# Accepted Manuscript

Motivations for promoting the consumption of green products in an emerging country: Exploring attitudes of Brazilian consumers

Ágata M. Ritter , Miriam Borchardt , Guilherme L.R. Vaccaro , Giancarlo M. Pereira , Francieli Almeida
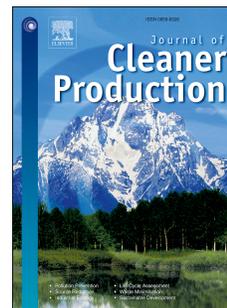
Please cite this article as: Ritter ÁM, Borchardt M, Vaccaro GLR, Pereira GM, Almeida F, Motivations for promoting the consumption of green products in an emerging country: Exploring attitudes of Brazilian consumers, *Journal of Cleaner Production* (2015), doi: 10.1016/j.jclepro.2014.11.066.

Motivations for promoting the consumption of green products in an emerging country: exploring attitudes of Brazilian consumers

Ágata M. Ritter

Affiliation: Vale do Rio dos Sinos University (UNISINOS)

Address: Av. Unisinos, 950 – CEP 93200-000 - São Leopoldo – RS - Brazil

e.mail: agataritter@ibest.com.br

Miriam Borchardt *

Affiliation: Vale do Rio dos Sinos University (UNISINOS)

Address: Av. Unisinos, 950 – CEP 93200-000 - São Leopoldo – RS - Brazil

e.mail: miriamb@unisinos.br

Guilherme L. R. Vaccaro

Affiliation: Vale do Rio dos Sinos University (UNISINOS)

Address: Av. Unisinos, 950 – CEP 93200-000 - São Leopoldo – RS - Brazil

e.mail: guilhermev@unisinos.br

Giancarlo M. Pereira

Affiliation: Vale do Rio dos Sinos University (UNISINOS)

Address: Av. Unisinos, 950 – CEP 93200-000 - São Leopoldo – RS - Brazil

e.mail: gian@unisinos.br

Francieli Almeida

Affiliation: Vale do Rio dos Sinos University (UNISINOS)

Address: Av. Unisinos, 950 – CEP 93200-000 - São Leopoldo – RS - Brazil

e.mail: francieli_almeida@hotmail.com

* corresponding author – Phone: 55.51.84667669

Abstract

Understanding the motivations that stimulate green consumption can promote environmental thinking to increase demand, especially because the current estimated market share for green products is less than 4% worldwide. In this scenario, emerging countries have contributed to the increasing levels of consumption and environmental effects. Culture and socio-economic status play a significant role in environmental impacts and influences the consumption of green products. The current body of literature lacks studies focused on the attitude of Brazilian consumers in relation to these products. This research evaluates the elements that motivate the consumption of green product. A survey targeting individuals who have consumed these products was performed in the largest city in Southern Brazil. Data were analyzed using a factorial analysis, and a causal structural equation model was created to evaluate the drivers that promote green consumption. The elements of Information and Knowledge, Environmental Attitude, Social Context and Environmental Consciousness were strongly correlated with green consumption. However, the Quality and Price of green products has shown a weaker relationship with consumption. These elements indicated that the individuals in the survey recognize and seek information covering environmental issues, are concerned with the health effects associated with the consumption of the goods, and reject a brand or company that might have demonstrated inappropriate environmental behaviours. Also indicate that the relation price versus quality does not play a central role in the decision of consuming green products. Finally, information about these products and their point-of-sale availability were highlighted as enhancing green consumption. This outcome suggests that education might increase green consumption. This research contributed to understand the main drivers that support the decision about the green products option made for the surveyed sample. From a managerial standpoint, improvements in ethical transactions, the promotion of socially responsible actions, the distribution of appropriate information about green products, and the structure of the green supply chain could create new businesses focused on sustainable production and consumption. The findings of this research could support future policies and actions focused on providing information and knowledge about environmental and health contribution of the green products to the consumers, producers, companies, and society.

Keywords: green products; green consumption; sustainability; green market.

1. Introduction

The global consumer continues to grow as people in developing nations use their increasing purchasing power to emulate the consumption patterns of economically developed countries (Mont *et al.*, 2014). Providing green products (GP) for the growing global market could be a way to minimize the environmental impacts derivate from this increasing consumption (Mont and Plepys, 2008). The debate regarding what constitutes GP is ongoing. The definition of GPs can highlight different aspects of these products: the life cycle phases during which a product can show its environmentally friendly features, the higher environmental benefits compared to conventional products, or the minimization of the natural resources used. In this study, a GP was considered as a product striving to protect or to enhance the natural environment by conserving energy and/or resources and reducing or eliminating the use of toxic agents, pollution, and waste (Dangelico and Pujari, 2010).

Despite the investment of various companies in green production and marketing (Gleim *et al.*, 2013), consumers do not purchase GPs as regularly as expected (Polonsky, 2011). The estimated market share for GPs is less than 4% worldwide and may be decreasing (Gleim *et al.*, 2013). Understanding consumer attitudes better would help producers, marketers and policy makers to promote consumer habits that are less harmful toward the environment (Lin and Huang, 2012). Positive attitudes, quality of life, and environmental conscientiousness frequently are cited by the GP consumers as relevant to support their buying decision (Leire and Thidell, 2005; Jacob *et al.*, 2009; Sheth *et al.*, 2011). The psychological benefits and the desire to be recognized as GP consumers can be more relevant than the functional aspects of the products such as price and quality (Lin and Huang, 2012). The lack of knowledge about GPs seems to be the greatest barrier to the consumption of these products (Tseng and Hung, 2013) and the consumption decision could be based only on the economic aspects (Wang *et al.*, 2014).

Approaches related to sustainable consumption should be investigated confronting industrialized and developing countries (Mont and Plepys, 2008). External factors such as culture, environmental structures and services in different countries might play a relevant role in consumers´ behavior towards the environment (Vicente-Molina *et al.*, 2013; Ester *et al.*, 2004). The behaviour in terms of energy and water consumption, food habits and cultural perspectives from emerging countries could be different from developed countries. The per-capita water consumption in Brazil is much bigger than in Europe (Barbosa and Veloso, 2014) but the per-capita energy consumption in Europe is at least the double than in Latin America (Mont and Plepys, 2008). Also, from the socioeconomic point of view, Brazil comes from a recent period of economic stability (OCDE, 2011) but presents a relatively low percentage of people with higher education (7.46% of the population aged over 10 years concluded graduation, 0.32% concluded a minor, and 0.12% concluded Ph.D.) (CGEE, 2012). In this sense, the drivers that stimulate sustainable attitudes as well GP consumption should be influenced by socio-economic structures and individual options and choices (Bilharz and Cerny, 2012). Reinforcing this point, Spencer and Lilley (2012) pointed out that there are few studies conducted on the subject of cultural influence on natural resource use and mentioned that culture plays a significant role in environmental impact.

This study investigates how Brazilian consumers decide to buy GPs (Gleim *et al.*, 2013) and the aspects that influence the consumers´ choice in this emerging country (Aspinall *et al.*, 2011; Zhao *et al.*, 2014; Paço *et al.*, 2013). As presented before, the current body of literature lacks studies focused on the attitude of Brazilian consumers in relation to GPs. Brazil is an emerging country with approximately 220 million of inhabitants and with the seventh largest GDP in 2012 (The World Bank, 2013). Despite the extreme inequality and poverty in Brazil, the country's growing economy includes a huge developing middle class that represents about 100 million of people, more than the population of the most European or Latin America countries. This middle class has been generating a large-scale environmental change in the country (Ariztía *et al.*, 2014). This study contributes to the discussion of developing global approaches through considering a local perspective. These concerns have been stated in recent Brazilian academic studies discussing consumption and domestic life and their relationship with sustainability in Brazil (Barbosa and Veloso, 2014), lifestyle orientation and sustainable consumption (Bilharz and Cerny, 2012) and methods to increase the sale of GPs in the supply chain (Tomasin *et al.*, 2013). A survey was performed in the largest metropolitan area in Southern Brazil (4 million inhabitants) (IBGE, 2010). The data were analyzed using a factorial analysis. Afterward, a structural equations model (SEM) was created to support the proposed analysis. This study was restricted to consumable GPs, such as food, hygiene and cleanliness products, clothing, household appliances, lights and batteries. These items are consumed daily, accounting for approximately 32% of the monthly expenditures of the families in the surveyed region (IBGE, 2010).

2. Motivations for green product consumption

No official listings or classifications are assigned to GPs internationally; however, the World Trade Organization (WTO) Committee on Trade and Environment (CTE) has taken actions and organised discussions to list these products, and preliminary listings have been established (Hamwey *et al.*, 2013). The challenges associated with generating criteria to characterize a GP are reflected in communications to the consumer about the benefits and advantages of these products. One crucial point related to the lack of an international classification system for GPs is the misunderstanding of what constitutes a GP (Dangelico and Pontrandolfo, 2010). A historical review about GP characteristics and definitions was previously conducted by Dangelico and Pontrandolfo (2010). Several of these characteristics are related to the performance of the products (e.g., energy consumption, water consumption), the use of recycling materials or materials that do not cause damage to the environment, the use of minimal or no packaging, the consideration of the social impact, the lack of harm to human health and the satisfaction of a genuine need.

The analysis of scientific papers related to GP consumption suggests a set of drivers or elements that have been considered as representing the consumers' mindset when deciding to buy a GP. Table 1 presents the authors and their main focus and Table 2 shows the topics considered by these authors. Topics with similar meaning were organised in the same blocks.

Table 1 – Main focus of the researches related to the GP consumption

Author	Main focus of the researches
Lai (1993)	The green products labels characteristics; Germany.
Roberts (1996)	Green consumers in the 1990s; survey in USA.
Schlegelmilch *et al.* (1996)	Green purchasing decisions x environmental consciousness; survey in UK.
Chan (2001)	Green purchase behaviour; survey in China.
Laroche *et al.* (2001)	Targeting consumers who are willing to pay more for environmentally products; survey in USA.
Diamantopoulos *et al.* (2003)	Socio-demographics influences x green consumers; survey in UK.
Williams and Parkman (2003)	On humans and environment: the role of consciousness in environmental problems.
Frick *et al.* (2004)	Environmental knowledge; survey in Swiss.
Gilg *et al.* (2005)	Identifying the sustainable consumer; survey in UK.
McDonald and Oates (2006)	Consumer perceptions and marketing strategies related to sustainability; survey in UK.
Tsen *et al.* (2006)	Relationship between the attitudes, behaviour and values of the GP consumers and their willingness to pay for GP; survey in Kota Kinabalu.
D´Souza *et al.* (2007)	Environmental beliefs and the influence on quality and price of GP; survey in Australia.
Marchand and Walker (2008)	Product development and responsible consumption: designing alternatives for sustainable lifestyles; interviews with 11 respondents.
Mostafa (2009)	Factors that influence GP consumption; Kuwait.
Smith and Paladino (2010)	Consumer motivations towards purchasing organic foods; Australia.
Young *et al.* (2010)	Green consumer behaviour when buying technology-based products; survey in UK.
Evans (2011)	Sustainable consumption integrated into everyday life; UK.
Koller *et al.* (2011)	Insights from car users x the ecological aspect of consumption; European car users.
Lin and Huang (2012)	Decision behaviours regarding green products; Taiwan.
Gleim *et al.* (2013)	Barriers to green consumption; 330 respondents, predominantly Caucasians.
Lorek and Fuchs (2013)	Strong sustainable consumption; theoretical paper.
Paço *et al.* (2013)	Green consumer behaviour; England, Germany, Portugal and Spain.
Tseng and Hung (2013)	Customers' expectations and their perceptions of green products; users of notebook computers, monitors and printers in Taiwan.
Vicente-Molina *et al.* (2013)	Similarities and differences between the pro-environmental behaviour of students from emerging and developed countries; survey in Spain, USA, Mexico and Brazil.
Zhu *et al.* (2013)	Green food consumption; China.
Zhao *et al.* (2014)	Green consumer behavior; China.

