The influence of sustainability beliefs in sustainable consumption behavior: a study with students from Brazil and Paraguay

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Abstract

One of the main challenges to achieving the much desired sustainable development is to identify the paths so as to realize the transition from speech to sustainable practice. One of the first aspects necessary for this transition is the change in the forms of production and consumption. This article aims to analyze the beliefs of individuals about the sustainability issue are related to the behavior of sustainable consumption. When investigating this relationship opens the opportunity to shed light on the factors that may influence consumption in order to make it sustainable. Therefore, validated instruments were used in the research from previous study of the constructs beliefs in sustainability and sustainable consumption behavior in a sample of brazilian and paraguayan students. Data analysis occurred through structural equation modeling. The results showed that, for the brazilian sample, the beliefs of individuals concerning the sustainability influence their willingness to sustainable consumption, however, this relationship was not true for the sample of paraguayan students. And cultural factors related to the understanding of stage about the sustainability for both countries are possible explanations for the results.

Keywords: Sustainability. Beliefs. Sustainable Consumption.

Introduction

The incompatibility between the current systems of production and consumption and the availability of natural resources has provoked intense debates regarding the urgency of sustainable development for the contemporary economy. Sustainable development can be defined as one that can meet the needs of today's generations without compromising the ability of future generations to meet their own needs (Brundtland, 1987). In this perspective, a new challenge is imposed on the society and the organizations since they must rethink their strategies of consumption and produc-

tion.

Working under the prism of sustainability suggests that organizations should contemplate the balance between economic needs with social equity and respect for the environment (ALMEIDA, 2007).

The implementation of a sustainable enterprise is considered a complex task, considering that the sustainable perspective requires a three-dimensional focus (economic, social and environmental), while the traditional management model focuses mainly on the economic dimension. The other dimensions are considered adjacent or even optional.

It is important to bear in mind that many are the obstacles that presents in the modification of current patterns of consumption, since they demand changes even of behavioral order. For Millar et. al. (2012), human behavior is essential in the management and change process. For Steinburg (1992), organizational change is anchored in personal change, which means that if an organizational change is to occur, personal change is also necessary. Portilho (2005) argues that when approaching to the question of sustainability and sustainable development, it is difficult to separate them from broader consumption explanations, and more specifically sustainable consumption. Regarding collective consumption attitudes and decisions, Belz and Peattie (2010), understand them as part of the main bases of changes, taking into account the way of satisfying needs, resulting in individual consequences for countries and species of planet Earth.

In this perspective, the practice of sustainable principles will only be effective as long as it is capable of promoting changes also in consumer behavior, which must take a sustainable perspective. Sustainable consumption can be defined as the set of actions and behaviors for the satisfaction of human needs, considering the contribution to local development, as much as for the preservation of natural resources as for the reduction of social differences (VIEGAS, DIAS, TEODÓSIO, 2010).

The explanatory factors or the factors directly associated with the adoption of this new posture or behavior of sustainable consumption are relevant for the understanding of the paths that can lead to sustainable development. In this sense, the "beliefs" of individuals have been pointed out as one of these factors. According to Barcelos (2001), one of the most important characteristics of beliefs is its influence on behavior. Beliefs influence how people organize and define their tasks, so they are strong indicators of how people act (PAJARES, 1992; BARCELOS, 2001). Yang (1992) argues that beliefs can influence the behavior of individuals, and it also complements that beliefs can cause strategies, that is, they can assist in the elaboration of strategies from the point of view of individuals towards themselves. Matrella (2002) argues that beliefs are described as socially defined interpretations of reality and serve as the basis for a subsequent action.

Maloney, Ward, and Braucht (1975) developed a study that concluded that individuals with a sharper ecological consciousness had more conspicuous sustainable consumption behaviors. For Bedante (2004) the knowledge about the ecology presents a direct and positive relation to a more active behavior towards the environment. On the other hand, Cortes and Moretti (2013), evaluate that the environmental behavior is the result of an interaction of social influences, making their evaluation complex. In this perspective, a direct relationship between people's beliefs and attitudes toward envi-

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ronmental issues would not exist (WHITMARSH, 2009, CARRUS, PASSARARO, E BONNES, 2008, WINTER and KOGER, 2004).

