and beliefs, confusion of green consumption, controlled green products consumption behavior and the perception of greenwashing. Considering these scenarios, this study tries to answer the following research question:

RQ1. What are the aspects for greater consumer perception of greenwashing taking into account consumers’ attitudes and beliefs?

Thus, this study aims to analyze the influence of greenwashing and consumer attitudes and beliefs on the decisions to purchase green products in retail. In this regard, we first carried out a survey covering a sample of 880 Brazilian consumers who purchased goods from supermarkets on a weekly or biweekly basis; that is, they are consumers and decision-makers on what products to purchase from the supermarket’s retail sector.

From our sample survey, we could evaluate a model and analyze the aspects of greenwashing, as well as consumer’s attitudes and beliefs. In this regard, note that the word “relationship” used in the hypotheses of this study can be understood as the influence of green products on consumer’s buying behavior.

2. Theoretical background

2.1 Green consumption

The increased consumption of green products and services has encouraged the adoption and communication of environmental practices in many organizations, creating a positive image

for society (Delmas & Burbano, 2011). Thus, environmental commitment has become an important variable in the competitive landscape.

The protection and attention given to the environment have influenced consumers, making them to choose environmentally friendly products (Yadav & Pathak, 2017). Some consumers are changing their buying behavior to reduce the impact of their consumption habits over the environment, choosing an environment-friendly consumption behavior, often called green consumption.

Green consumers are those who give importance to quality and price and choose products and brands that adopt conservation practices and display environmental concern (Ciribele & Caneschi, 2011).

To meet the green consumption requirements, green products now present features differentiating them from conventional products, such as differential packaging and/or environmental certification validating the characteristic of being environment friendly. In this sense, some products might seem to have characteristics of a green product but actually may not have them. These products are said to have “environmental makeup” or are characterized as a greenwashing product.

2.2 Greenwashing

The term greenwashing appeared in the 1980s and gained wide recognition by describing the practice of making offensive or exaggerated claims of sustainability in an attempt to gain market share (Dahl, 2010). The emergence of this term reflected the growing apprehension with which some corporations ingeniously manage their reputations before the public, financial community and regulating agencies and conceal guilt, obscuring the nature of their problem or claim (Laufer, 2003).

Greenwashing, also known as eco-bleaching, whitewash, eco-washing, green washing, green makeup or green image washing, is a form of misleading advertisement to promote the product's, goals, or policies of an organization and thus increase the aggregate benefits of the product (Kahle & Gurel-Atay, 2015; Mayrand & Trottier, 2011).

Many companies use greenwashing to manage the public perception of their brand. The disclosure of information is carried out in such a manner that it maximizes the perception of legitimacy. However, there is an increasing number of social and environmental audits to overcome the absence of public supervision and verification (Laufer, 2003; Seele & Gatti, 2017).

Although greenwashing is not a new practice, its use is increasing, possibly because of the growing demand for green and organic products, and aggravated by the regulatory agencies' slowness in setting parameters and standards to control this practice (Dahl, 2010). The consequence of this situation, along with inefficient regulation, increases the consumer skepticism about green products, leading to mistrust of the solutions meant to protect the environment in the production, distribution, or commercialization processes (Braga, Merlo, & Silva, 2016a; Dahl, 2010).

However, a real change in attitude toward the environment is often costly and cumbersome in implementation, thus making companies to take an easier path and exploit the new sustainable consumption scenario through greenwashing (Chen & Chang, 2013).

Thus, greenwashing is positively related to consumer confusion on the advertisements of brands and the perceived risks (PRs) in buying green products, because green makeup increases the possibility of consumers making erroneous purchase decisions. On the other hand, when greenwashing is perceived, it becomes negative for the company because consumers will no longer trust the brand nor the product (Chen & Chang, 2013).

2.3 Consumer behavior

Consumer behavior is characterized by the direct involvement of consumers in obtaining, consuming and disposing of products and services, as demonstrated by Blackwell, Miniard, and Engel (2005). Budica, Puiu, and Budica (2010) show that consumer behavior is influenced by a group (e.g. the influence of friends on the type of clothing chosen) or an organization. They consider the impact of consumer behavior on society important because it may have implications for the society, economy and environment.

Using the model proposed by these authors, we try to examine what occurs mainly at the buying stage, when greenwashing can have a positive or negative influence on consumer's attitudes and beliefs about buying a green product.

