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Severo, Eliana Andréa; Guimarães, Julio Cesar Ferro de;
Dellarmelin, Mateus Luan; Ribeiro, Rossana Parizotto

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The Influence of Social Networks on Environmental Awareness and the Social Responsibility of Generations

Eliana Andréa Severo[1,*]
[1] *Universidade Potiguar, Natal, RN, Brazil*
Julio Cesar Ferro de Guimarães[1,†]
[1] *Universidade Potiguar, Natal, RN, Brazil*
Mateus Luan Dellarmelin[2,Ω]
[2] *Universidade do Minho, Braga, Portugal*
Rossana Parizotto Ribeiro[3,¥]
[3] *Universidade do Vale do Rio do Sinos, Porto Alegre, RS, Brazil*

ABSTRACT

With the advent of globalization and access to information, social networks came to be widely used by different generations. However, environmental issues have been causing global impacts, as well as issues of social vulnerability. Environmental awareness awakens new consumption habits, implementing a new socially responsible posture. This study aims to analyze the influence of social networks on environmental awareness and the social responsibility of Baby Boomers, Generations X, and Y, in the regions of South and Southeast Brazil. We use the methodology of quantitative and descriptive research, by means of the Structural Equation Modeling. The results highlight that individuals who are exposed to information (videos, photos, texts) related to social responsibility and environmental sustainability are positively influenced in the formation of social and environmental awareness. However, generation Y presented the lowest means of responses in the search for information on environmental and social issues. This is relevant to society, teaching institutions, government agencies, as well as companies, in order to promote actions and information on social and environmental responsibility, in order to engage Generation Y in sustainable development.

KEYWORDS

Social networks, Environmental awareness, Social responsibility, Generations

CORRESPONDING AUTHOR

*Eliana Andréa Severo
E-mail: elianasevero2@hotmail.com
†Julio Cesar Ferro de Guimarães
E-mail: juliocfguimaraes@yahoo.com.br
Ω Mateus Luan Dellarmelin
E-mail: mateusluand@gmail.com
¥ Rossana Parizotto Ribeiro
E-mail: rossana_parizotto@hotmail.com

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1. INTRODUCTION

The interest in and recognized importance of environmental sustainability in the most diverse sectors is growing, especially from the point of view of the significant benefits that sustainability practices provide to society. There is also concern, especially due to the lack of environmental awareness (Chugh, Wibowo, & Grandhi, 2016), since there is a gradual need to protect the natural resources that are used to supply the needs of individuals and productive sectors (Moldan, Janouskova, & Hak, 2012).

According to Asadi et. al (2008), discussions about environmental sustainability are necessary, due to the use of natural resources and their distributions in the present and future generations, especially for what concerns the capacity of self-sustenance by these generations. Therefore, the concern with environmental sustainability is increasing, contributing to the environmental preservation and the development of a sustainable planet (Ioppolo, Saija, & Salomone, 2013; Severo & Guimarães, 2015).

From a perspective of environmental sustainability, it is essential for individuals who are members of society to have environmental awareness, important to preserve these resources, and to adopt sustainable environmental practices. Environmental awareness awakens new consumption habits, implementing a new socially responsible posture. The more knowledge one has on environmental sustainability, the greater the sustainable attitude towards the environment (Heiskanen, Mont, & Power, 2014; Schroeder & Anantharaman, 2017).

Baby Boomers, Generation X, and Y currently live in the same economic and social environment, relating to an organizational and educational society. Accordingly, these generations have different behaviors and characteristics (Akhras, 2015; Severo, Guimarães, & Dorion, 2018). Baby Boomers are regarded as the most conservative and optimistic; as for generation X, they seek professional stability, whereas generation Y appreciates challenges and risks, as well as being highly creative, innovative and individualistic (Strauss & Howe, 1991; Maniero & Sulivan, 2006; Zopiaris, Krambia-Kapardis & Varnavas, 2012; Zahari & Esa, 2016; Lissitsa & Kol, 2016).