The relationship between "beliefs" and "consumer behavior" constructs are relevant since there is actually a direct and positive relationship between them, so the path to achieving sustainable development may be better understood. Considering this possible relation, the objective of this study was to analyze if the beliefs of individuals related to sustainability are factors influencing the behavior of sustainable consumption.

Since sustainability issues tend to affect the next generations more deeply, it is important to understand how this concept is being incorporated by future managers and collaborators of organizations, who are current undergraduate students. The guiding question of this work was thus defined: Do the beliefs of Brazilian and Paraguayan students about the sustainability theme influence their sustainable consumption behavior?

This study was conducted with brazilian and paraguayan students belonging to a university located in a triple frontier region, trying to analyze if the cultural factors could somehow interfere with the results of this investigation. The data were collected through questionnaires already validated in the studies of Catapan (2014) and Ribeiro and Veiga (2011) and that measured the constructs beliefs of sustainability and behavior of sustainable consumption. The results were analyzed through structural equation modeling.

The existence of studies with different conclusions about the direct or negative relationship between sustainability beliefs and sustainable consumption behavior brings up a possibility of contribution of this study to the filling of this theoretical gap. In addition, studies of this nature may provide support for a better understanding of the ways that can help build a more sustainable society.

Theoretical

Sustainable development is seen as a process of change in which resource exploitation, investment direction, technological development orientation and institutional change are in harmony to improve the current and future potential of meeting human needs and aspirations (BRUNDTLAND, 1987). Dahl (2007), in dealing with sustainable development, sees it as a value-laden concept, thus presenting a strong relationship between the principles, ethics, beliefs and values that underpin a society or community and its conception of sustainability .

The achievement of sustainable objectives is associated with the capacity of society to change old habits, especially with regard to their consumption habits. According to Slater (2002), consumer culture is related to modernity as a whole. The basis for the formation of sustainable consumption habits has its origins in personal relationships such as family and friends, commercials and advertising campaigns, packaging reports, public mass media sources, influences of groups or consumer organizations, handling experiments or use of the product among other forms (BELZ; PEATTIE, 2010).

The problem is not precisely in the act of consuming, but in the ways in which this consumption occurs, as well as the impacts they generate in terms of reconciling

productive pressures on the environment and meeting the basic needs of mankind (SOLOMON, 2002) .

The so-called hyperconsumption or consumption without measures makes the world a true container of goods, dedicated to adjusting human actions to their consumption profile (BAUMAN, 2007). For Portilho (2005), the concern goes beyond the relations between consumption, use of natural resources in productive processes and their impacts on the environment, reaching spheres of reflection on social impacts. In this case consumption is seen as a manifestation susceptible to a political regulation, containing definitions of production as well as consumption itself.

The consumer becomes a proactive key within the explanation of solutions that focus on sustainability (BELZ; PEATTIE, 2010). As consumption is one of the factors that has a strong impact on the use and waste of natural resources, the long-term sustainable development presupposes a redefinition for consumption and the means that make it possible to change consumption habits need to be known as indispensable tools to this process.

One of the factors pointed out by the literature as associated with attitudes and behavior of sustainable consumption is the belief of individuals, more specifically, the belief about sustainability.

The beliefs as construct

One of the relevant aspects regarding beliefs is that, according to SCHÖN, 1983; WILLIAMS, BURDEN, 1997; BANDEIRA, 2003, one may or may not be aware of them. In this sense, Bandeira (2003) states that belief can be a disposition for action and can turn into behavioral attitudes. Thus, when they become behavior, they are beliefs to which the individual has consciousness.

For Perina (2003) beliefs are personal, individual, experience-based truths that guide the action and can influence the beliefs of others. Ferreira (1986) argues that beliefs are opinions endowed with faith and conviction. Schlegelmilch et al. (1996) studied the importance of environmental knowledge, attitudes, and pro-environmental buying behaviors. They have shown that consumers' environmental awareness can impact their purchasing decisions. However, they had difficulty identifying how these environmental attitudes are actually formed, suggesting that sources of information could be the basis for the preliminary investigations.