2.3.1 Attitude. Englis and Phillips (2013) show a disconnection between consumer attitudes and green behavior because consumer concerns about the environment do not easily translate into green products.

Fishbein and Ajzen (1977) define attitude as a positive or negative assessment of an object, action, issue or person. Solomon (2016) adds that attitude is a lasting evaluation of people about the objects and environments that surround them.

Wu and Chen (2014) show that attitude is influenced by a behavioral belief. Thus, attitudes are based on beliefs and attributes about an object that influence an individual to behave consistently according to them (Fishbein & Ajzen, 1977). We consider these attributes through the evaluation of any association with the product's image.

2.3.2 Beliefs. Belief is a cognitive aspect and it refers to how an individual sees the consequences of a given behavior (Ajzen, 1991). According to Chen (2010), one's choice of a product or service is based on the belief or expectation based on credibility, benevolence and environmental performance.

Thus, Wu and Chen (2014) propose that the belief influences subjective norms and perceived behavioral control in addition to consumer attitude. One's beliefs about attributes and product quality are important because they determine how favorable the attitudes toward the product and/or service are (Blackwell et al., 2005).

2.3.3 Perceived risk. Risk is defined in terms of consumer perception as the uncertainty and unfavorable consequences of buying a product or service (Dowling & Staelin, 1994). PR consists of psychological, physical, financial, social, and performance factors (Jacoby & Kaplan, 1972). Solomon (2016) shows that the PR can affect purchase decisions by highlighting the negative consequences. According to Roselius (1971), the consumer, to perceive the risk in a purchase, might adopt four different strategies: reduce the risk by decreasing the probability of purchase, change from one type of perceived loss to another whose tolerance is higher, postpone the purchase and purchase and absorb the unresolved risk.

From these definitions, PR may have a negative relationship with attitude and belief and a positive relationship with the perception of greenwashing, because the consumer purchasing a product will be assumed to have confidence in the product quality. In this case, the perception of greenwashing can result in rejection of the product because of the negative relationship with attitude. From these constructs, we propose the following hypotheses:

- H1. Attitude and belief have a negative relationship with PR for the consumption of green products in retail.
- H2. The perception of greenwashing has a positive relationship with PR for the consumption of green products in retail.

2.3.4 Green consumption confusion. According to Mitchell, Walsh, and Yamin (2005), the state of confusion is characterized by the consumers' difficulty to understand the various

alternatives of products and services from the information presented in the consumption scenario. It may affect the consumers' ability to make decisions because of ambiguous information. One reason for the confusion of green consumers is greenwashing, where companies operating in the market in an ethical manner end up being confused with those practicing greenwashing. Thus, consumers find it difficult to perceive the difference between a product fulfilling the requirements of environmental sustainability and one that does not because of false and hidden information (Paixão, 2016).

The negative relation to attitude and belief and positive relation to the perception of greenwashing confuse the green consumers because of the difficulty in defining which product is true and which one is false (Mitchell, Walsh, & Yamin, 2005), provoking in some cases even skepticism about the product (Braga, Silva, & Merlo, 2016). Thus, we have the following hypotheses:

H3. Attitude and belief have a negative relationship with the green consumption confusion for green products in retail.

H4. The perception of greenwashing has a positive relationship with the green consumption confusion for green products in retail.

2.3.5 Perceived benefit. The overall benefit that consumers demand is not only satisfaction with the product's operation, but also additional beneficial effects (Drennan, Sullivan Mort, & Previte, 2006). Chandon, Wansink, and Laurent (2000) separate the perceived benefit (PB) into six constructs: monetary savings, quality, convenience, value, expression, and entertainment. Babin, Darden, and Griffin (1994) discuss four conceptualizations of the perceived value from the customer's perspective: value is the price, what I gain from what I give, the tradeoff between perceived quality and price and all the subjective and objective factors forming the complete buying experience.

Thus, once the benefits in green products are perceived, one's attitude and beliefs would become positive, but greenwashing would become negative as it has no additional benefit. Thus, we formulate the following hypotheses:

H5. Attitude and belief have a positive relationship with the PB of the consumption of green products in retail.

H6. The perception of greenwashing has a negative relationship with the PB of the consumption of green products in retail.

2.3.6 Satisfaction and consumer loyalty. Ko, Hwang, and Kim (2013) find that satisfaction and consumer loyalty have the largest effect on the consumers' corporate image of a company. According to them, a positive corporate image can increase the consumers' intention to buy products from that company. This can also lead to greater satisfaction and loyal customers (Kim, Galliers, Shin, Ryou, & Kim, 2012).