Parry and Urwin (2011) highlight that in the same generation there may be people with the behavioral characteristics inherent to another generation, so in addition to the broad characteristics, we also need the individual's year of birth to classify their generation. In this context, several authors use the scale of years to classify generations; Strauss and Howe (1991) bring the year of birth to the definition of the generations, with Baby Boomers being those born before 1965, generation X those born between the years from 1965 to 1981, and generation Y those born after 1981.

The use of information and communications technology, social networks in particular, are widely appropriated by individuals of the different generation. In light of this, we understand that Social Networks refer to social connections and interconnections between users, with the potential to reach and engage other individuals. In other words, they are means of communication that provide the construction of relationships, through mobile interfaces and desktop devices that have recreational functions, whose operations are fed by various data, whether through images, videos, or texts being shared or developed by the users themselves (Kaplan & Haenlein, 2010; Kietzmann, Hermkens, McCarthy, & Silvestre, 2011).

Access to social networks has been increasing exponentially over recent years (Frazier, Culley, Hein, Williams, & Tavakoli, 2014; Rauniar et al., 2014), because it allows the interaction, exchange of information, union of ideas around shared values and interests among its members (Nohria & Eccles, 1992; Evans, 2009; Chakraborty & Balakrishnan, 2017; Radzi, Harun, Ramayah, Kassim, & Lily, 2018). The use of the internet through Whatsapp, Facebook, Instagram, Youtube, and

Twitter is in people's daily lives, as well as being a tool to help the knowledge of news, products and services. According to Negreiros (2015), it may result in a direct and simultaneous relationship between hundreds or thousands of people without losing the informality of the interpellations, whereas by direct contact the same action becomes practically impossible.

In this scenario, social networks have been the scope of several scientific research projects, due to its resources and scope (Ellison, 2007; Sun, Xu, Ma, & Sun, 2015), teaching and learning (Hall, Delello, & McWhorter, 2017). However, a research gap emerges regarding social networks and their importance for environmental and social issues. Therefore, when analyzing the different behavioral characteristics of Baby Boomers, generations X and Y, in exposure to various stimuli in social networks and the dissemination of information that can influence environmental awareness and social responsibility, the research question is: What is the influence of Social Networks on Environmental Awareness and on the Social Responsibility of Baby Boomers, Generations X and Y?

In this context, this study aims to analyze the influence of Social Networks on Environmental Awareness and Social Responsibility of Baby Boomers, Generations X and Y, in the regions of South and Southeast Brazil.

2. THEORETICAL FRAMEWORK

2.1. Social networks and environmental awareness

The concern for environmental is growing exponentially, especially in relation to environmental awareness amongst consumers (Roberts & Bacon, 1997; Heiskanen et al., 2014; Noppers, Keizer, Bolderdijk, & Steg, 2014; Yang & Xiao, 2017). When faced with the information that environmental protection is not only the responsibility of companies and/or institutions, but rather their own, awareness that intrinsic attitudes also influence the consumption and sustainable development of society is awakened (Hansen & Schrader, 1997; Kotchen & Reiling, 2000; Paavola, 2001; Fraj & Martinez, 2007).

In this context, several studies have been conducted. Roberts and Bacon (1997) analyzed two new scales: i) New Environmental Paradigm (NEP), and; ii) Ecologically Conscious Consumer Behavior (ECCR). Gadenne, Kennedy, and Mckeiver (2009) emphasized that environmental awareness is the understanding and recognition of the costs and benefits associated with environmental issues, in the relationship between human beings and the environment. However, some research emphasized the role of environmental awareness in corporate managers in the implementation of a management strategy that performs environmentally correctly (Sakr, Sherif, & El-Haggar, 2010; Qu, Liu, Nayak, & Li, 2015).

From the perspective of society, Altin, Tecer, Tecer, Altin, and Kahraman (2014) and Mei, Wai, and Ahamad (2016), highlight that environmental awareness is aligned with the individual's convictions regarding environmental causes, their positioning through actions and attitudes, and the way in which they demonstrate this behavior in favor of the environment, by participating actively in environmental issues (Vergragt, Dendler, Jong, & Matus, 2016).