Doron and Parot (1998) explain that beliefs can be presented in three different ways: (i) as an opinion; (Ii) how, indeed, a belief; and, (iii) as knowledge. In this line, Nonaka and Takeuchi (1997) cite that knowledge refers to beliefs and commitments, or specific intention, being essentially related to human action.

Dewey (1933) explains that beliefs have a relation to knowledge, stating that they cover all the subjects that we do not yet have knowledge of, giving trust as a basis for action.

Barcelos and Kalaja (2003, p.233) emphasize that beliefs are dynamic, emerging, socially constructed and contextually situated. Rokeach (1968) explains that beliefs are grouped between the most central and other more peripheral, with the most central being more resistant to change. The central beliefs have four characteristics: (i) they are more interconnected with others and, therefore, they communicate more with each other and, in this way, they bring more consequences to other beliefs; (Ii) are more

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related to the identity and self of the individual; (Iii) are shared with others; and, (iv) derive from direct experience ("seeing to believe"). The central beliefs are those to which individuals do not undo easily, and are more linked to individuals' identity and emotion (BARCELOS, 2006). There are also peripheral beliefs, which refer to beliefs about taste, are arbitrary, less central, and have fewer connections (PAJARES, 1992).

In this way, in the same line used by Catapan (2014), it was decided to use the concept, adapted from Peirce (1958) and Barcelos (2006), as a definition for the term belief: Ideas and opinions of people, habits, customs and traditions on sustainability, built on the experiences of these people.

Given the concept of beliefs will be conducted in the context of students, it is important to analyze this concept from the perspective of this audience. Catapan (2014) argues that one of the first works that involved the concept of beliefs in the context of students was that of Honselfeld (1978), who used tacit knowledge of the students, even without naming them as beliefs (BARCELOS, 2004).

Methodology

This study aimed to analyze the influence of sustainability beliefs on the behavior of sustainable consumption of brazilian and paraguayan university students. The present study is an explanatory one, since it intends to discover and to describe the characteristics of the phenomenon in question (RICHARDSON, 1999).

In relation to the approach to the problem, this research is classified as quantitative, since it sought to find statistical relations between the beliefs of sustainability in the behavior of sustainable consumption.

Within the context of the analysis model, the relationships between the variables were supported by the literature review, resulting in the following research hypothesis: The beliefs in sustainability have a direct and positive influence on sustainable consumption behavior.

In order to conduct this work, a search was made in the literature about the subject that aimed to find statistically validated research instruments. In order to evaluate and measure the construct sustainability beliefs, it was decided to use an instrument developed by Catapan (2014), which used some indicators of the Enviromental Concern Scale (EC) proposed by Straughan and Roberts (1999) and the steps of scale development suggested by Netemeyer, Bearden and Sharma (2003), which are: (i) the definition of the object; (ii) generation of measurement items; (iii) the development and refinement of the scale through exploratory factorial analysis; and (iv) finalization of the scale by means of confirmatory factorial analysis. After completing all the steps, Catapan (2014) arrived at the instrument presented in Table 1. The variables were supported by the literature review, resulting in the following research hypothesis: The beliefs of sustainability have a direct and positive influence on sustainable consumption behavior.

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Table 1 – Questionnaire for Sustainability Beliefs

Construct		Questions
Sustainability Beliefs	1	Plants and animals basically exist to be used by humans.
	2	Humanity was created to dominate nature.
	3	Humans have the right to modify the environment to fit their needs.
	4	Humans should live in harmony with nature so that they can survive better.
	5	When humans interfere with nature, this often produces disastrous consequences.
	6	Planet Earth has limited space and resources.
	7	The balance of nature is very delicate and easily disturbed.
	8	To maintain a healthy economy we will have to develop it so that industrial growth is controlled.
	9	We are approaching the number of inhabitants that the earth can bear.
	10	There are growth limits beyond which our industrialized society can not expand.
	11	The adoption of sustainable marketing can be used to camouflage derogatory processes.
	12	Strategies to minimize environmental impacts generate costs for organizations.
	13	The maintenance of resources is the most important aspect of sustainability.
	14	I know that there are laws aimed at minimizing environmental impacts applied to companies.
	15	I know the laws aimed at minimizing the environmental impacts applied to companies.
	16	I can list at least three certifications aimed at minimizing environmental impacts.
	17	The environmental question is considered by the organizations in the definition of their strategies.