Satisfaction and loyalty are defined by Oliver (1999) as the commitment to systematically repurchase a product or service despite the influence of situations and marketing efforts conducive to behavioral changes. According to Chang, Lv, Chou, He, & Song (2014), products having security and consumer confidence encourage greater satisfaction and lead to a loyalty relationship (positive) between the consumer and the product or service. Thus, we propose the following hypotheses:

H7. Attitude and belief have a positive relationship with satisfaction and loyalty for the consumption of green products in retail.

H8. The perception of greenwashing has a negative relationship with satisfaction and loyalty for the consumption of green products in retail.

2.3.7 Subjective and control forces. Subjective forces reflect the perception of social pressure individuals might experience in response to their behavior (Ajzen, 1991; Chuttur, 2009); this is also related to the importance of the individual in the group or approval or disapproval of others' behavior (Zhan & He, 2012).

This would lead consumers to observe whether society approves their behavior of consuming green products. According to Chen and Chang (2013), the positive relationship of an individual or a group with greenwashing provokes society's disapproval of the individual or group. Thus, we propose the following research hypotheses:

H9. Attitude and belief have a positive relationship with subjective and control forces for the consumption of green products in retail.

H10. The perception of greenwashing has a positive relationship with subjective and control forces for the consumption of green products in retail.

2.3.8 Controlled behavior and decision power. Blackwell et al. (2005) find it absolutely necessary to understand consumer behavior for competitive survival. Pinheiro, De Castro, Da Silva, and Nunes (2011) consider this when they state that the consumers' purchase decision is influenced by psychological, sociocultural, situational and demographic factors. Kotler and Keller (2006) separate this process into cultural, social, personal, psychological and motivational factors.

From the perspective of these authors, controlled behavior and decision-making power are positively related to attitude and belief, as well as greenwashing, because the greater the control and decision-making power, the greater will be the tendency to perceive greenwashing and the attitude and belief of accepting or rejecting green products. Therefore, we have the following research hypotheses:

H11. Attitude and belief have a positive relationship with controlled behavior for the consumption of green products in retail.

H12. The perception of greenwashing has a positive relationship with controlled behavior for the consumption of green products in retail.

To facilitate a better understanding, Figure 1 shows the proposed theoretical framework giving the main effects between the constructs and the interaction effects tested with the proposed research hypotheses. A plus sign (+) indicates a positive relationship between the constructs.

3. Methodological procedures

To verify the objective of this study, we carried out a quantitative analysis through an online survey covering a sample of 880 Brazilian consumers. Data were collected with the aid of a company specialized in market research. Thus, we could collect data of real consumers living in the city of São Paulo.

From the study's hypotheses, we propose a structural model (Figure 2) using scales that were validated and tested by Braga, Merlo, Freire, Da Silva, & Quevedo-Silva (2016b) and Correa, Junior, and Da Silva (2017). In addition, we adapted certain items of the Wu and Chen (2014) scale using the procedure recommended by DeVellis (2016), where the translation, evaluation, and phase validation of the scale involve at least five experts in the area, who contribute by adjusting the phrases and evaluating whether they fit the construct

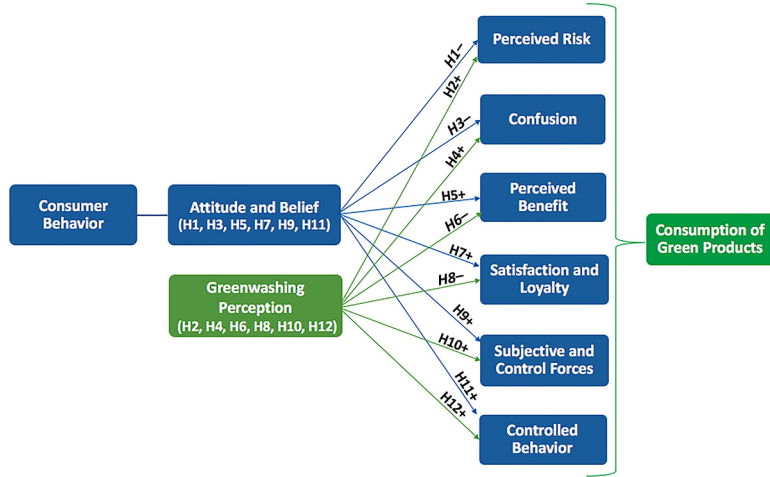


Figure 1.
Proposed theoretical structure and study hypotheses

Source: Drafted by the authors

proposed in the study (face validation). Note that the concepts of green consumption and green products are not explained to the respondents in the response form.