Table 2 – Topics considered by the authors

Group of topics x authors	Lai (1993)	Roberts (1996)	Schlegelmilch et al. (1996)	Chan (2001)	Laroche et al. (2001)	Diamantopoulos et al. (2003)	Willians and Parkman (2003)	Frick et al. (2004)	Gilg et al. (2005)	McDonald and Oates (2006)	Tsen et al. (2006)	D´Souza et al. (2007)	Marchand and Walker (2008)	Mostafa (2009)	Smith and Paladino (2010)	Young et al. (2010)	Evans (2011)	Koller et al. (2011)	Lin and Huang (2012)	Gleim et al. (2013)	Lorek and Fuchs (2013)	Paço et al. (2013)	Tseng and Hung (2013)	Vicente-Molina et al. (2013)	Zhu et al. (2013)	Zhao et al. (2014)
Environmental consciousness / concern; ecological / environmental knowledge; man-nature orientation.		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x		x	x		x		x
Functional aspects of the GP; availability; GP environmental performance; quality of the GP.	x	x											x		x	x		x							x	
Environmental attitudes; recycling behaviour; green attitudes.			x	x	x	x			x	x			x			x						x		x		x
Economic value (price x long term costs reduction during the use of the GP); price.		x													x	x	x		x							
Social value; been a good person; altruism; psychological factors; cultural aspects; citizenship.	x			x					x	x			x	x	x	x	x	x	x	x	x	x		x	x	
Life style; quality of life; habits; health consciousness.					x								x		x	x	x	x	x					x	x	x
Information / knowledge about GP; labels related to GP.	x	x												x		x		x	x		x	x				
Socio-demographic aspects; political actions.			x		x	x			x			x										x		x	x	

The topics presented in Table 2 where organised into elements of analysis. The price, the economic costs in the medium and long term (Roberts, 1996; Gleim *et al.*, 2013; Evans, 2011) and the quality / product performance and product availability (Lai, 1993; Tseng and Hung, 2013; Young *et al.*, 2010) were grouped in an element named 'Quality and Price'. Behavioural aspects and personal values associated with quality of life (Laroche *et al.*, 2001; Lorek and Fuchs, 2013; Gleim *et al.*, 2013) were grouped in a element named 'Quality of life'. The element 'Social Context' considered society values, altruism, cultural aspects and citizenship (Mostafa, 2009; Lorek and Fuchs, 2013; Young *et al.*, 2010). 'Environmental Conscientiousness' element was performed by attitudes like reducing the wastes, no longer buying from a company that harming the environment and considering oneself to be part of the environment (Zhao *et al.*, 2014; Paço *et al.*, 2013). The benefits of GPs (Tseng and Hung, 2013; Paço *et al.*, 2013), information and knowledge about GP (Gleim *et al.*, 2013; Tseng and Hung, 2013) formed the element 'Information and knowledge'. Therefore, the theoretical review was organised into five elements that could influence the consumption of GPs.

2.1 Quality of life and the consumption of green products

In the Executive Summary presented by the Department for Environment, Food and Rural Affairs (United Kingdom), the description of the purpose of sustainability was to enable everyone to enjoy a better quality of life without compromising the quality of life of future generations (Higgins and Campanera, 2011). Quality of life (QOL) has been discussed considering many foci and traditions, reflecting multi-individual and/or collective life preferences and priorities. These discussions involve the consideration of the quality of living conditions in a given community according to multi-dimensional variables such as health, economic stability, life satisfaction, shelter, and psychological well-being (Higgins and Campanera, 2010). For individual concerns, the fulfillment of these aspects is associated with happiness but the QOL is associated with the commitment to ideas that transcend personal satisfaction and is not connected to the accumulation of material goods (Jacob *et al.*, 2009). Consequently, sustainable consumption can be triggered by a sufficient QOL (Lorek and Fuchs, 2013). By contrast, maintaining the QOL demands an increasing consumption of, e.g., electricity, water, healthcare, and technological devices, highlighting the idea that QOL is not connected with sustainability (Higgins and Campanera, 2010). The key point is to understand sufficient consumption and to avoid consumerism.

Frequently, standard of living has been associated with QOL. The standard of living refers to material and monetary gains, including economic well-being. A subset of people confuses these concepts, believing that higher consumption resulting from a higher standard of living improves the QOL (Huang and Rust, 2011). This supposed happiness feeds the consumption cycle, but individuals remain unsatisfied (Tukker *et al.*, 2008). Similarly, religiousness is often related to personal satisfaction because it stimulates well-being outside a materialistic culture; materialism focuses on consumption as a type of pleasure (Jacob *et al.*, 2009).

In this study, the focus was on the individual and the decision to purchase GPs; therefore, it was assumed that, after all his/hers basic needs are satisfied, the individual seeks a healthy lifestyle and well-being (Lorek and Fuch, 2013). QOL may therefore be considered (Huang and Rust, 2011) to stimulate green consumption (Tukker *et al.*, 2008).

Therefore, hypothesis H1 was formulated: *Green consumption is positively influenced by the quality of life of consumers*.

2.2 Environmental consciousness and the consumption of green products

As nations have developed, the emphasis on economic development has triggered environmental degradation and affected the quality of life (Veeravatnanond *et al.*, 2012). However, environmental challenges should be linked with the environmental conscientiousness of the individual since the effect of human activities is globally evident (Williams and Parkman, 2003). Environmental consciousness refers to the ability to reshape habits to minimize environmental effects and is affected by cognitive, attitudinal and behaviour components (Schlegelmilch *et al.*, 1996).

These consumption habits include deciding whether and what to consume. Consumption habits affect how GPs should be developed and sold because they are related to the satisfaction of "eco-citizens" (Marchand and Walker, 2008). However, accelerating the development of GPs is insufficient; the process of developing environmental conscientiousness requires time and a change in both attitudes and habits (Lin and Huang, 2012). People search for more sustainable lifestyles not only because they are environmentally conscious and understand the role they play in the environment but also because they expect personal benefits (Marchand and Walker, 2008).

Those aspects supported the formulation of hypothesis H2: *The consumption of green products is positively influenced by the environmental conscientiousness of consumers*.

2.3 Quality and price of green products

Consumers view GPs as less effective than non-green products, implying that because they have a lower yield, they may require greater quantities to obtain the same effect (Lin and Chan, 2012). However, the perceived quality of a product, including GPs, directly affects the intent to purchase (Tseng and Hung, 2013).

The price of GPs and other costs associated with their use also influence purchasing decisions (Gleim *et al.*, 2013). The time required to evaluate and search for GPs is included in their cost. Because GPs are considerably more expensive than traditional products, their price deters non-green consumers; these consumers are generally reluctant to search for information and evaluate the potential long-term gains associated with GPs (Gleim *et al.*, 2013; Zhao *et al.*, 2014). However, some consumers are willing to pay more for GPs (Laroche *et al.*, 2001; Cherian and Jacob, 2012). The price sensitivity of consumers is related to their perception of value added by GPs; this value is often realized in the long term, primary examples include hybrid vehicles and solar panels (Drozdenko *et al.*, 2011). The role of green marketing is to stress and communicate what consumers can expect from a GP in both the short- and long-term (Polonsky, 2011).

These aspects led us to formulate hypothesis H3: *Green consumption is positively influenced by the perceived quality of green products and their prices*.

2.4 Information and knowledge about green products

Although information concerning the advantages of GPs in the context of the environment, health, and society is essential for encouraging consumption, researchers have suggested that consumers generally have little knowledge about this subject (Lai, 1993; Cherian and Jacob, 2012). Salespeople could provide potential GP consumers with more information about GPs; however, current knowledge about GPs is limited (Spangenberg *et al.*, 2010). Information that influences purchasing decisions includes details about the product features, environmental benefits, health effects, and the potential economic benefits that can be generated in the medium- and long-term (Leire and Thiedell, 2005).

Non-green consumers constitute a significant share of the market and are usually not interested in the environmental effects caused by higher consumption; they are not interested in receiving information about GPs (Cherian and Jacob, 2012). Only individuals motivated to consume GPs tend to seek information about the products and the associated benefits to consumers, both individually and collectively (Spangenberg *et al.*, 2010). The route that information covering GPs takes to reach consumers and non-consumers should be reconfigured in cognitive terms (Gleim *et al.*, 2013; Tseng and Hung, 2013).

The above information led to hypothesis H4: *Green consumption is positively influenced by the information available on green products*.

2.5 Social context and the consumption of green products

Sustainable consumption may be influenced by social aspects; the behaviour of the consumer group; and the personal, social, and economic life of the consumer (Spangenberg *et al.*, 2010). In developing countries, sustainable consumption will be an attractive approach if it can reduce hunger and poverty; these elements are directly correlated with environmental degradation (O´Neill *et al.*, 2009). The consumption of GPs is related to material possession but also provides non-material contributions to the quality of life of a community (Lorek and Fuchs, 2013). Consequently, GP consumers seek a collective identity that is centered on altruistic goals (Wang *et al.*, 2014). Thus, social pressure may encourage consumers to purchase GPs (Zhao *et al.*, 2014).

The above aspects led to the formulation of hypothesis H5: *Green consumption is positively influenced by the social context of the consumer*.

3.   Methods

This section presents the research hypotheses and the conceptual framework related to GP consumption followed by the methodological procedures used in this research.

3.1 Research hypotheses and model

This research follows the literature trend presented in Table 1 and Table 2 by seeking to evaluate the motivation for GP consumption. This aim can be expressed through the following research question: What are the elements that drive the consumption of GPs? Hypotheses were formulated based on the literature review. One element was associated with each hypothesis

and was used to define the conceptual framework shown in Figure 1: quality of life, environmental consciousness, quality and price, information and knowledge, and social context. These elements include personal or psychological aspects (quality of life, environmental consciousness and social context), and external aspects (quality and price resulting from the technical features of the product, the marketing characteristics, and the information/knowledge of its quality).