Source: Adapted of Catapan (2014)

In order to analyze the behavior of sustainable consumption, we chose to use the instrument proposed and validated by Ribeiro and Veiga (2011), which contemplates 11 questions that, together, measure the construct consumer behavior. This research instrument is presented in Table 2.

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Table 2 – Questionnaire for Sustainable Consumption Behavior

Construct		Questions
Sustainable Consumption Behavior	18	I separate metal objects (aluminum cans, oil, tomato extract, etc.) for recycling.
	19	Separate glass (beer gags, soda, perfume bottles, etc.) for recycling.
	20	I separate papers (newspapers, magazines, books, notebooks, etc.) for recycling.
	21	Separate plastic packaging (bags, PET bottles, disposable cups, etc.) for recycling.
	22	In elections for public office, I prefer to vote for candidates who have strong positions in defense of the environment.
	23	I stop buying from a company that shows disrespect for the environment.
	24	Change the brand choise to buy from companies that show greater care the environment.
	25	I'm looking for ways to reuse objects.
	26	I try to fix things instead of throwing them away.
	27	I buy used cars and nearly new equipment.
	28	I leave devices like television and computer connected even when I'm not using them.
	29	I lock faucets from the sink or shower when I am using soap.
	30	I leave lights on unnecessarily.

Source: Adapted from Ribeiro de Veiga (2011)

Sample and data collection

Data were collected at Unila University, located in a three-border region, using questionnaires, with Likert 10-point responses. The brazilian sample consisted of 108 students who answered the questionnaires, however, 98 were considered valid. It is noteworthy that there were 775 brazilians enrolled in the University at the time of the research, and in this sense, the sample represented 12.6% of the population.

For the sample of paraguayans, 42 valid answers were obtained in a population of 252 paraguayan students, representing a sample of 16.6% of the population. Thus, this sample was also considered representative of the study population.

The questions were randomly arranged so as not to induce the respondent to identify patterns of response or the constructs being analyzed. The collection took place during the month of november and the first week of december 2014. Printed questionnaires were used, personally collected by the researcher, as well as online questionnaires were made available through the use of the Qualtrics tool.

Structural equation modeling

In order to analyze the relationships among the proposed constructs for this work, it was used the structural equation modeling (SEM), which examines a series of dependency relations simultaneously, is a particularly useful method when a dependent variable becomes independent in subsequent dependency relationships

(SILVA, 2006). According to Hair et al. (2005), it is a multivariate technique that combines aspects of factorial analysis and multiple regression, aiming at estimating a series of interrelated dependency relationships simultaneously.

The variables of this model can be classified as observable variables (or indicators) or latent variables, which, by definition, are not directly observable but deduced from one or more observable variables belonging to the field of empirical research (MALHOTRA, 2004). In this stage of the work, multi-group structural equations were used, that is, the analyzes were made considering the countries together and separately, to understand if there are differences in the influences of the attributes of the countries in the sample. The analysis was performed using the software SmartPLS 3. The model tested can be visualized in Figure 1, placing consumption behavior as a dependent variable.

Figure 1 – Structural Research Model
Source: Author

Analysis of results

The results obtained by this work are presented in three different sections: i) the characterization of the respondents, ii) the descriptive statistics and iii) the quantitative analysis by means of structural equations.

Respondents profile

The characterization of the respondents included questions related to gender, age, type of residence, type of school attended in high school, course in progress and the period of the same. The objective of this characterization was to observe if there were relevant socioeconomic differences between the brazilian and paraguayan respondents that could influence the final results for the analyzed groups.