The scale used in this study is presented in [Table I](#). The application uses a Likert scale with five points for agreement/disagreement, where 1 (one) stands for total disagreement and 5 (five) represents total agreement. The respondents were asked to make choices based on their perception about others, that is, to consider how other people would present their answers. The categorical study variables are gender, age range (above 18 years), family

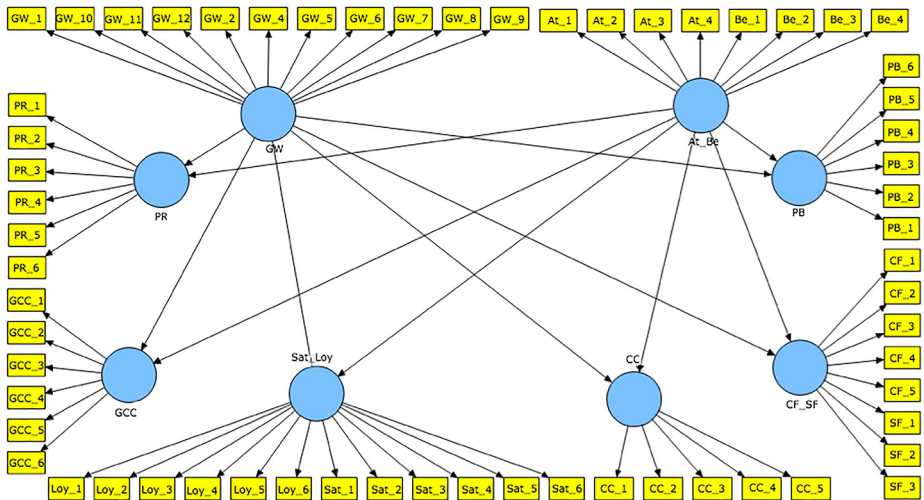


Figure 2.
Proposed initial model

Source: Drafted by the authors

income, marital status and purchase frequency (the survey covers people who buy groceries from supermarkets on a weekly or biweekly basis).

We used the SmartPLS 2.0.M3 software to test the structural equation model because the data originated from a Likert-type scale violated, as expected (Ringle, Silva, & Bido, 2014), the condition of multivariate normality that models of structural equations based on covariance demand. We performed this test with the LISREL 9.2 software (Jöreskog & Sörbom, 2001).

To evaluate the minimum sample size suitable for the analysis of the model (Figure 1), we followed the recommendations of Ringle et al. (2014), by which the construct that “receives the most arrows” (predictors) is the one that decides the size in question.

From Figure 2, the constructs with more predictors show two arrows pointing to it. Thus, we used the G*Power 3.1.7 software with Cohen’s (1988) specifications for the social sciences and behavior area; that is, the average effect size of 0.15 and test power of 0.80 require a scale like the one used in this study, with a minimum sample of 68 respondents.

This is sufficient to detect the desired structural equation modeling effect using the partial least square (PLS) method. As the sample of the research included 880 respondents, it was 12.94 times the calculated size. Furthermore, as mentioned above, the sample included real consumers because it was collected by a company specialized in opinion surveys and marketing.

With regard to the data analysis, we used the IBM SPSS Statistics 22 software for the frequency tests. For the structural equations modeling with the PLS method, we use the SmartPLS 2.0 M3 software to carry out the test and evaluate the consistency of the proposed model. The sample test of adherence to the multivariate normal distribution (Mardia’s PK) is significant ($p < 0.001$), indicating non-adherence and the need to use methods and techniques that do not require this assumption.

4. Results

An analysis of the descriptive statistics of the sample of valid questionnaires showed that 67.6 per cent of the respondents are women and 32.4 per cent are men, with an average age of 32; 52.6 per cent of them were married, and 47.4 per cent were single. All of them go to supermarkets on a weekly or biweekly basis, with 73.8 per cent purchasing weekly and 26.2 per cent purchasing biweekly. The predominant minimum wage family income ranges were 4 to 6 (28.4 per cent) and 6 to 8 (19.4 per cent). Clearly, the respondents can be considered real consumers.