Given this factor, it is through social networks that individual members of these digital platforms can access and share networks, while fostering discussions and creating various forms of content (Kaplan & Haenlein, 2010; Kietzmann et al., 2011; Ghali, Frayret, & Robert, 2016), Through this, people are made aware of various environmental problems; however, involvement is missing (Kamaruddin, Ahmad, & Alwee, 2016). This involvement grants people the awakening of consumers' environmental awareness, encouraging companies to produce more green products and to adopt sustainability policies (Yang & Xiao, 2017).

Therefore, social networks have an important role in the formation of environmental awareness, given that it is exposes users to various stimuli of environmentally sustainable messages, with an online and offline bridge of connections being between personal and business sectors (Ghali et al., 2016). In this regard, the tendency is for consumers to increase their environmental awareness gradually. In view of the above, we list the first hypothesis of this study:

H1: Social Networks positively influence Environmental Awareness.

2.2. Social networks and social responsibility

The engagement in social responsibility in favor of society is a way to increase the social incentive to make financial donations or even donating time to involvement with social actions (Mattila & Hanks, 2012). In this regard, the actions that generate social responsibility are positively related to motivation and sense of empathy. These actions are not limited to the tangible but are also found in intangible actions, thus generating collaborative actions in the lives of all members of society (Skudiene & Auruskeviciene, 2012).

In this scenario, the subject who is willing to perform actions of social responsibility, has numerous reasons to carry out such action, not necessarily because of altruism or acknowledgement, but rather a combination of innumerable reasons that lead them to be socially responsible (Garay & Fonte, 2012; Boulouta & Pitelis, 2014).

Therefore, social responsibility must be perceived as an ethical attitude – starting from within each individual – through the tasks and groups that develop social actions. Thus, social responsibility practices change according to daily activities, since society and companies are constantly evolving (Carroll, 1999; Global Reporting Initiative, 2015; Instituto Ethos, 2015). In the organizational context, indicators of the Global Reporting Initiative (GRI, 2015) and Instituto Ethos (2015), take companies' sustainability reporting practices to a level of quality equivalent to that of financial reports, making public the economic, environmental, and social visions, challenges and results.

The vision of social responsibility, according to Nakayama and Teixeira (2012), is associated with values such as compliance with laws, norms, certifications, and the image of what society defines as an ideal subject. The perception of Lomônaco et al. (2010), on social responsibility is seen in three perspectives: i) it addresses social inclusion implying equal rights and the reduction of major socioeconomic differences of society; ii) it refers to the concern with the environment, referring to the fact that industrial companies have often been accused of assaulting nature, causing serious environmental damage; and, iii) it refers to solidarity, associated with the concept of social responsibility, with the idea of cooperation and mutual assistance between the people.

Social responsibility actions generate engagement in favor of social action, where social networks play an important role by providing the establishments of links between users so that when they encounter content information related to social responsibility, it can generate interest in attitudes and social action activities, with users themselves also being diverse content generators. Moreover, they make it accessible to as many people as possible through interaction on the various social networking platforms (Villasante & Márti, 2006; Wasserman & Faust, 2007). We highlight the hypothesis of this study:

H2: Social Networks positively influence Social Responsibility.

2.3. Moderator effect of baby boomers, generations x and y

We can classify generations according to their personal characteristics, as well as the year of birth (Akhras, 2015; Zahari & Esa, 2016; Lissitsa & Kol, 2016; Radzi et al., 2018). In general, time frames in years of birth are used to classify a generation. According to Strauss and Howe

(1991), generations can be classified according to the year of birth, with Baby Boomers having been born before 1965, generation X are those born between the years from 1965 to 1981, and generation Y having been born after 1981. In accordance with this classification of generations, we developed hypotheses H3a and H3b.

In this context, according to Kim et al. (2016) generations Y and X present differences in the effects of motivation on environmental concern, as well as pro-environmental behavior. Zahari and Esa (2016) highlight that we need to identify the factors that shape generation Y to adopt environmental actions. According to Kosterlitz and Lewis (2017), by 2020, this generation will account for almost 50% of the global workforce, and there will be many implications associated with the increase in this population. Coherently, Issa and Isaias (2016), reported that the use of the internet by generation Y causes positive factors, such as collecting information, global and local awareness, and communicating and collaborating with peers and family members. It also brings with negative factors, as we avoid physical contact and physical activities, capabilities such as independent thinking, concentration and memory are reduced, and people become depressed, and isolated.