Regarding the sex of the brazilian respondents, it was observed that 51.02% of the respondents were females and 48.98% were males. In terms of age, brazilian respondents were distributed in 38.78% between 21 and 25 years, and 33.67% with up to 20 years. The two groups accounted for 72.45% of the brazilian respondents, which added up to the percentage of 16.33% found in the 26 to 30 year age group, and accounted for 88.78% of respondents.

In the brazilian sample, the areas with the highest incidence of respondents were health (medical school) with 36.73%, applied social sciences with 26.31% and civil engineering with 11.22%. Together these three areas accounted for approximately 75% of the total sample. The highest frequencies of brazilian respondents in relation to the periods of the course were in the first period with 38.78% of the brazilian respondents, sixth period with 24.49% and second period with 12.24%, totaling approximately 75% of the total brazilian respondents. Brazilian respondents

who attended high school in public school accounted for 63.27% of the total, while 28.57% attended private school and only 8.16% with private scholarship. It was noted that 57.14% of the total of the "rented" category, which added to the category of student housing, which obtained 11.22% of the answers, 68.36% of the total.

In relation to the paraguayan respondents, they declared themselves to be male in 54.76% of the answers while the female ones were 45.24% of the total of respondents. As to age, 57.14% of paraguayan respondents reported being in the 21-25 age group, while 33.33% were in the age range up to 20 years, which corresponded to 90.48% of the total paraguayan respondents.

The medical course presented the largest number of paraguayan respondents, with 42.86% of the total, followed by courses in the area of applied social sciences with 30.95% of the total, the two added areas accounted for 73.81% of the sample. Regarding the course period, the paraguayan respondents reported attending the first period of the course in 45.24% of the answers. About 19.05% were in the eighth grade while the rest of the sample was distributed between the other periods.

It was observed that 41.67% of the paraguayan respondents lived with parents or relatives, the same percentage was attributed to those living in rented housing, with 83.33% of the total answers valid.

Thus, it was possible to identify that the samples of brazilian and paraguayan respondents did not present significant differences in relation to gender, age, courses in progress and socioeconomic conditions.

Descriptive statistics

The descriptive analysis of those collected with brazilians, responses that obtained averages greater than 8.0 were related to questions 4 and 5, observing a greater concern on the part of the respondents with the aspects related to environmental awareness. Regarding sustainable consumption behavior, averages above 8.0 were not found, the highest of which was obtained in question 30, with 7.74.

However, the lowest averages were found for the construct beliefs in sustainability in question 2, with only 2.70 and for the sustainable consumption behavior in question 30, with a mean of 5.15.

The highest standard deviations and variance were found for the sustainability beliefs in questions 1, 2 and 6 described in Table 1. Regarding the behavior of sustainable consumption, it was verified that questions 21, 23 and 25 presented a variance higher than 9, 0. Demonstrating thus, the different ways of understanding the beliefs in sustainability and especially the behavior of sustainable consumption found among the respondents.

Regarding the paraguayan sample, the descriptive analyzes presented the highest averages of questions 3, 5, 6 and 9 for sustainability beliefs, all of them above 8.0. The same was not observed for the construct of sustainable behavior that did not obtain any average above 8.0. The highest mean was found in question 29, with 7.98. The lowest mean for beliefs is in question 2, being 3.60 and in question 30 for sustainable consumption behavior, which was 3.48. The highest standard deviations and variance were identified in questions 22, 23 and 26, in which all presented a variance above 9.0.

Quantitative analysis

For purposes of analysis of the structural equations model, it was decided to consider as only significant factorial loads for the results of this study, higher than 0.7, excluding factorial loads that presented values lower than 0.4 and even those with values between 0.4 And 0.7, with the aim of making the statistical analysis more robust. The analysis of the structural equations was separated into two samples, an analysis was performed for brazilian respondents and another for paraguayan respondents.