As the methodology shows, the SmartPLS 2.0 M3 software was used for data analysis. The model created from the hypotheses was tested, and items At_0 and GW_3 were removed as their factorial loads were not above 0.50 (Hair, Hult, Ringle, & Sarstedt, 2014) and therefore interfered with the convergent validity criterion – the average variance extracted (AVE) or the Fornell and Larcker criterion (Henseler, Ringle, & Sinkovics, 2009), that is, $AVE > 0.50$ for the model constructs.

Proceeding with the analyses, we evaluated R^2 (part of the variables explaining the constructs and indicating the quality of the adjustment model). For social and behavioral sciences, Cohen (1988) suggests that $R^2 = 2$ per cent should be classified as a small effect, $R^2 = 13$ per cent as a medium effect, and $R^2 = 26$ per cent as a large effect. Cronbach’s alpha (internal consistency) and composite reliability are used to assess whether the sample is free or biased and whether the responses, on the whole, are reliable.

The Cohen effect or indicator (f^2) size indicates the “usefulness” of the construct for the model adjustment. Values of 0.02, 0.15 and 0.35 are considered small, medium and large, respectively. The predictive validity (Q^2) or the Stone–Geisse indicator evaluates the accuracy of the adjustment model. The evaluation criteria are values greater than zero (Hair et al., 2014). These quality indicators are given in Table II.

Construct	Lab	Item
Greenwashing (GW)	GW_1	I'm sure that green products, in their majority, deceive consumers
	GW_2	I'm sure that green products, in their majority, are only green on their labels
	GW_3	I try to check if the information about a green product is true
	GW_4	I have trouble proving that the information of a given product is green
	GW_5	The manufacturers of green products always exaggerate the (green) characteristics of their products
	GW_6	The vast majority of green products "disguise" their true characteristics to make them greener than they really are
	GW_7	The vast majority of green products do not present important information to make them greener than they really are
	GW_8	The advertising of green products is never true
	GW_9	Green companies are those that are truly ethical
	GW_10	I'm sure that green products exist only in advertisements
	GW_11	There is no real green product, only those that improve a few environmental practices
	GW_12	Company websites always exaggerate their products' green characteristics
Green consumption confusion (GCC)	GCC_1	There is a great similarity between many products and this makes it hard to know which one is really green
	GCC_2	Recognizing the differences between a green product and other products on the market is very difficult
	GCC_3	The fact that there are many products on the market always creates confusion in recognizing their green characteristics
	GCC_4	There are so many products that it is hard to decide to buy the one that respects the proper use of environmental resources
	GCC_5	Whenever I buy a product, I don't feel sufficiently informed whether or not it is green
	GCC_6	Whenever I buy a product I question its green characteristics
PBs	PB_1	Green products are always more reliable
	PB_2	Green products always have a better quality
	PB_3	Green products are cheaper
	PB_4	Green products are more durable
	PB_5	Green products are healthier
	PB_6	Green products always provide a better quality of life
PR	PR_1	Buying green products does not present more advantages than buying conventional products
	PR_2	The consumption of green products has not been approved by society as a whole.
	PR_3	Consuming green products does not interfere with my personal image
	PR_4	Consuming green products does not ensure a better quality of life
	PR_5	Consuming green products does not improve my health
	PR_6	Consuming green products does not meet my expectations
Attitude (At)	At_0	I even forget that there are green products on the market.
	At_1	The consumption of green products is viable for everyone
	At_2	Consuming green products is of great importance for people
	At_3	Consuming green products is fundamentally important
	At_4	Consuming green products guarantees our future
	At_5	Consuming green products is a waste of money
Beliefs (Be)	Be_1	My family members believe that I should consume green products
	Be_2	My friends believe that I should consume green products
	Be_3	I value the opinion and feelings of my family members regarding the consumption of green products
	Be_4	I value the opinion and feelings of my friends regarding the consumption of green products

Table I.
Scale used in this study

(continued)