Figure 1 – Conceptual framework related to green product consumption
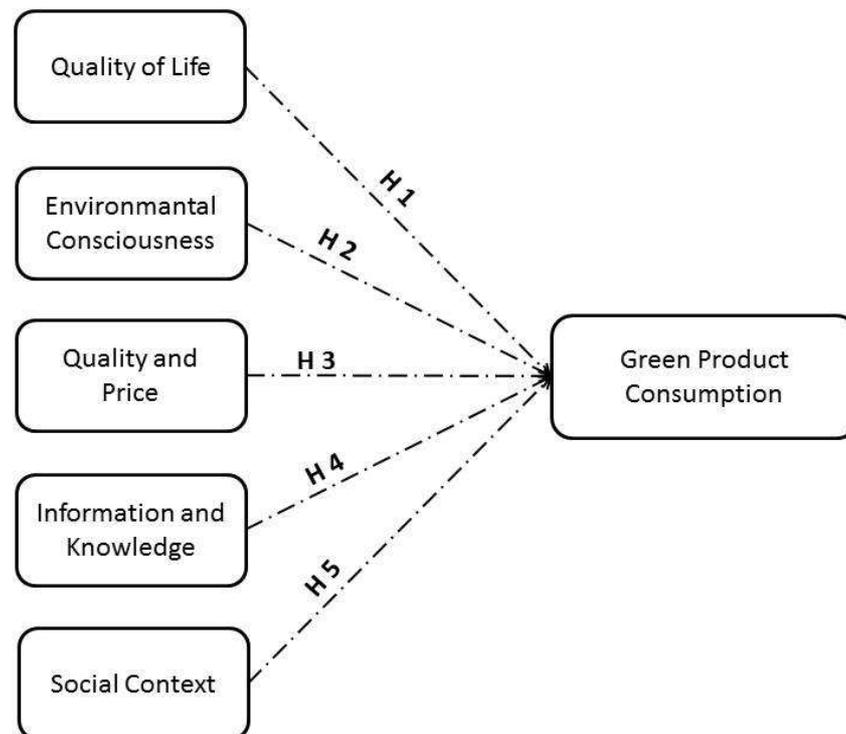
Each element was associated to variables driving GP consumption depicted from other applied and theoretical studies that were identified in the available literature and briefly presented in the previous sections. The resulting model is complemented by Table 3.

Despite the fact that the proposed framework is based on peer-reviewed literature, no previous model covered all of the selected elements listed in Table 3. GP consumption, and the motivation associated with GP consumption, is a complex subject. The presented model is still an exploratory framework, especially if considered the context of data collection, since, as indicated before, there is lack of similar work in Brazil. Additionally, the proposed model was tested based on the collected data and was refined until a representative and qualitatively acceptable causal model could be identified; this model was used to establish the argument for the theme and the research objectives.

Table 3 – Elements that drive the GP consumption and indicative variables associated with the conceptual framework

Elements	Indicative Variables	Authors
Quality of life	- Taking good care of one's health; - satisfying material needs; - having a healthy lifestyle; - religiousness as a form of balance; - controlling stress as a form of balance.	Marchand and Walker (2008); Jacob *et al*. (2009); Roberts and Clemente (2007); Huang and Rust (2011); Lorek and Fuchs (2013).
Environmental consciousness	- No longer buying from a company after determining that it is harming the environment; - caring about the planet's future; - buying a GP is good for the environment; - reducing the waste of plastic, metals, paper, glass, chemicals, electric power, water and fuels; - considering oneself to be part of the environment; all actions taken by human beings affect the environment.	Lin and Huang (2012); Veeravatnanond *et al*., (2012); Williams and Parkman (2003); Schlegelmilch *et al*. (1996).
Quality and price	- GPs have an acceptable standard of quality and a fair price; - buying GPs would be the best option if they had the same price as non-green products; - the purchase of GPs would be leveraged if they were more available in the market.	Lin and Chan (2012); Gleim *et al*. (2013); Zhao *et al*. (2014); Laroche *et al*. (2001); Cherian and Jacob (2012).
Information and knowledge	- Having more information about GPs would influence the decision to buy; - information about GPs is reliable; - the label and the packaging specifying the features of GPs would contribute to the decision to buy; - advertising explaining the benefits of GPs would influence the decision to buy; - newsletters and other information about environmental problems would drive the consumption of GPs.	Lai (1993); Cherian and Jacob (2012); Spangenberg *et al*. (2010); Leire and Thiedell (2005); Gleim *et al*. (2013); Tseng and Hung (2013).
Social Context	- Society values GP consumers; the consumption of GPs generates new businesses; - the consumption of GPs contributes to society now and in the future; - more income or higher pay would drive the consumption of GPs; - financial contributions or voluntary actions for environmental projects and actions drive the consumption of GPs.	Spangenberg *et al*. (2010); O´Neill *et al*. (2009); Lorek and Fuchs (2013); Wang *et al*. (2014); Zhao *et al*. (2014).

3.2 Data collection

To test the proposed model, a survey was conducted in the metropolitan area of Porto Alegre, the fourth most populated region in Brazil. Porto Alegre is the largest city in Southern Brazil, comprising 37% of the total population of the state of Rio Grande do Sul totaling over 4 million inhabitants (SEPLAG, 2014). This region was chosen by convenience, since: it was necessary to directly contact individuals who purchase GPs; and no accessible records or databases were available to select individuals randomly. Also, the studied region has traditionally incorporated commercialized GPs, suggesting an enhanced ability to understand the elements selected for this study. Even so, it is not possible to affirm that the selected population is representative of the Brazilian population of interest. Brazil is a multicultural country, with large extension and several different cultural roots, which vary form region to region (Fleury, 1999). However it is possible to affirm that the selected sample is representative of this region in Brazil. Nevertheless, because of its size and context of collection the sample can provide relevant information considering the motivators for GP consumption. The places in which data collection occurred were regionally known as pools of GP trade, represented by traditionally established B2C (Business to Consumer) GP fairs.

The respondents were approached in person by researchers and were asked to identify the responses that best expressed their views for each item. This method was based only on a structured data collection questionnaire with a five-point Likert scale [1 = strongly disagree through 5 = strongly agree] was utilized for the response options (Malhotra, 2007). A previous explanation of GPs and the focus on consumable products was included in the questionnaire to ensure the respondents held a similar understanding of the concepts. A pilot test was conducted using 30 respondents with a profile similar to the sample. Two questions were unclear and were changed. Cronbach's alpha of the pilot test was of 0.66. Cronbach's alpha scores for the individual elements were of: Quality of Life (0.60), Environmental Consciousness (0.70), Quality and Price (0.60), Information and Knowledge (0.60), and Social Context (0.60). Hair *et al*. (2009) consider Cronbach's alpha adequate in the range [0.7; 0.9], and acceptable if in the range [0.6; 0.9]. Even aware these were borderline values, the instrument was accepted. Nevertheless, modifications had been made in order to achieve better Cronbach's alpha scores, as suggested by Hair *et al*. (2009).

The refined questionnaire consisted of twenty-eight assertive sentences, as presented in Appendix A. It had been applied in October 2012, providing 337 valid responses, although 8 cases produced missing data. The total missing data, when occurred, was inferior to 1% per question, and inferior to 0.23% of the overall mass of collected data. No significant pattern of missing data was detected. Missing data were replaced by the respective distribution mean. Overall Cronbach's alpha for the sample data was of 0.82, and, for the individual elements, the scores obtained were of: Quality of Life (0.60), Environmental Consciousness (0.74), Quality and Price (0.65), Information and Knowledge (0.60), and Social Context (0.62).

The proportion between the number of collected cases and the number of analysis variables was superior to 10 and 15, respectively, as recommended for establishing Factorial Analysis (FA) and Structural Equation Models (SEM) (Hair *et al*., 2009). Therefore, the sample meets the requirements for developing a SEM-based study.

The characteristics of the 337 respondents were as follows: 59.3% were female, and 40.7% were male; 29% were between 18 and 24 years old, 45% were between 25 and 39 years old, 22% were between 40 and 59 years old, and 4% were 60 years or older; and 5% of respondents had completed primary school, 22% had completed secondary school, 35% had an incomplete university education, 26% had a university degree, and 13% had post-graduate degrees. The classification method complies with Brazilian standards (IBGE, 2010). Regarding the level of green consumption, 1.2% of respondents had never consumed GPs; 16.2% rarely consumed GPs; 50.6% occasionally consumed GPs; 24.8% habitually consumed GPs; and 7.2% only consumed GPs.

3.3 Data analysis

Data was firstly analyzed regarding normality and skewness. None of the individual variables was adherent to the Normal model, considering 5% of significance under the Kolmogorov-Smirnov test. Data was then log-transformed and normalized to avoid non-normality effects and to ensure standardized scale. Transformed data was accepted as normally distributed, hence apt to further analyses.

For testing common method bias, initially Harman's (1967) single factor test was used. This technique assumes that if a substantial amount of common method variance is present, either a single factor will emerge from the factor analysis or one general factor will account for the majority of the covariance among the measures (Podsakoff et al., 2003). Results show that one general factor does not account for a majority of variance (more than 50%), but for less than 22% of the total variance. This strategy was also used by Murovec et al. (2012) and Cheng et al. (2014) in similar works. Also, as proposed by Lindell and Whitney (2001), and by Podsakoff et al. (2012), the common method variance (CMV) model was used. This method allows partial correlation analysis to adjust the observed correlations for CMV contamination and determine if conclusions about the statistical and practical significance of a predictor have been influenced by the presence of CMV (Lindell and Whitney, 2001). In this method, a marker variable (M) is assumed as theoretically not correlated to the studied variables. The CMV model assumes that M has a constant correlation, r_s (which may turn out to be zero but is not assumed a priori to be so), with all of the manifest variables. After removing the effects of the marker variable through the estimation of the partial correlations of the predictor variables against r_s (estimated in this study as 0.065), even at the level of 1% significant associations were found, thus indicating the existence of significant associations between predictors and the response variable that cannot reasonably be accounted as due to common method variance. These results allowed performing the multivariate analysis as presented in the remaining of this paper.

The Factorial Analysis (FA) technique was used to analyse the unidimensionality of the GP consumption motivations. Varimax rotation and Kaiser normalization were utilized for the interaction process (Hair et al., 2009). The validity of the sample was tested using the following criteria: the size of the sample must be equal to or higher than ten times the number of variables; the majority of the correlation coefficients must present values above 0.30; the Kaiser-Meyer-Olkin (KMO) test must generate the highest value possible; values starting at 0.60 are acceptable for the Measure of Sampling Adequacy (MSA); and considering the sample size,

Bartlett's Sphericity Test, results are significant at 0.05 (Hair *et al.*, 2009). The FA was performed using IBM SPSS 21 software.

A structural equations model was established, representing the hypotheses to be tested. This decision was made since the proposed model is originated from several sources, hence is not completely established (Hair et al., 2009). Under the SEM assumptions, a model fits the data when its covariance matrix does not present significant differences from the covariance of the data (Tabachnick and Fidell, 2001). SEM studies should consider the proportion of cases per variable tested to reduce the effects of deviation on the multivariate distribution. Samples with more than 400 data points generate an exceedingly sensitive SEM model. Similarly, samples with less than 150 data points are not suitable for SEM (Hair *et al.*, 2009).