Structural equations modeling: Brazil

The sample of brazilian respondents presented n = 98 and was treated using a level of significance of 0.05. When analyzing the factorial loads, values lower than 0.4 were found in questions 1, 2, 6 and 12. Questions 14, 15 and 25 were also discarded because they presented values of factorial load with values between 0.4 and 0.7. After this procedure, the modeling was again estimated. The results using student's t statistics are illustrated by Figures 2 and 3.
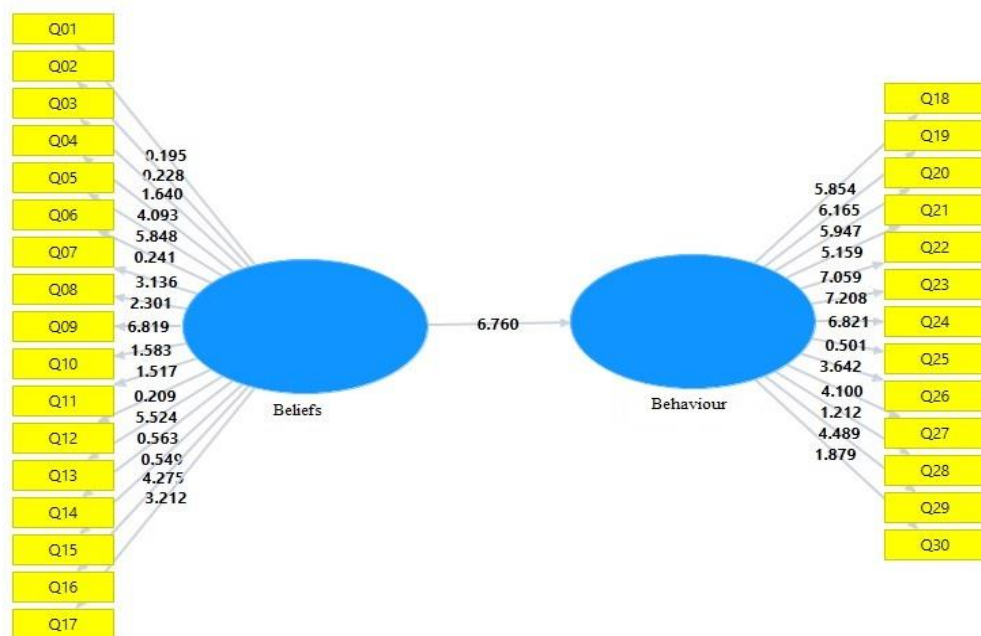

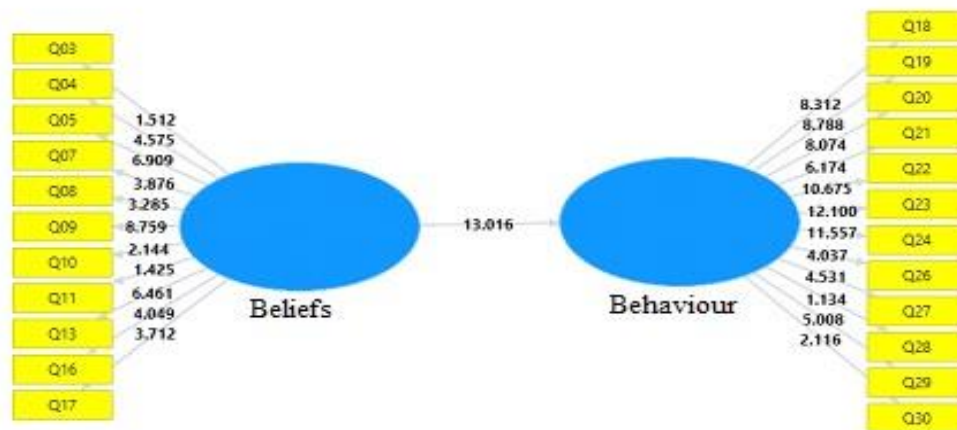Figure 2 – Complete structural model for brazilians sample
Source: Author

Figure 3 – Adjusted structural model for brazilians sample
Source: Author

The adjusted structural model for the brazilian respondent sample presented a t-statistic of student equal to 13,016, being well above the acceptable minimum value of 1.96 for acceptance of the hypothesis proposed, at the level of significance of 0.05. The p-value identified was equal to 0.000. Thus, it was observed that there are statistically significant relationships between the analyzed constructs, so that the beliefs of brazilians about sustainability influence their behavior of sustainable consumption.