Construct	Lab	Item
Control forces (CF)	CF_1	I have enough money to buy green products
	CF_2	I have enough time to buy green products
	CF_3	I have sufficient resources to maintain the consumption of green products
	CF_4	I have sufficient information and knowledge about green products
	CF_5	I feel that I am capable of consuming green products
Subjective forces (SF)	SF_1	I find it easy to consume green products
	SF_2	I am aware of all the differences between green products and normal products
	SF_3	I have vast knowledge about the consumption of green products
Controlled behavior and decision power (CC)	CC_1	I have the power to decide about buying green products.
	CC_2	I participate in the purchasing process of green products
	CC_3	I participate in the decision-making process of purchasing green products
	CC_4	I am the one who buys green products
	CC_5	I feel that I'm free to choose and buy either green or conventional products
Satisfaction (Sat)	Sat_1	I always identify with green products
	Sat_2	I always recommend green products to my friends and family members
	Sat_3	Green products meet my quality expectations
	Sat_4	Green product prices represent their quality
	Sat_5	Green product prices are higher than their quality
	Sat_6	When I buy a green product, I'm satisfied with its quality
Loyalty (Loy)	Loy_1	I always buy green products
	Loy_2	I really enjoy buying green products
	Loy_3	I am certain that I made the right choice in changing my consumption habits to green products
	Loy_4	I believe that green products are reliable
	Loy_5	I'm sure that the environmental performance of green products is generally reliable
	Loy_6	I believe that environmental information regarding green products is generally reliable

Source: Adapted from [Braga, Merlo, Freire et al. \(2016b\)](#); [Wu and Chen \(2014\)](#); [Correa, Junior and Da Silva \(2017\)](#)

Table I.

An analysis of [Table II](#) clearly shows that, on the whole, the model can be considered adjusted even when the non-adherent variables (which did not occur in this case) are not eliminated. We obtained indicators that meet the PLS-SEM adjustment requirements.

We need to analyze the discriminant validity as well as the model adjustment quality because the constructs must independently relate to each other ([Hair et al., 2014](#)). The Fornell and Larcker criteria are used to compare the AVE value square roots for each construct with the (Pearson) correlations between the constructs (or latent variables). The AVE square roots should be larger than the correlation between the constructs ([Table III](#)).

For all constructs, [Table III](#) shows that the AVE square roots are larger than the correlations between the constructs. This shows that the model has discriminant validity and can be interpreted.

After confirming that the model was suitably adjusted, one can analyze the hypotheses based on the theory presented in [Figure 3](#). This model shows that greenwashing is positively related to PR and green consumption confusion (GCC) and negatively related to satisfaction and loyalty (Sat_Loy) and PB. On the other hand, attitude and beliefs (At_Be)

are positively related to Sat_Loy, PB, controlled behavior and decision power (CC), and subjective and control forces (SF_CF) and negatively related to PR and GCC.

From these relationships, we calculated the *p*-value (with a significance level of 5 per cent) and *t*-value (with a significance level of 1.96), and evaluated the path coefficients; thus, we could decide whether to accept or reject the study hypotheses presented in Table IV.

H10 (The perception of greenwashing has a positive relationship with subjective and control forces for the consumption of green products in retail) and *H12* (The perception of greenwashing has a positive relationship with controlled behavior for the consumption of green products in retail), presented significance in their relationships with the perception of greenwashing (*p* < 0.05); however, *t*-value (*t* > 1.96) makes the relationships lose validity, where the values were 1.292 for *H10* and 0.428 for *H12*.

4.1 Discussion of results

In a more detailed and applied analysis of the results obtained through the modeling of structural equations with the PLS method, we can infer that consumer's attitudes and beliefs confirm the theory by demonstrating that the values of PBs, satisfaction and loyalty; aspects of decision-making power; and subjective and control forces are actually charged in the purchasing and consumption decision of green products in retail. Therefore, we can say that the relationship between attitude and belief in PR (*H1*) is negative, as presented in theory. However, this is a low-value inference relation, suggesting that when the consumer believes in the product, the PR is not considered significant.

Table II.

Quality criteria for the adjustment of specification models – SEM – average extracted variance (AEV), composite reliability, *R*², Cronbach alpha, predictive validity (*Q*²) or Stone–Geisser indicator and effect size (*f*²) or Cohen indicator

	AVE	Composite reliability	<i>R</i> ²	Cronbach's alpha	<i>Q</i> ²	<i>f</i> ²
At_Be	0.5405	0.9034		0.8770	0.4280	0.4280
PB	0.5353	0.8681	0.4228	0.8175	0.2117	0.3728
CC	0.7163	0.9263	0.2471	0.8997	0.1692	0.5716
GCC	0.6122	0.9045	0.4260	0.8736	0.2500	0.4544
SF_CF	0.6215	0.9291	0.3715	0.9132	0.2104	0.5153
GW	0.5121	0.9164		0.8959	0.4196	0.4196
PR	0.5601	0.8823	0.3007	0.8394	0.1560	0.3946
Sat_Loy	0.6136	0.9479	0.5263	0.9369	0.3042	0.5491
Reference values	>0.50	>0.70	See note 1	>0.70	Positive	See note 2

Notes: Reference values for *R*² for social and behavioral sciences: *R*² = 0.02 (2%) classified as small, *R*² = 0.13 (13%) as medium and *R*² = 0.26 (26%) as large. Values of 0.02, 0.15 and 0.35 are considered small, medium and large, respectively

Source: Cohen (1988), Hair et al. (2014)

Table III.