The evaluation of the adequacy of a SEM can be inferred using the χ^2 test or adequacy indexes. The adequacy indexes are utilized with the χ^2 test requirements, particularly the dependence on sample size and the multivariate normality of the data. The indexes commonly utilized to measure the degree of adequacy for SEM models include the GFI (Goodness-of-Fit Index), NNFI (Non-Normed Fit Index), CFI (Comparative Fit Index), RMSEA (Root Mean Square Error of Approximation), SRMR (Standardized Root Mean Square Residual), TLI (Tuker-Lewis Index) and AIC (Akaike Information Criteria). The cutoff criteria used to define the acceptability of the model are somewhat arbitrary (Engel *et al.*, 2003; Hair et al., 2009). These indexes can be affected by poor specification of the models, a small sample size, effects caused by violating the normality premises, and the estimation method (Hu and Bentler, 1999). In this study, the following were used as the decision criteria: ratio of χ^2/DF < 3; RMSEA <= 0.05; TLI ~ 1; CFI >= 0.95; and SRMR <= 0, 10 (Dion, 2008).

An iMac i7 (3.1 GHz and 16 MB RAM) running the IBM SPSS 21 software and the Lavaan package implemented on the R platform (Rosseel, 2012) was utilized to analyse the data. A total of 54 SEMs were specified incrementally to identify the latent structure that could represent the studied constructs while meeting the criteria indicated in the previous sections of this article. The results are shown in section 4.

3.4 Method Limitations

Limitations can be established from the standpoint of the background theory, data collection, and data analysis. From the standpoint of the background, as presented in the previous sections, limitations include the lack of similar works for comparing the obtained results. Also, the proposed model is sustained on research work of different authors in the same subject, but also based on localized application and survey. An attempt of mitigating this limitation by comparing the concepts presented in the background give origin to Tables 1 and 2.

From the standpoint of data collection, as indicated before, the study does not intend to represent habits or consumption drivers related to GP to all the Brazilian population. Despite data was collected on the metropolitan area of a large city in Brazil, it is not advisable assume that Brazilian population will hold the same habits. Brazil is known by its cultural diversity (Fleury, 1999) and high economic asymmetry (Jakobeit, 2010), thus indicating difficulties for addressing the behaviour of the totality of the Brazilian population. In such aspect, due the lack

of similar studies in Brazil, this is an exploratory study restricted to the behaviour of studied sample from Southern Brazil.

From the standpoint of data analysis, firstly it was observed borderline scale reliability values, yet acceptable according to the reference literature. These results may either indicate that the proposed exploratory scale, even based on the consulted literature on the theme is barely sufficient for an adequate measurement of GP consumption, or problems with the instrument used. Regarding the second possible cause, as presented in the previous section, CMV and Harman's (1967) procedure were used in order to ensure reasonable scale validity.

Nevertheless, results are subjected to the assumptions of the employed techniques. FA demands multicolinearity, in the sense of allowing grouping variables according to the subjacent structure of the variables. Adequacy to hypothesis can be tested by holding significance under the Bartlett's Sphericity Test, and by achieving a Mean Sample Adequacy indicator over 0.6 (Hair et al., 2009). Tests recommended for supporting the results of the FA analysis were performed. SEM demands several analyses to check model validity. Tests for convergent, nomologic and discriminant validity check are not presented in this paper, since the SEM model is understood as part of an exploratory analysis, thus limiting the analyses to both multicolinearity analysis through correlation analysis, and goodness-of-fit indexes (Hair et al., 2009). A confirmatory analysis would require further studies and data collection, which remain as suggestions for future work. Also, as will be presented in the following sections, since from the original variables only 17 remained in the produced models, this is an indicative that further research need to be done in order to produce confirmatory models, as suggested by Hair et al. (2009).

4. Results/Outcomes

This section presents the results derived from the data analysis.

4.1 Descriptive Statistics for the Construct Items

Table 4 presents the scores statistics for the constructs items used in this study. With exception of QUE05 and QUE20, all the other variables presented results reaching the extremes of the proposed scale. Results also indicate a tendency for negative skewness.

Table 4 – Descriptive statistics for the construct items (N=337)

Variable	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
QUE01	1	5	3.83	0.773	-0.911	1.450
QUE02	1	5	2.76	0.963	0.216	-0.843
QUE03	1	5	4.22	0.749	-0.859	0.942
QUE04	1	5	3.43	0.923	-0.251	-0.023
QUE05	2	5	4.13	0.770	-0.746	0.430
QUE06	1	5	3.72	0.903	-0.544	0.136
QUE07	1	5	4.12	0.789	-1.655	6.237
QUE08	1	5	4.44	0.777	-1.785	4.613
QUE09	1	5	4.17	0.856	-1.313	2.495
QUE10	1	5	3.92	0.951	-0.607	-0.150
QUE11	1	5	4.16	0.739	-0.797	1.042
QUE12	1	5	4.22	0.728	-0.974	1.891
QUE13	1	5	3.34	0.861	-0.606	0.149
QUE14	1	5	4.08	0.731	-0.957	2.060
QUE15	1	5	3.66	0.872	-0.294	-0.298
QUE16	1	5	3.67	1.030	-0.843	0.219
QUE17	1	5	4.04	0.958	-0.907	0.487
QUE18	1	5	3.15	0.975	-0.152	-0.532
QUE19	1	5	4.11	0.859	-0.971	0.700
QUE20	2	5	4.55	0.566	-0.976	1.071
QUE21	1	5	4.44	0.625	-1.112	2.664
QUE22	1	5	3.84	1.068	-0.697	-0.294
QUE23	1	5	3.92	0.932	-0.900	0.580
QUE24	1	5	3.77	0.889	-0.610	0.218
QUE25	1	5	3.75	1.171	-0.899	0.040
QUE26	1	5	3.58	0.864	-0.334	-0.282
QUE27	1	5	3.38	1.043	-0.608	-0.416
QUE28	1	5	3.21	0.840	0.207	-0.008

4.2 Factorial Analysis and Extraction of the Main Components

Preliminary analysis was performed by covariance and correlation analysis. The correlation matrix is presented in the Appendix B. No correlations over 0.8 were found, allowing inferring the absence of detrimental multicolinearity. In the same sense, correlations over 0.3 were found, as requested by FA (Hair *et al.*, 2009). For testing common method bias, principal axes factoring restricted to one factor was performed. The extracted factor, obtained in 4 iterations, explained 18.785% of the total variance, indicating no significant presence of common method bias.

The FA of the entire data set converged after nine iterations. Initially, eight factors were observed. However, numerous variables with similar factorial loads were identified in the diverse factors, even after a Varimax rotation, resulting in inadequate values for the KMO criterion. This result indicates the presence of variables that are not independent to the structure of factors, generating undesirable noise during the analysis. The variables that generated the most noise were gradually removed according to the lowest MSA value per variable (Hair *et al.*, 2009). The 17 remaining variables were grouped into five factors, with a KMO of 0.829, and a Bartlett's Test of Sphericity p-value < 0.001 (Table 5). These values meet

the criteria specified for this study. The five factors explained 52.725% of the data variance. The matrix revealed a convergence after six iterations.

Table 5 – Matrix of Rotated Factors

Indicator	Factors				
	F1	F2	F3	F4	F5
QUE01	.150	-.003	.044	.057	.762
QUE02	.056	.073	.057	.018	.768
QUE05	.720	.011	.161	.195	.084
QUE06	.790	.030	-.042	.133	.047
QUE07	.566	.132	.267	.042	.101
QUE09	.614	.181	.166	-.032	.061
QUE11	.225	.273	.695	.110	-.099
QUE12	.118	.092	.861	.031	.100
QUE14	.126	.061	.529	.228	.098
QUE15	.272	.568	.254	-.102	.173
QUE16	.139	.590	.054	.010	-.034
QUE17	.115	.602	.153	.165	-.009
QUE18	.049	.598	.049	.188	-.012
QUE19	.034	.253	-.019	.739	-.054
QUE20	.170	.188	.137	.785	.005
QUE21	.103	.038	.260	.642	.159
QUE24	-.107	.551	.020	.191	.084
Total Explained Variance	12.398%	11.401%	10.687%	10.655%	7.585%

The matrix of rotated factors analysis (Table 5) suggests that factor F1 is formed by the following indicative variables: QUE05, QUE06, QUE07, and QUE09. Conversely, Table 2 and Appendix A indicates that those variables are associated with the Social Context. The data led the researchers to name Factor F1 as 'Social Context' to remain consistent with the theoretical conceptual framework.

Factor F2 aggregated the following indicative variables: QUE15, QUE16, QUE17, QUE18, and QUE24. This factor was named 'Environmental Attitude' because it reflects the behaviours and attitudes of the consumers.

Factor F3 represents the indicative variables QUE11, QUE12, and QUE14, which have factorial loads higher than 0.529. These indicators are present in the 'Information and Knowledge' element of the conceptual model. Therefore, Factor F3 accurately reflects this denomination.

Factor F4 aggregates the indicative variables QUE19, QUE20, and QUE21. These variables are present in the Environmental Consciousness element of the conceptual model. Therefore, Factor F4 was termed 'Environmental Consciousness'.

QUE01 and QUE02 are present in the Price and Quality element of the conceptual model; therefore, Factor F5 was labeled as 'Price and Quality'.

The analysis of the matrix of rotated factors (Table 5) indicates that 17 out of the 27 indicative variables could be categorized into five factors: Social Context, Environmental Attitude, Information and Knowledge, Environmental Consciousness, and Price and Quality. Therefore, by using the obtained extraction, four elements were preserved. The quality of life element was not perceived by the respondents in the manner it was proposed; therefore, it was more broadly interpreted as the Environmental Attitude construct.

Finally, Table 6 presents the non-parametric Spearman's correlations and, in the diagonal, the estimates for the scale reliability for the extracted factors. Values between parentheses are the estimated significances for the correlations. As can be seen, no significant correlations were found between the extracted factors.

Table 6 – Spearman's rho correlation matrix and scale reliability estimates for the extracted factors (N=337)

	F1	F2	F3	F4	F5	Green Consumption
F1	0,6					
F2	0,004 (0,947)	0,74				
F3	0,032 (0,553)	-0,02 (0,718)	0,65			
F4	0,007 (0,905)	0,019 (0,725)	0,004 (0,937)	0,6		
F5	0,034 (0,538)	-0,005 (0,926)	-0,003 (0,963)	-0,013 (0,805)	0,62	
Green Consumption	0,116 (0,034)	0,274** (0,000)	-0,052 (0,338)	0,159* (0,003)	0,065 0,233)	1

* Remains significant at 5% after the CMV analysis
** Remains significant at 1% after the CMV analysis

4.3 Definition of the Causal Model of the Consumption of Green Products

To define the structural equations causal model, 54 different configurations were independently tested to verify the results obtained by the FA. Of the models tested, the most adequate model included the identical 17 variables selected in the previous procedure in the configuration shown in Figure 2. The elements that influence the consumption of GPs varied in strength or had a distinct relevance according to the respondents. The regression coefficients between each indicator and the correspondent element and between each element and the level of green product consumption are presented in Figure 2. The measures of adequacy for the selected model were as follows, meeting the criteria presented in section 3.3: ratio χ^2 / df = 1.44, RMSEA = 0.036, TLI = 0.942, CFI = 0.951, and SRMR = 0.048. Complimentary statistics are presented in Table 7.