Structural equation modeling: Paraguay

Regarding the sample of paraguayan respondents, it presented n = 42. The analysis of factorial loads identified values below 0.4 in questions 1, 2, 4, 6, 7 and 13 and between 0.4 and 0.7 in question 10, which are then disregarded for continuity of the analysis, according to Figure 4. From the new analysis, values below 0.7 in the factorial load of question 11 were still found, and it was also discarded for the continuity of the study. After elimination of the factorial loads considered low, the regression was estimated, according to figure 5.
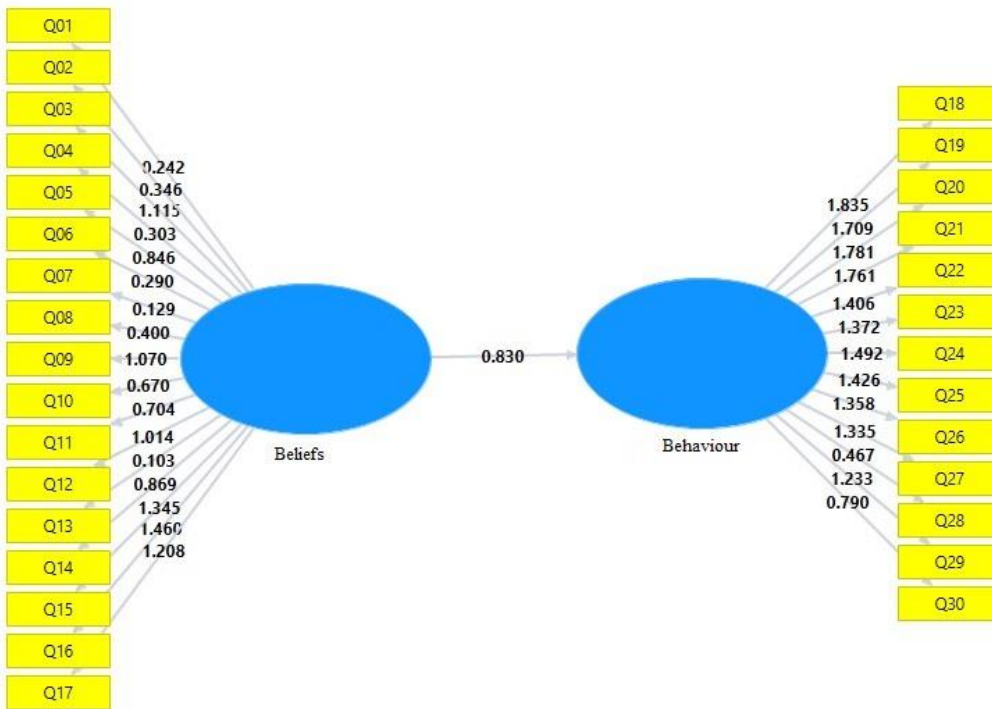
Figure 4 – Complete structural model for paraguayan sample
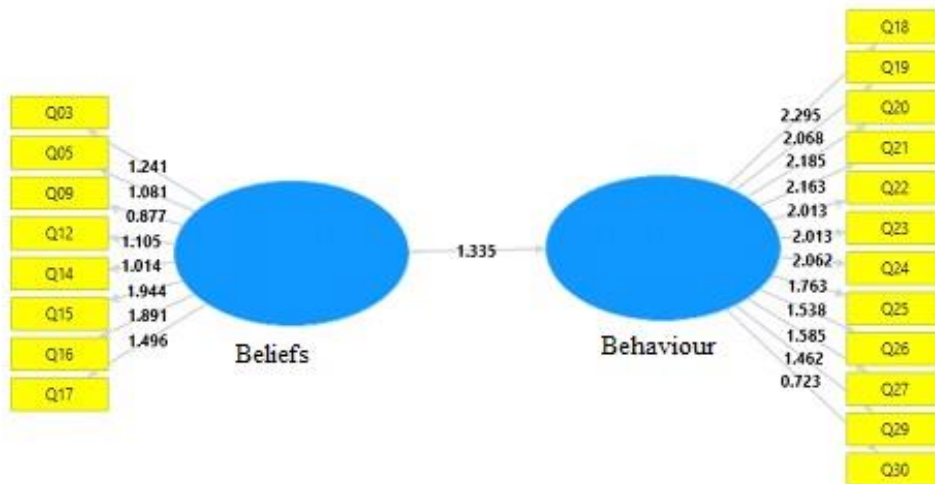Source: Author