Discriminant validity evaluation– comparison of the square roots of the AVE versus the correlation between constructs

	At_Be	PB	CC	GCC	SF_CF	GW	PR	Sat_Loy
At_Be	0.7352							
PB	0.6461	0.7317						
CC	0.4971	0.4333	0.8464					
GCC	0.1580	0.0872	0.0980	0.7825				
SF_CF	0.6095	0.5689	0.6271	0.0730	0.7884			
GW	0.0488	-0.0419	0.0317	0.6403	0.0606	0.7156		
PR	-0.0384	-0.0938	-0.0961	0.3566	0.0500	0.5445	0.7484	
Sat_Loy	0.7105	0.6775	0.6747	0.0146	0.7478	-0.1117	-0.1236	0.7833

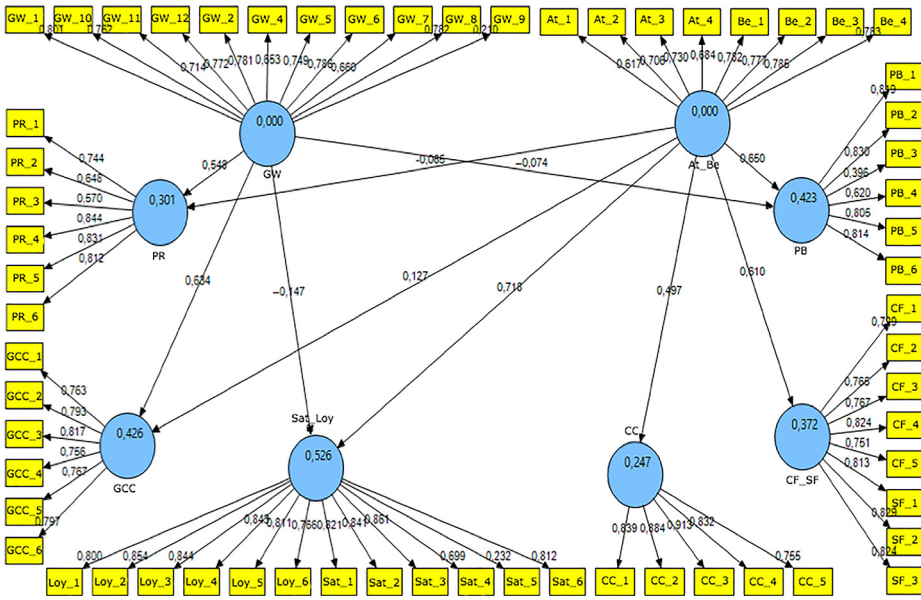


Figure 3. Adjusted study model

Source: Drafted by the authors

	Path coefficient	t-value	p-value	Decision
(H1) At_Be → PR	-0.0652	2.013	0.0335	Accept
(H2) GW → PR	0.5477	18.3839	0.0298	Accept
(H3) At_Be → GCC	0.1271	4.3315	0.0293	Accept
(H4) GW → GCC	0.6341	25.2523	0.0251	Accept
(H5) At_Be → BP	0.6497	25.0365	0.0259	Accept
(H6) GW → BP	-0.0736	2.1411	0.0344	Accept
(H7) At_Be → Sat_Loy	0.7177	34.1849	0.021	Accept
(H8) GW → Sat_Loy	-0.1467	5.6337	0.026	Accept
(H9) At_Be → SF_CF	0.6095	23.6104	0.0258	Accept
(H10) GW → SF_CF	0.008	1.292	0.0320	Does not present ratio significance
(H11) At_Be → CC	0.4971	14.6903	0.0338	Accept
(H12) GW → CC	0.033	0.428	0.0320	Does not present ratio significance

Table IV. Evaluation of the hypotheses

Thus, attitude and belief are related to the confusion of green consumption (H3) in a small but positive way. This could be because of two reasons:

- (1) lack of in-depth understanding of the concept of green product; and
- (2) superficial or deep understanding of the concept of green product, making the consumer to think a little more before deciding to buy a product of a certain preferred brand.