Figure 2 – Causal model
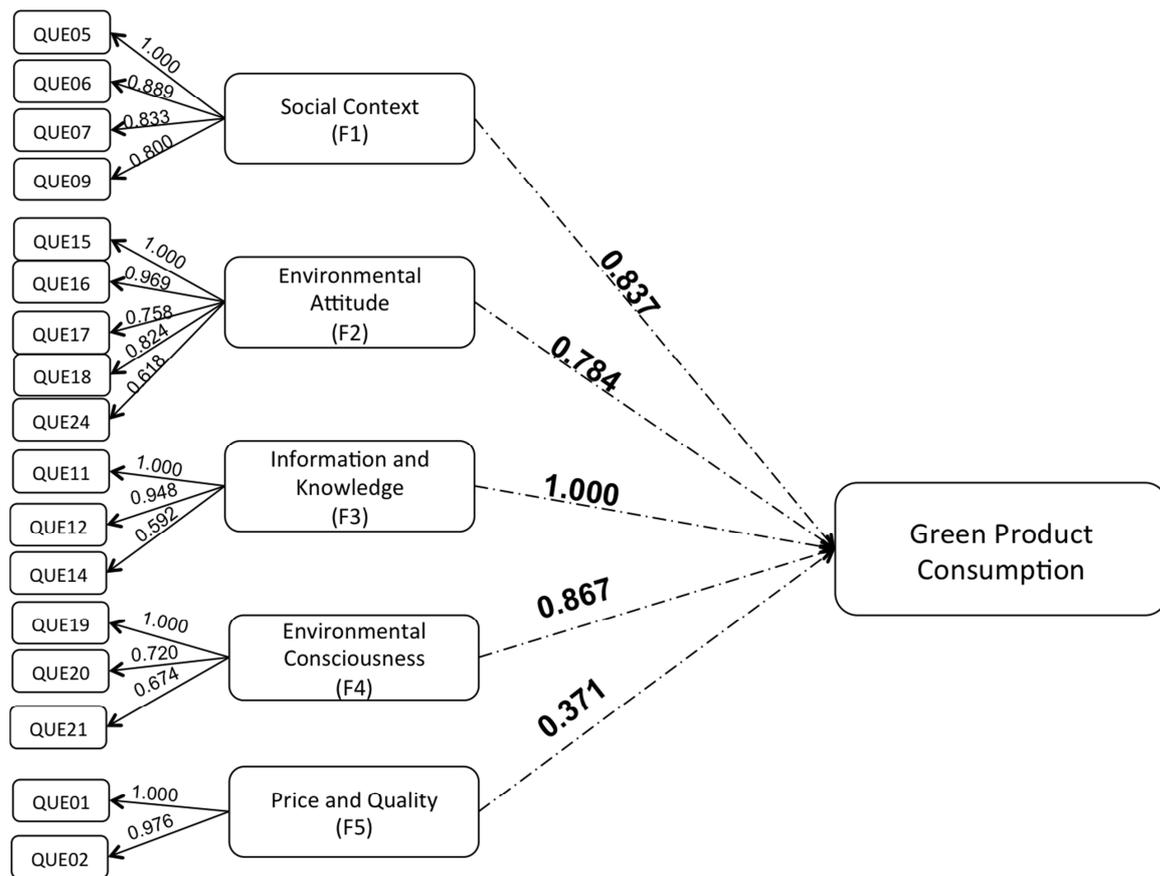
Table 7 – Parameter estimates from SEM

Explained Variable	Predictor Variable	Estimate	Std.err	Z-value	P(>|z|)
GreenConsumption	F3	1.000			
	F1	0.837	0.133	6.281	0.000
	F2	0.784	0.132	5.927	0.000
	F4	0.867	0.138	6.295	0.000
	F5	0.371	0.119	3.113	0.002
F1	QUE 05	1.000			
	QUE 06	0.889	0.114	7.831	0.000
	QUE 07	0.833	0.111	7.505	0.000
	QUE 09	0.800	0.110	7.294	0.000
F2	QUE 15	1.000			
	QUE 16	0.969	0.152	6.389	0.000
	QUE 17	0.758	0.139	5.460	0.000
	QUE 18	0.824	0.142	5.786	0.000
	QUE 24	0.607	0.132	4.607	0.000
F3	QUE 11	1.000			
	QUE 12	0.948	0.108	8.749	0.000
	QUE 14	0.592	0.093	6.366	0.000
F4	QUE 19	1.000			
	QUE 20	0.720	0.093	7.736	0.000
	QUE 21	0.674	0.090	7.453	0.000
F5	QUE 01	1.000			
	QUE 02	0.976	0.375	2.603	0.009
Variances	QUE 01	0.743	0.116		
	QUE 02	0.755	0.113		
	QUE 05	0.555	0.062		
	QUE 06	0.648	0.064		
	QUE 07	0.690	0.065		
	QUE 09	0.714	0.065		
	QUE 11	0.469	0.063		
	QUE 12	0.523	0.062		
	QUE 14	0.812	0.069		
	QUE 15	0.686	0.068		
	QUE 16	0.704	0.068		
	QUE 17	0.818	0.071		
	QUE 18	0.786	0.070		
	QUE 19	0.882	0.073		
	QUE 20	0.350	0.073		
	QUE 21	0.662	0.064		
	QUE 24	0.703	0.065		
	F1	0.213	0.053		
	F2	0.111	0.041		
	F3	0.202	0.059		
	F4	0.402	0.081		
	F5	0.209	0.098		
	GreenConsumption	0.326	0.071		

5. Discussion and Implications

This section presents the discussion based on the obtained causal model, the implications of the results and future research directions related to this research.

5.1 Discussion

The results presented by the FA and SEM indicate that the consumption of GPs is strongly related to the 'Environmental Attitude', 'Environmental Consciousness', 'Information and Knowledge' and 'Social Context' elements and that consumption is moderately related to 'Quality and Price'. Consequently, hypotheses H2, H3, H4, and H5 are valid. Hypothesis H1 was not confirmed because the conceptual 'Quality of Life' element was not reflected in the resulting causal models. Another causal element was proposed: 'Environmental Attitude'. The elements that originated from the causal model obtained with the SEM were independent of each other because the co-variances were not significant.

'Environmental Attitude' is strongly influenced by QUE15, QUE16, QUE17, and QUE18 and substantially influenced by QUE24. The presence of QUE15 and QUE16 indicates that the surveyed respondents recognize and seek information about environmental issues. QUE17 reflects the attitudes of rejecting a brand or company that might have demonstrated inappropriate environmental behaviour. The presence of QUE18 indicates that for the surveyed sample, participation in and support of voluntary actions that stimulate environmental initiatives are important. The presence of QUE24 indicates the relevance of healthy attitudes such as eating adequate food and the prevention of disease.

The 'Information and Knowledge' element strongly relates to the QUE11, QUE12, and QUE14 variables. These variables explicitly reflect the importance of information about GPs not only at the point of sale (labels and packaging) but also in other places through different media. QUE13 was disregarded in the FA, suggesting that information, when available, may be inadequate or that consumer confidence in the accuracy of the information is not associated with this element.

'Social Context' strongly relates to the QUE05, QUE06, QUE07, and QUE09. Those variables refer to morally correct behaviour, the stimulus for developing new businesses focused on green production, concern about the future and a suggestion that the consumption of GPs could be intensified if GPs were more available. QUE04 was initially linked to the element 'Social Context' but was not relevant to the causal model. Therefore, the social image that comes from GP consumption is not significant. QUE10 was not relevant in the causal model.

The 'Environmental Consciousness' element is strongly influenced by QUE19 and QUE20 and substantially influenced by QUE21. These three variables reveal a concern for the environment, future and generation of waste. The conceptual model included QUE17, which is associated with attitudes regarding a brand or company that harms the environment. This variable in the causal model was moved to the 'Environmental Attitude' element.

The 'Quality and Price' element is strongly influenced by QUE01 and QUE02. The influence of this element on the consumption of GPs is, nevertheless, weak, presenting the lowest load attributed to the SEM model. Also this factor is presented in the selected form of the model only by two indicators. The proposed conceptual model included QUE08. This variable was not

significant when forming the matrix of rotated components, stressing the perception that the relation price versus quality is not a factor of high impact on determining the consumption of GPs for the respondents. The conceptual model considered that the indicative variables related to religiousness, professional life and compensation, and decreased stress through sports, leisure, or meditation would be linked to the 'Quality of Life'. When the causal model was established, the presence of these variables was not verified. These differences from literature can lead to further studies regarding this aspect of GP consumption.

5.2 Implications

The aim of this research was to explore the understanding about the drivers that influence Brazilian consumers in relation to GPs. In a literature search, studies related to the behaviour of Brazilian GP consumers were not found. Several drivers associated with the consumption of GP identified in this study agree with other studies. These drivers are: receiving an education on and searching for information regarding environmental problems (Zhao *et al*., 2014); punishing companies that are not recognized as environmentally responsible (Huang and Rust, 2011); looking for healthy attitudes (Sheth *et al*., 2011) and information regarding the features of GPs, identifying benefits to the environment, realizing economic gains in the short- and long-term (Gleim *et al*., 2013); and developing a concern about waste (Marchand and Walker, 2008). The studied sample group and their GP consumption behaviour have similar variables to these previous studies. However, the presence of variables related to 'Quality of life' was not identified as a GP consumption driver. Sustainable consumption was considered to be triggered by a sufficient quality of life (Lorek and Fuchs, 2013). In this study, variables associated with religiousness and the reduction of daily stress (essentially focusing on personal satisfaction instead of materialistic consumption), as suggested by Jacob *et al.* (2009), were also not identified as relevant drivers of GP consumption.

The presence of variables linked to 'Environmental Attitude' indicates that the respondents associate the presence of healthy eating habits to the search for information and a preference for products made by companies with similar values. In addition, 74% of the interviewees either have enrolled in undergraduate programs or have completed a graduate degree. Those findings suggest that there may be a positive relationship between education and the search for information regarding environmental problems, possibly driving new consumption habits. The respondents have been searching for information regarding environmental problems and believe that actions resulting in contributions to sustainability arise from a belief in a more fair and correct world. This point stresses the importance of governments and schools in generating an awareness of environmental issues. Furthermore, the respondents tend to punish companies that are not recognized as environmentally responsible. This point should be considered by the companies focused on being environmentally friendly as a factor to drive their strategic planning. Huang and Rust (2011) noted that external political sectors would trigger a firm's environmentally responsible corporate behaviour; this behaviour would be more expressive when faced with political and institutional pressures by developing coordinated multiple stakeholder strategies for long-term survival. NGOs, associations as cooperatives and other entities that focus on these initiatives may strengthen such participation. Additionally, these organisations would mobilize current non-consumers of GPs to consider purchasing GPs in the medium and long term. This aspect is particularly relevant in Brazil because of its growth

characteristics, the expanded consumption capability of its citizens and the wide social inequality in the country (Ariztía *et al.*, 2014).

The generation of waste was considered relevant by the respondents. This aspect was related to 'Environmental Consciousness', suggesting that the design, production and products' end-of-life can be thought of in terms of environmental issues. Several processes (e.g., Ecodesign, Design for Environment, reverse logistics, appropriated waste disposals) could be considered by companies and stakeholders. However, GP consumers or potential GP consumers should be informed about the features of the products and the appropriate waste disposal method. This point is reinforced in 'Information and Knowledge'. In addition, providing more information regarding the benefits to the environment and the economic gains in the short- and the long-term may increase the consumption of these products. Gleim *et al.* (2013) noted that information spread by word of mouth or by appropriate labels indicating the features and performance of GPs are more effective than information in numerical format or extensive descriptions.