Figure 5- Adjusted structural model for paraguayan sample
Source: Author

The results obtained presented factorial loads with values above 0.7, being statistically acceptable for the research, however, the present sample of paraguayan respondents in terms of composite reliability presented a value of 0.041, well below the recommended 0.7, as well as a value of the student's t statistics of 1,335, which also shows below the desired minimum of 1.96 for samples with a significance level

of 0.05, in addition to a p value of 0.357, and there is evidence that there is no statistical significance in the relation of influence of sustainability beliefs on sustainable consumption behavior for paraguayan students in the sample. Thus, when comparing the obtained results, it was verified that different conclusions could be obtained for the two samples. Figure 6 summarizes the results obtained, namely the acceptance of the hypothesis proposed for the brazilian sample and the rejection of this hypothesis for the paraguayan sample.

	Hipótese de Pesquisa	Brasil	Paraguai
H1	Sustainability beliefs have a direct influence on sustainable consumption behavior	Accepted	Rejected

Figure 6: Results of hipothesis testing by samples
Source: Author

Considering the existence of different results for Brazil and Paraguay, it can be inferred the existence of statistically significant differences in the relationships between sustainability beliefs and sustainable consumption behavior, when comparing the samples of respondents of different nationalities of the study. A possible explanation, also used by Catapan (2014) when conducting similar research in Ecuador, was that in underdeveloped countries sustainability is still a little known theme, and is being built to be experienced. Thus, the concept of sustainability beliefs and, consequently, sustainable consumption behavior is still being developed in the population. In the case of the developing country studied (Brazil), where Sustainability is a more mature concept, there is a greater association between beliefs and sustainable consumption behavior.

Conclusion

This study aimed to analyze the influence of sustainability beliefs and sustainable consumption behavior of brazilian and paraguayan university students. Considering that, beliefs influence how people organize and define their tasks, being strong indicators of how people act (PAJARES, 1992; BARCELOS, 2001). Due to the size of the sample and nationalities of the respondents, it was decided to conduct the research by separating the sample between brazilians and paraguayans. Considering the modeling of multi-group structural equations, when only the brazilian respondents are approached, the proposed hypothesis was accepted, but rejected for the paraguayan sample.

Factors related to the maturation of the theme in both countries as well as cultural factors may be associated with the results found. These results corroborate the findings of Catapan (2014) in conducting a similar study in Brazil, Singapore, Ecuador and Portugal, and thus, relations between sustainability beliefs and sustainable consumption behavior were observed for the brazilian sample, but rejected For all other nationalities analyzed.

The result found in the sample of brazilian students partially counteracts Capra's (2006) statement, where sustainability could only exist in a taxing way, since there is no government regulation or determination that all in the country necessarily adopt

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sustainable behavior. The result found among paraguayan students indicates a direct relationship between the difficulty in defining and diffusing the term sustainability in its manifestation in daily and permanent attitudes, since even presenting averages close to the brazilian respondents, these presented a negative result in the relation between the beliefs in sustainability and behavior of sustainable consumption, such a similar result on beliefs still refers to the assertion that people who verbally express a negative attitude about the environment will not be found despite having destructive behaviors towards it (ARAGONÉS; AMÉRIGO, 1991).

It is important to recognize the limitations of this work, which when working with a non-probabilistic sample, its results can not be generalized to all brazilian and paraguayan students or even to students of the institution whose respondents were a large majority, mainly for bringing answers from different courses, thus being another limitation of the study. There are other attributes, besides beliefs, that can influence the behavior and were not analyzed in the scope of this research, such as the affective component (CATAPAN, 2014). The fact that they are foreign students studying in Brazil, may also become a limitation.

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