In this way, if the consumer recognizes features that do not please or add value, he may stop consuming the product.

Thus, the model in [Figure 3](#) demonstrates that consumers buying products actually appreciate the aspects that attach good memories to the product – “This product is good and satisfies me” – and practically disregards aspects such as risk and confusion. In other words, they consume without risk and with confidence in the product.

However, when consumers realize that they are being deceived because of greenwashing practices with the product they are consuming, risk and confusion become relevant in their decision-making process (54.7 per cent for risk and 63.4 per cent for confusion), and consequently they may stop buying the product identified (perceived) as misleading. Even so, if the consumer consumes the product, he/she will purchase it without expecting any benefit and with no satisfaction and loyalty.

Note that the Brazilian consumer is becoming increasingly demanding and observant and identifies the greenwashing advertised in the packaging of products when he/she observes the items forming the construct “Green consumption confusion” and how it relates to greenwashing.

On the business side, this study showed that companies should only “follow the trend” of the green product by presenting a makeup package because as soon as the consumer perceives the false message, the product will tend to lose market and fall in disrepute.

5. Conclusions

The goal of this research was to analyze consumers’ decision-making regarding green products, their greenwashing and consumption. We affirm that we could demonstrate how the Brazilian consumers’ attitude and beliefs are formed and how greenwashing affects their green products consumption in retail.

By comparing the results of this study with those of [Braga, Merlo, Freire et al. \(2016b\)](#), [Correa, Junior, and Da Silva \(2017\)](#) and [Wu and Chen \(2014\)](#), we can infer that our results are superior to the previous findings because we considered the aspects forming the consumers’ attitude and belief and those that reflected the perception of greenwashing.

[Braga, Merlo, Freire, Da Silva, and Quevedo-Silva \(2016b\)](#) demonstrated the effect of consumer skepticism that arises when consumers observe greenwashing and recognize the risk and confusion with green consumption. This reinforces the importance of companies being true when providing information about its product.

From the planned behavior theory, [Wu and Chen \(2014\)](#) analyzed how the consumers’ behavior is based on characteristics such as satisfaction, loyalty, benefits, risk, attitudes, beliefs and control forces. In this study, these characteristics are related to the consumption characteristics of green products to verify whether the application would fit. Thus, this study found that, for green products, consumer behavior also follows the concept of planned behavior, as confirmed by *H1, H5, H7, H9* and *H11*.

This study also showed that risks are not considered when the consumers believe in the product (*H1*) but show some confusion in green consumption because of attitudes and beliefs (*H3*). On the other hand, in the case of greenwashing, the PR (*H2*) and confusion in green consumption (*H4*) become significant and influence the decision to purchase a determined product.

For companies, this study showed that identifying a product as misleading can damage the image and lower the sales volume, market share, and financial results. In extreme cases, this will continue until the product is withdrawn from the market. In general, the main greenwashing practices (cheating the consumer) are related to green packaging, which relates the product to the environment or shows it as an organic product. Other features of the products are related to vague and irrelevant, and even false information about the product being green or ecologically correct.

Finally, when comparing this study to [Correa, Junior, and Da Silva \(2017\)](#), who analyzed greenwashing in terms of beliefs, attitudes, PBs, and confusion, we could confirm the results of that study and demonstrate that the PBs are linked to consumer's attitudes and beliefs.

In addition, considering the purpose of this study, we can also infer that the marketing of green products in retail conveys reliability, because the high demand for satisfaction, loyalty and PBs demonstrate such reliability.

On the other hand, because consumers become suspicious, they would no longer believe in the product and the company once they realize that they are taking risks or are being deceived in the purchase of a product claiming to have characteristics that in reality do not exist, and is labeled as a "makeup product" or greenwashing product.

Another point to consider and that has already been raised by [Braga, Merlo, and Silva \(2016a\)](#) is the possibility of consumers looking for organic or ecologically correct products at the retailers specialized in these products and looking less frequently for them at conventional supermarkets, thus enabling a lower consumer demand.

Finally, as a limitation of this study, the respondents are not given an explicit definition of green product and its consumption in the questionnaire, because they are expected to have basic knowledge of the subject. Yet, we believe that the main contribution of this study is to prove that consumers tend to value green products in retail through their attitude and beliefs and avoid the consumption of a product when they discover the practice of greenwashing. The study aimed to evaluate an image recovery process for a product found to be greenwashed.

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