The respondents' intent to stimulate new business focused on green production, and the consumption of GPs could be intensified if GPs were more available. This 'Social Context' aspect indicates that the green market can increase. As mentioned, a long-term strategy involving all stakeholders focused on developing GPs should be considered.

The results of this research suggest the quality of GPs is satisfactory and the price was not significant variable. This result agrees with Lin and Huang (2012) and Cherian and Jacob (2012). According to these authors, consumers would be willing to pay more for GPs if they perceive other gains associated with well-being and health. Additionally, consumers of GPs tend to analyze prices according to their perception of value added (Drozdenko *et al.*, 2011). Understanding the flexibility of the price of GPs is relevant to being able to increase the availability of the product in the market. Again, this analysis may indicate that GPs currently represent a market niche associated with higher income brackets. If this is the case, then less influence should be attributed to the financial aspects of purchasing GPs.

5.3 Limitations and future research directions

Considering that Brazil is a large country that embraces numerous regional cultures, eating habits and social contexts, this study should be reapplied in other regions with different features, for further both analysis and comparison. Therefore, the studied sample may not be adequate in the representation of Brazilian consumers of GP, despite providing relevant information for profiling the studied region.

Still, given the factor loadings on the generated models, a two-factor model (Herzerberg, 1968; Westbrook, 1987) could be created in the future for studying the influence of motivators and dissatisfying factors driving GP consumption, although it would extend the focus of the research beyond green consumption.

This research focused on consumable goods. Developing an understanding of the drivers that stimulate the consumption of durable and/or technological goods that are more sustainable than the traditional ones is suggested.

Also, this study focused on understanding the motivations for GP consumption, predominantly from the viewpoint of established GP consumers. Because non-green product consumers are in the majority the understanding of which consumer groups are at the threshold of becoming green consumers and which actions would trigger their transition to the consumption of GPs is critical.

Since the presence of variables related to 'Quality of Life' was not identified as a GP consumption driver, further investigations to verify correlations well-being, personal values, religiousness and spiritualism, healthy life and green consumption are suggested. These comparisons could indicate whether consumers considering these variables to be more relevant are more interested in GPs than others consumers.

6. Conclusions

The motivation for this research was based on the need to understand how Brazilian consumers decide to buy GPs and the aspects that influence this decision. This study explored the attitude of Southern Brazilian consumers in relation to GPs and provides insights to producers, marketers and policy makers that are focused on stimulating the production and consumption of these products. Previous studies covering Brazilian GP consumers and the drivers that induce the consumption of GPs were not found. Additionally, this study explored the discussion of a global approach considering a local perspective.

As the first step, the topics related to GP consumption were identified in the literature and grouped in elements that supported the theoretical framework. This study was performed using a sample predominantly composed of GP consumers. Based on the data set, a final model was created via FA and SEM. Hypothesis H1 was linked with Quality of Life and could not be confirmed. Therefore, the interviewees did not consider those variables to be related to the quality of life, though they have been previously presented as relevant. After that, some variables were re-grouped into a factor called Environmental Attitude. The output data indicated that for the surveyed sample, Information and Knowledge, Environmental Attitude, Social Context and Environmental Consciousness strongly influence the consumption of GPs. The Quality and Price element was less influential.

Of course, this study could only provide a first step towards a better known about green consumers in Southern Brazil. The expansion of this inquiry and subsequent discussions in broader forums are highly necessary. Additionally, the formation of policies and actions focused on sustainable development would be notable. These policies and actions could consider some findings related to this research, especially the ones related to Information and Knowledge about the benefits and characteristics of GPs and stimuli to attitudes focused on environmental concerns. These points are relevant if it was considered that in Brazil there are an emerging group of consumer from the base of social pyramid, anxious for products and services. The offer of products and services, if focused only on business aspects, will promote a consumerism with severe environmental damages and personal consequences related to health and economic issues.

7. Acknowledgements

Appendix A – Sentences included in the questionnaire used to collected data

Code	Sentences
QUE01	Green products have acceptable quality standards.
QUE02	Green products have a fair market price.
QUE03	By buying green products, you are helping the environment.
QUE04	If you buy green products, society will view you in a positive light.
QUE05	By buying green products, you are contributing to society for the present and the future.
QUE06	When buying green products instead of non-green products, you are acting morally.
QUE07	By buying green products, you are contributing to new businesses that focus on those products.
QUE08	If green products were the same price as non-green products, you would buy them.
QUE09	If green products had better availability at the point of sale, you would prefer them to non-green options.
QUE10	If you had a higher salary or income, you would buy more green products.
QUE11	You would like more information about the green products that are available at the point of sale before buying them.
QUE12	More information about green products could help you make decisions about them.
QUE13	You trust information about green products.
QUE14	Labels and specifications describing the characteristics of green products could help you decide whether to buy them.
QUE15	Advertising about the benefits of green products causes you to prefer them.
QUE16	You have read newsletters or seen reports about environmental problems.
QUE17	If you knew that a company had harmed the environment, you would stop buying from it.
QUE18	You are able to volunteer or financially contribute to organizations and projects focusing on environmental concerns.
QUE19	You try to reduce plastic waste and limit the use of chemical products, water, oil and energy.
QUE20	You are concerned about the future of the planet.
QUE21	You feel as though you are part of the environment.
QUE22	Each of your actions affects the environment.
QUE23	You look for relaxing activities and reduce your daily stress level with sports, music, meditation, etc.
QUE24	You take care of your health by consuming healthy food and following medical recommendations.
QUE25	You consider religion essential for balance.
QUE26	You consider your lifestyle to be healthy.
QUE27	You consider your professional life and income/salary sufficient to satisfy your needs.
QUE28	What is your level of green product consumption?* (*) answer options: (1) never; (2) rarely; (3) occasionally; (4) frequently; (5) always.

Appendix B – Correlation Matrix and Estimated Significance Levels

Correlations	QUE_01	QUE_02	QUE_03	QUE_04	QUE_05	QUE_06	QUE_07	QUE_08	QUE_09	QUE_10	QUE_11	QUE_12	QUE_13	QUE_14	QUE_15	QUE_16	QUE_17	QUE_18	QUE_19	QUE_20	QUE_21	QUE_22	QUE_23	QUE_24	QUE_25	QUE_26	QUE_27	QUE_28
QUE_01	1	.254**	.357**	.251**	.163**	.147**	.152**	.216**	.169**	.192**	0.046	.140*	.223**	.125*	.133*	0.039	0.07	0.077	0.031	0.065	.169**	.192**	0.084	0.018	-0.065	.221**	0.1	0.07
QUE_02	.254**	1	.293**	.207**	.172**	.108*	.129*	-0.034	0.101	.141**	0.071	.119*	.142**	0.079	.132*	0.033	0.096	0.036	0.028	0.083	0.072	0.011	0.021	0.054	-0.1	.153**	.115*	0.048
QUE_03	.357**	.293**	1	.316**	.511**	.290**	.342**	.277**	.237**	.152**	.162**	.258**	.273**	.118*	.247**	.181**	0.077	0.068	.111*	.211**	.245**	.205**	.116*	0.05	0.008	0.092	0.03	0.044
QUE_04	.251**	.207**	.316**	1	.282**	.252**	.308**	.202**	.225**	.142**	0.098	0.091	.174**	.233**	0.094	.177**	.122*	0.074	0.081	0.082	0.099	.135*	-0.002	0.041	-0.031	0.073	0.063	0.056
QUE_05	.163**	.172**	.511**	.282**	1	.444**	.348**	.389**	.313**	.308**	.272**	.260**	.235**	.239**	.209**	.180**	.157**	.108*	.140**	.283**	.196**	0.095	0.074	0.032	0.093	-0.018	0.058	.115*
QUE_06	.147**	.108*	.290**	.252**	.444**	1	.300**	.294**	.340**	.341**	.204**	.113*	.249**	.216**	.207**	0.063	.152**	0.106	0.096	.194**	.133*	.133*	0.082	0.035	0.042	0.011	0.032	.153**
QUE_07	.152**	.129*	.342**	.308**	.348**	.300**	1	.405**	.308**	.220**	.281**	.291**	.186**	.210**	.243**	.204**	.139*	0.101	.122*	.172**	.179**	.295**	0.006	0.099	0.01	0.005	-0.041	0.02
QUE_08	.216**	-0.034	.277**	.202**	.389**	.294**	.405**	1	.575**	.287**	.263**	.253**	.242**	.161**	0.064	.160**	0.082	0.101	0.063	.157**	.222**	.250**	0.075	0.09	0.028	-0.017	0.079	0.044
QUE_09	.169**	0.101	.237**	.225**	.313**	.340**	.308**	.575**	1	.318**	.274**	.244**	.194**	0.091	.238**	0.099	.187**	.126*	0.076	.125*	.172**	0.079	0.089	.111*	0.022	0.06	0.068	.129*
QUE_10	.192**	.141**	.152**	.142**	.308**	.341**	.220**	.287**	.318**	1	.265**	.237**	.165**	.228**	.249**	0.008	.213**	.126*	.193**	.240**	.171**	0.039	0.083	.139*	.190**	.137*	-0.062	.185**
QUE_11	0.046	0.071	.162**	0.098	.272**	.204**	.281**	.263**	.274**	.265**	1	.517**	.130*	.235**	.274**	.194**	.303**	.237**	.171**	.272**	.237**	.122*	0.074	.140*	.111*	0.076	0.05	.200**
QUE_12	.140*	.119*	.258**	0.091	.260**	.113*	.291**	.253**	.244**	.237**	.517**	1	.129*	.334**	.292**	0.091	.190**	.154**	0.1	.188**	.225**	0.099	.137*	.111*	0.064	0.074	0.048	-0.032
QUE_13	.223**	.142**	.273**	.174**	.235**	.249**	.186**	.242**	.194**	.165**	.130*	.129*	1	.274**	.187**	.172**	.166**	.178**	0.101	.153**	0.071	.129*	.152**	0.036	0.025	0.08	0.075	.128*
QUE_14	.125*	0.079	.118*	.233**	.239**	.216**	.210**	.161**	0.091	.228**	.235**	.334**	.274**	1	.175**	.187**	.199**	0.091	.133*	.221**	.197**	0.106	0.098	.135*	0.034	0.022	-0.055	0.015
QUE_15	.133*	.132*	.247**	0.094	.209**	.207**	.243**	0.064	.238**	.249**	.274**	.292**	.187**	.175**	1	.263**	.216**	.235**	.142**	.166**	.144**	-0.022	.148**	.212**	.266**	.200**	0.072	.181**
QUE_16	0.039	0.033	.181**	.177**	.180**	0.063	.204**	.160**	0.099	0.008	.194**	0.091	.172**	.187**	.263**	1	.277**	.157**	.118*	.134*	.180**	.199**	.120*	.164**	0.028	0.075	-0.065	.134*
QUE_17	0.07	0.096	0.077	.122*	.157**	.152**	.139*	0.082	.187**	.213**	.303**	.190**	.166**	.199**	.216**	.277**	1	.302**	.226**	.279**	0.099	0.015	0.007	.159**	.113*	0.046	-0.026	0.1
QUE_18	0.077	0.036	0.068	0.074	.108*	0.106	0.101	0.101	.126*	.126*	.237**	.154**	.178**	0.091	.235**	.157**	.302**	1	.226**	.244**	.154**	-0.015	.197**	.195**	.223**	.167**	.113*	.200**
QUE_19	0.031	0.028	.111*	0.081	.140**	0.096	.122*	0.063	0.076	.193**	.171**	0.1	0.101	.133*	.142**	.118*	.226**	.226**	1	.486**	.294**	0.09	.141**	.207**	.239**	0.105	.113*	.216**
QUE_20	0.065	0.083	.211**	0.082	.283**	.194**	.172**	.157**	.125*	.240**	.272**	.188**	.153**	.221**	.166**	.134*	.279**	.244**	.486**	1	.429**	0.081	0.069	.184**	.136*	.111*	0.083	.192**
QUE_21	.169**	0.072	.245**	0.099	.196**	.133*	.179**	.222**	.172**	.171**	.237**	.225**	0.071	.197**	.144**	.180**	0.099	.154**	.294**	.429**	1	.263**	.195**	.154**	0.103	.201**	0.079	.140*
QUE_22	.192**	0.011	.205**	.135*	0.095	.133*	.295**	.250**	0.079	0.039	.122*	0.099	.129*	0.106	-0.022	.199**	0.015	-0.015	0.09	0.081	.263**	1	0.014	.129*	-0.051	0.011	-0.019	0.021
QUE_23	0.084	0.021	.116*	-0.002	0.074	0.082	0.006	0.075	0.089	0.083	0.074	.137*	.152**	0.098	.148**	.120*	0.007	.197**	.141**	0.069	.195**	0.014	1	.383**	.194**	.377**	.239**	.144**
QUE_24	0.018	0.054	0.05	0.041	0.032	0.035	0.099	0.09	.111*	.139*	.140*	.111*	0.036	.135*	.212**	.164**	.159**	.195**	.207**	.184**	.154**	.129*	.383**	1	.275**	.549**	0.078	.289**
QUE_25	-0.065	-0.1	0.008	-0.031	-0.093	0.042	0.01	0.028	0.022	.190**	.111*	0.064	0.025	0.034	.266**	0.028	.113*	.223**	.239**	.136*	0.103	-0.051	.194**	.275**	1	.198**	.131*	.203**
QUE_26	.221**	.153**	0.092	0.073	-0.018	0.011	0.005	-0.017	0.06	.137*	0.076	0.074	0.08	0.022	.200**	0.075	0.046	.167**	0.105	.111*	.201**	0.011	.377**	.549**	.198**	1	.216**	.268**
QUE_27	0.1	.115*	0.03	0.063	0.058	0.032	-0.041	0.079	0.068	-0.062	0.05	0.048	0.075	-0.055	0.072	-0.065	-0.026	.113*	.113*	0.083	0.079	-0.019	.239**	0.078	.131*	.216**	1	.192**
QUE_28	0.07	0.048	0.044	0.056	.115*	.153**	0.02	0.044	.129*	.185**	.200**	-0.032	.128*	0.015	.181**	.134*	0.1	.200**	.216**	.192**	.140*	0.021	.144**	.289**	.203**	.268**	.192**	1