Within the different generations: Baby Boomers, X and Y, Severo et al. (2018) emphasize that the different generations moderate the relations of environmental and social actions, in the search for the formation of a sustainable behavior. Accordingly, we developed hypotheses H3a and H3b.

H3a: Generations (Baby Boomers, X and Y) moderate relationships between Social Networks and Environmental Awareness.

H3b: Generations (Baby Boomers, X and Y) moderate relationships between Social Networks and Social Responsibility.

In this context, we present the Theoretical Model that summarizes the research hypotheses (Fig. 1).

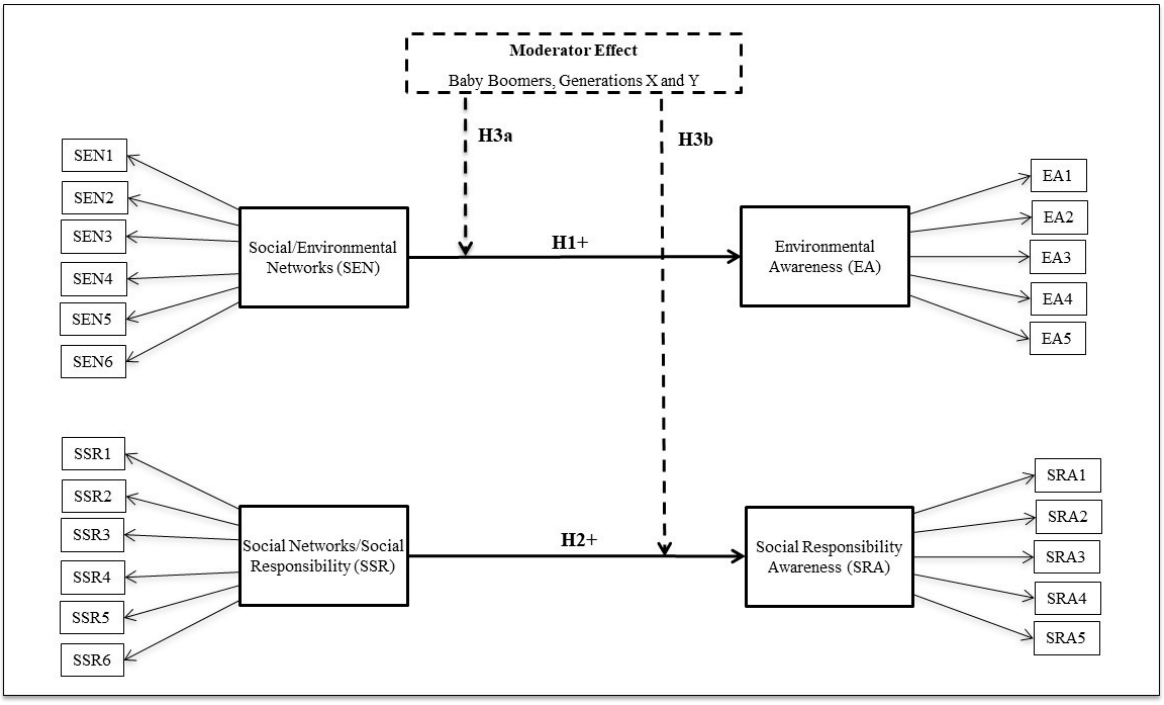

Figure 1. Theoretical model.
Source: Authors (2017).

3. METHOD

In accordance with the objective of this research, this study can be characterized as a quantitative (survey) and descriptive paper, which we analyze by means of the Structural Equations Modeling (SEM), following the precepts of Hair Jr., Black, Bardin, and Anderson (2010). According to Hair Jr., Gabriel, and Patel (2014) the two most prevalent SEM based analytical methods are covariance-based SEM (CB-SEM) and variance-based SEM (PLS-SEM). We emphasize, however, that however, we emphasize that the use of CB-SEM makes it possible to evaluate the effects of mediation, moderation, invariance/equivalence of constructs in various groups, and second or third order modeling of the constructs. In this research, we use first order modeling, with moderator effect analysis and multi-group analysis; therefore, the CB-SEM method is suitable for this study.