* significant values at 0.05
** significant values at 0.01

References

Ariztía, T., Kleine, D., Brightwell, M., Agloni, N., Afonso, R., Bartholo., R., 2014. Ethical consumption in Brazil and Chile: institutional contexts and development trajectories. J. Clean. Prod. 63, 84-92.

Aspinall, A., Cukier, J., Doberstein, B., 2011. Quality of life assessments and social sustainability: SKI tourism development in invermere, British Columbia. J. Environ. Assess. Policy and Manage. 13, 179-201.

Barbosa, L., Veloso, L., 2014. Consumption, domestic life and sustainability in Brazil. J. Clean. Prod. 63, 166-172.

Bilharz, M., Cerny, L., 2012. Big points of sustainable consumption and lifestyle orientation: How do they fit together? - in 2nd PERL International Conference -Beyond Consumption: Pathways to Responsible Living - Conference Proceedings.

CGEE (Centro de Gestão e Estudos Estratégicos), 2012. Mestres 2012: Estudos da demografia da base técnico-científica brasileira. Available in: http://www.cgee.org.br/publicacoes/mestres_e_doutores.php. Accessed at 07/May/2014. In Portuguese.

Chan, R., 2001. Determinants of Chinese consumers' green purchase behavior. Psychology & Marketing. 18, 389–413.

Cheng, C., Yang, C., Sheu, C., 2014. The link between eco-innovation and business performance: a Taiwanese industry context. J. Clean. Prod. 64, 81-90.

Cherian, J., Jacob, J., 2012. Green Marketing: A study of consumers' attitude towards environment friendly products. Asian Science Society. 8, 117-126.

D ' Souza , C., Taghian, M., Khosla, R., 2007. Examination of environmental beliefs and its impact on the infl uence of price, quality and demographic characteristics with respect to green purchase intention. Journal of Targeting, Measurement and Analysis for Marketing. 15, 69–78.

Dangelico, R.M., Pontrandolfo, P. 2010. From green product definitions and classifications to the green option matrix. J. Clean. Prod., 18, 1608-1628.

Dangelico, R.M., Pujari, D. 2010. Mainstreaming green product innovation: why and how companies integrate environmental sustainability. J. Bus. Ethics. 95, 471-486.

Diamantopoulos, A., Schlegelmilch, B., Sinkovics, R., Bohlen, G. 2003. Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation. J. Bus. Res., 56, 465–480.

Dion, P., 2008. Interpreting Structural Equation Modeling results: a reply to Martin and Cullen. J. Bus. Ethics. 83, 365–368.

Drozdenko, R., Jensen, M., Coelho, D., 2011. Pricing of green products: premiums paid, consumer characteristcs and incentives. International Journal of Business, Marketing, and Decision Sciences. 4(1), 106-116.

Engel, K., Moosbrugger, H., Müller, H., 2003. Evaluating the fit of Structural Equation Models: test of Significance and Descriptive Goodness-of-Fit- Measures. Methods of Psychological Research Online. 8(2), 23-74.

Ester, P., Simões, S., Vinken, H., 2004. Cultural change and environmentalism: a corss-national approach of mass publics and decision makers. Ambiente & Sociedade. 2, 45-59.

Evans, D., 2011, Consuming conventions: sustainable consumption, ecological citizenship and the worlds of worth. Journal of Rural Studies. 27, 109-115.

Fleury, M., 1999. The management of culture diversity: lessons from Brazilian companies. Industrial Management & Data Systems. 99(3), pp.109 – 114.

Frick, J., Kaiser, F., Wilson, M. 2004. Environmental knowledge and conservation behavior: exploring prevalence and structure in a representative sample. Personality and Individual Differences. 37, 1597–1613.

Gilg, A., Barr, S., Ford, N. 2005. Green consumption or sustainable lifestyles? Identifying the sustainable consumer. Futures. 37, 481–504.

Gleim, M.R., Smith, J., Andrews, D., Cronin Jr., J.J., 2013. Against the green: a multi-method examination of the barriers to green consumption. J. Retail. 89(1), 44–61.

Hair, J., Anderson, R., Tatham, R., Black, W., 2009. Multivariate Data Analysis (7th ed.), Prentice Hall, Upper Saddle River, USA.

Hamwey, R., Pacini, H., Assunção, L., 2013. Mapping green product spaces of nations. J. Environ. & Develop., 22(3), 1–14.

Harman, H.H., 1967. Modern Factor Analysis. University of Chicago Press, Chicago, London.

Higgins, P.,Campanera, J., 2011, (Sustainable) quality of life in English city locations. Cities 28, 290–299.

Hu, L., Bentler, P., 1999. Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. Structural Equation Modeling. 6(1), 1-55.

Huang, M., Rust, R., 2011. Sustainability and consumption. J. of the Acad. Mark. Sci. 39, 40-54.

IBGE (Brazilian Institute of Geography and Statistics). 2010. Características da população e dos domicílios. Available in http://www.ibge.gov.br/home/estatistica/populacao/censo2010/caracteristicas_da_popu lacao/default_caracteristicas_da_populacao.shtm. Accessed in 15/Sept/2013.

Jacob, J., Jovic, E., Brinkerhoff, M., 2009. Personal and planetary well-being: mindfulness meditation, pro-environmental behavior and personal Quality of Life in a survey from the Social Justice and Ecological Sustainability Movement. Soc. Indic. Res. 93, 275-294.

Jakobeit, L., 2010,Social Inequalities in Brazil, München, GRIN Verlag GmbH. Available in: http://www.grin.com/de/e-book/167315/social-inequalities-in-brazil; Accessed in May/2014.

Koller, M., Floh, A., Zauner, A., 2011. Further insights into perceived value and consumer loyalty: A "Green" Perspective. Psychology & Marketing. 28(12), 1154–1176.

Lai, O., 1993. Making sense of the greening of consumption and production. J. Clean.Prod. 1, 43-47.

Laroche, M. Bergeron, J., Forleo, G.B., 2001. Targeting consumers who are willing to pay more for environmentally friendly product. J. Consumer Mark. 18, 503-520.

Leire, C., Thidell, A. K., 2005. Product-related environmental information to guide consumer purchases e a review and analysis of research on perceptions, understanding and use among Nordic consumers. J. Clean. Prod. 13, 1061-1070.

Lin, Y., Chang, C. A., 2012. Doubie Standard: the role of environmental consciousness in green product usage. Journal of Marketing. 76, 125-134.

Lin, P., Huang, Y., 2012. The influence factors on choice behavior regarding green products based on the theory of consumption values. J. Clean. Prod. 22, 11-18.

Lindell, M., Whitney, D., 2001. Accounting for Common Method Variance in Cross-Sectional Research Designs. Journal of Applied Psycology. 1, 114-121.

Lorek, S., Fuchs, D., 2013. Strong sustainable consumption governance e precondition for a degrowth path? J. Clean. Prod. 38, 36-43.

McDonald, S.,Oates, C., 2006. Sustainability: consumer perceptions and marketing strategies Bus. Strat. Env. 15, 157–170.

Malhotra, N., Birks, D., 2007. Marketing research: an applied approach, Harlow: Prentice Hall, 2007.

Marchand, A., Walker, S., 2008. Product development and responsible consumption: designing alternatives for sustainable lifestyles. J. Clean. Prod. 16, 1163-1169.

Mont, O., Plepys, A., 2008. Sustainable consumption progress: should we be proud or alarmed? J. Clean. Prod. 16, 531-537.

Mont,O., Neuvonen, A., Lähteenoja, S., 2014. Sustainable lifestyles 2050: stakeholder visions, emerging practices and future research. J. Clean. Prod. 63, 24-32.

Mostafa, M., 2009.Shades of green: a psychographic segmentation of the green consumer in Kuwait using self-organizing maps. Expert Systems with Applications. 36, 11030–11038.

Murovec, N., Erker, R., Prodan, I., 2012. Determinants of environmental investments: testing the structural model. J. Clean. Prod. 37, 265-277.

O'Neill Jr., G., Hershauer, J., Golden, J., 2009. The Cultural Context of Sustainability. Entrepreneurship. 2009 Greenleaf Publishing Ltd – avaiable in http://www.greenleaf-publishing.com.

OCDE (The Organisation for Economic Cooperation and Development), 2011. Brazil's economy: Reaching new heights. Available in http://www.oecdobserver.org/news/fullstory.php/aid/3741/Brazil_92s_economy:_Reaching_new_heights_.html. Accessed in 07/May/2014.

Paço, A., Alves, H., Shiel, C., Leal Filho, W., 2013. Development of a green consumer behaviour model. Int. J. Consum. Stud. 37, 414–421.

Polonsky, M.J., 2011. Transformative green marketing: Impediments and opportunities. J. Bus. Res. 64, 1311–1319.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., Podsakoff, N.P., 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. Journal of Applied Psychology. 88, 879-903.

Podsakoff, P. M., MacKenzie, S. B., Podsakoff, N. P., 2012. Sources of Method Bias in social science research and recommendations on how to control it. Annu. Rev. Psychol. 63, 539-569.

Roberts, J., 1996. Green consumers in the 1990s: profile and implications for advertising. J. Bus. Res. 36, 217-231.

Roberts, J. A., Clement, A., 2007. Materialism and Satifaction with over-all Quality of Life and eight Life Domains. Social Indicators Research. 82, 79-92.

Rosseel, Y., 2012. lavaan: An package for Structural Equation Modeling. J. Statistical Soft. 48(2), 1-36.

Schlegelmilch, B., Bohlen, G., Diamantopoulos, A., 1996. The link between green purchasing decisions and measures of environmental consciousness. European Journal of Marketing. 30, 35-55.

SEPLAG (Secretaria de Planejamento, Gestão e Participação Cidadã), 2014. Atlas Socioeconômico do Rio Grande do Sul. Available in: http://www.scp.rs.gov.br/atlas/conteudo.asp?cod_menu_filho=807&cod_menu=805&tipo_menu=POPULA&cod_conteudo=1396; Accessed in: May/2014.

Sheth, J. N., Sethia, N.K., Srinivas, S., 2011. Mindful consumption: a customer-centric approach to sustainability. J. of the Acad. Mark. Sci. 39, 21-39.

Smith, S., Paladino, A., 2010. Eating clean and green? Investigating consumer motivations towards the purchase of organic food. Australasian Marketing Journal. 18, 93–104.

Spangenberg, J. H., Fuad-Luke, A., Blincoe, K., 2010. Design for Sustainability (DfS): the interface of sustainable production and consumption. J. Clean. Prod. 18, 1485-1493.

Spencer, J., Lilley, D., 2012. The effect of culture on sustainable behaviour in a design context - in 2nd PERL International Conference -Beyond Consumption: Pathways to Responsible Living - Conference Proceedings.

Tabachnick, B. G., Fidell, L., 2001. Using multivariate statistics. 4 th. Allyn & Bacon. Needham Heights. MA.

The World Bank. Brazil Overview. Available in http://www.worldbank.org/en/country/brazil/overview. Accessed in September/2013.

Tomasin, L., Pereira, G., Borchardt, M., Sellitto, M., 2013. How can the sales of green products in the Brazilian supply chain be increased? J. Clean. Prod. 47, 274-282.

Tsen C-H, Phang C, Hasan H, Buncha MR. 2006. Going green: a study of consumers' willingness to pay for green products in Kota Kinabalu. International Journal of Business and Society 7(2): 40–54.

Tseng, S., Hung, S., 2013. A framework identifying the gaps between customers' expectations and their perceptions in green products. J. Clean. Prod. 59, 174-184.

Tukker, A., Emmert, S., Charter, M., Vezzoli, C., Sto, E., Andersen, M., Geerken, T., Tischner, U., Lahlou, S., 2008. Fostering change to sustainable consumption and production: an evidence based view. J. Clean. Prod. 16, 1218-1225.

Veeravatnanond, V., Nasa-Arn, S., Nithimongkonchai, W., Wongpho, B., Phookung, K., 2012. Development of Risk Assurance Criteria to the utilization of natural resources and environment for sustainable development of life quality, economy and society in rural Thai Communities. Asian Social Science. 8(2), 189-195.

Vicente-Molina, M., Fernández-Sáinz, A., Izagirre-Olaizola, J., 2013. Environmental knowledge and other variables affecting pro-environmental behaviour: comparison of university students from emerging and advanced countries. J. Clean. Prod. 61, 130-138.

Wang, P., Liu, Q., QI, Y., 2014. Factors influencing sustainable consumption behaviors: a survey of the rural residents in China. J. Clean. 63(15), 143-151.

Williams, J.; Parkman S., 2003. On humans and environment: the role of consciousness in environmental problems, Human Studies. 26, 449-460.

Young, W., Hwang, K., McDonald, S., Oates, C. J., 2010. Sustainable Consumption: Green consumer behaviour when purchasing products. Sustainable Development. 18(1), 20–31.

Zhao, H., Wu, Y., Wang, Y., Zhu, X., 2014. What affects green consumer behavior in China? A case study from Qingdao. J. Clean. 63, 143-161.

Zhu, Q., Li, Y.; Yong, G., Yu, Q., 2013. Green food consumption intention, behaviors and influencing factors among Chinese consumers. Food Quality and Preference. 28, 279–286.

Table 1 – Main focus of the researches related to the GP consumption

Author	Main focus of the researches
Lai (1993)	The green products labels characteristics; Germany.
Roberts (1996)	Green consumers in the 1990s; survey in USA.
Schlegelmilch *et al.* (1996)	Green purchasing decisions x environmental consciousness; survey in UK.
Chan (2001)	Green purchase behaviour; survey in China.
Laroche *et al.* (2001)	Targeting consumers who are willing to pay more for environmentally products; survey in USA.
Diamantopoulos *et al.* (2003)	Socio-demographics influences x green consumers; survey in UK.
Williams and Parkman (2003)	On humans and environment: the role of consciousness in environmental problems.
Frick *et al.* (2004)	Environmental knowledge; survey in Swiss.
Gilg *et al.* (2005)	Identifying the sustainable consumer; survey in UK.
McDonald and Oates (2006)	Consumer perceptions and marketing strategies related to sustainability; survey in UK.
Tsen *et al.* (2006)	Relationship between the attitudes, behaviour and values of the GP consumers and their willingness to pay for GP; survey in Kota Kinabalu.
D'Souza *et al.* (2007)	Environmental beliefs and the influence on quality and price of GP; survey in Australia.
Marchand and Walker (2008)	Product development and responsible consumption: designing alternatives for sustainable lifestyles; interviews with 11 respondents.
Mostafa (2009)	Factors that influence GP consumption; Kuwait.
Smith and Paladino (2010)	Consumer motivations towards purchasing organic foods; Australia.
Young *et al.* (2010)	Green consumer behaviour when buying technology-based products; survey in UK.
Evans (2011)	Sustainable consumption integrated into everyday life; UK.
Koller *et al.* (2011)	Insights from car users x the ecological aspect of consumption; European car users.
Lin and Huang (2012)	Decision behaviours regarding green products; Taiwan.
Gleim *et al.* (2013)	Barriers to green consumption; 330 respondents, predominantly Caucasians.
Lorek and Fuchs (2013)	Strong sustainable consumption; theoretical paper.
Paço *et al.* (2013)	Green consumer behaviour; England, Germany, Portugal and Spain.
Tseng and Hung (2013)	Customers' expectations and their perceptions of green products; users of notebook computers, monitors and printers in Taiwan.
Vicente-Molina *et al.* (2013)	Similarities and differences between the pro-environmental behaviour of students from emerging and developed countries; survey in Spain, USA, Mexico and Brazil.
Zhu *et al.* (2013)	Green food consumption; China.
Zhao *et al.* (2014)	Green consumer behavior; China.

Table 3 – Elements that drive the GP consumption and indicative variables associated with the conceptual framework

Elements	Indicative Variables	Authors
Quality of life	- Taking good care of one's health; - satisfying material needs; - having a healthy lifestyle; - religiousness as a form of balance; - controlling stress as a form of balance.	Marchand and Walker (2008); Jacob *et al.* (2009); Roberts and Clemente (2007); Huang and Rust (2011); Lorek and Fuchs (2013).
Environmental consciousness	- No longer buying from a company after determining that it is harming the environment; - caring about the planet's future; - buying a GP is good for the environment; - reducing the waste of plastic, metals, paper, glass, chemicals, electric power, water and fuels; - considering oneself to be part of the environment; all actions taken by human beings affect the environment.	Lin and Huang (2012); Veeravatnanond *et al.*, (2012); Williams and Parkman (2003); Schlegelmilch *et al.* (1996).
Quality and price	- GPs have an acceptable standard of quality and a fair price; - buying GPs would be the best option if they had the same price as non-green products; - the purchase of GPs would be leveraged if they were more available in the market.	Lin and Chan (2012); Gleim *et al.* (2013); Zhao *et al.* (2014); Laroche *et al.* (2001); Cherian and Jacob (2012).
Information and knowledge	- Having more information about GPs would influence the decision to buy; - information about GPs is reliable; - the label and the packaging specifying the features of GPs would contribute to the decision to buy; - advertising explaining the benefits of GPs would influence the decision to buy; - newsletters and other information about environmental problems would drive the consumption of GPs.	Lai (1993); Cherian and Jacob (2012); Spangenberg *et al.* (2010); Leire and Thiedell (2005); Gleim *et al.* (2013); Tseng and Hung (2013).
Social Context	- Society values GP consumers; the consumption of GPs generates new businesses; - the consumption of GPs contributes to society now and in the future; - more income or higher pay would drive the consumption of GPs; - financial contributions or voluntary actions for environmental projects and actions drive the consumption of GPs.	Spangenberg *et al.* (2010); O´Neill *et al.* (2009); Lorek and Fuchs (2013); Wang *et al.* (2014); Zhao *et al.* (2014).

Table 5 – Matrix of Rotated Factors

Indicator	Factors				
	F1	F2	F3	F4	F5
QUE01	.150	-.003	.044	.057	.762
QUE02	.056	.073	.057	.018	.768
QUE05	.720	.011	.161	.195	.084
QUE06	.790	.030	-.042	.133	.047
QUE07	.566	.132	.267	.042	.101
QUE09	.614	.181	.166	-.032	.061
QUE11	.225	.273	.695	.110	-.099
QUE12	.118	.092	.861	.031	.100
QUE14	.126	.061	.529	.228	.098
QUE15	.272	.568	.254	-.102	.173
QUE16	.139	.590	.054	.010	-.034
QUE17	.115	.602	.153	.165	-.009
QUE18	.049	.598	.049	.188	-.012
QUE19	.034	.253	-.019	.739	-.054
QUE20	.170	.188	.137	.785	.005
QUE21	.103	.038	.260	.642	.159
QUE24	-.107	.551	.020	.191	.084
Total Explained Variance	12.398%	11.401%	10.687%	10.655%	7.585%

Highlights:

1. Green consumers tend to punish companies that are not environmentally responsible.
2. Education might increase green consumption.
3. The quality of green products is satisfactory and the price was not significant variable.
4. Provide information about green products contribute to increase green consumption.