We conducted the research through a questionnaire applied by means of an online form with the Google Docs form via the researchers' social media, since different generations use social networks for communication and personal interaction. We used the Snowball research method for data collection, which researchers sent to their contacts who subsequently forwarded the survey to other individuals, from March 20 to July 30, 2017. For this purpose, the choice of respondents occurred in a non-probabilistic way (Hair Jr. et al., 2010), by convenience.

We also emphasize that for the composition of the four constructs and the elaboration of the questionnaire (Table 1 and 2), the questions on Social/Environmental Networks (SEN), Social Networks/Social Responsibility (SSR) were elaborated by the researchers, as for the construct Environmental Awareness (EA) and Social Responsibility Awareness (SRA) we adapted it from research by Roberts and Bacon (1997), Vergragt et al. (2016) and Severo et al. (2017), as well as the Ethos and GRI indicators (Instituto Ethos, 2015; Gri, 2015).

We prepared the questionnaire with affirmations (Table 2), in a Five-point Likert scale, which ranges from totally disagree to fully agree (1- totally disagree, 2- partially disagree, 3- neither agree nor disagree, 4- partially agree and 5 - fully agree). In this setting, the questionnaire was validated by three experts in the thematic study area, with a pre-test being conducted with 23 respondents to verify the understanding of the questions and the duration time. Consequently, after the validation of the pre-test, we analyzed the data using SEM, which uses series of statistical analyzes (Hair Jr. et al., 2010).

For the data purification, we sought to identify univariate and multivariate outliers, Pearson's symmetry analysis with values close to Zero (Kline, 2005; Hair Jr. et al., 2010), and the kurtosis analysis, with values lower than 5 (Mardia, 1971), as well as the forms in which the respondent concentrated the answers on a single alternative of the five-point scale. We observed that the electronic form did not allow blank responses (missing). Initially, we collected 2776 questionnaires, of which 84 forms were eliminated (outliers), which resulted in 2692 valid cases. For the analysis of the data, we used the SPSS® software (Version 21) for Windows® and the AMOS® software (Version 21).

After data cleansing, we evaluated the normality and statistical consistency (Table 2), by means of: i) Bartlett's sphericity test, with significant result ($p>0.001$); ii) measure of adequacy by Kaiser, Meyer and Olkin (KMO), which according to Hair Jr. et al. (2010), should present values greater than 0.5; iii) verification of the simple reliability of the observable variables, by calculating Cronbach's alpha, with values greater than 0.7 (Hair Jr. et al., 2010); and, iv) Composite Reliability (CR), which is expected to be equal to or greater than 0.7 (Marôco, 2010).

In this given setting, we performed the Exploratory Factor Analysis (EFA) to verify the combination of observable variables in factors (Constructs), as the predecessor phase of the

Table 1
Sources and definitions of the questionnaire

Construct	Definitions
Social/ Environmental Networks (SEN)	SEN consists of questions taken from the premises that emphasize the people's concern to access information about environmental practices, among which we highlight the themes of reducing environmental pollution (water, atmospheric), the production of clean and renewable energies, recycling and separation of waste, besides addressing the motivation of the individual to act for the benefit of the environment. The authors of the research developed those theoretical assumptions.
Social Networks/ Social Responsibility (SSR)	SSR is composed of statements that are based on assumptions highlighting the actions of individuals in seeking information related to social responsibility practices, which can be expressed through voluntary work, the inclusion of people with disabilities, the appreciation of women in the work environment, respect and protection of children and adolescents, as well as people's interest in the social activities of NGOs. The authors of the research developed those theoretical assumptions.
Environmental Awareness (EA)	The concepts of EA directly relate to the environmental behavior that stimulates actions of preservation of natural resources for future generations, as well as individuals' environmental practices of recyclable and organic waste sorting, of reduction and reuse of water, as well as the adequate destination of electronic waste. We base these theoretical assumptions on Roberts and Bacon (1997), Vergragt et al. (2016) and Severo et al. (2018).
Social Responsibility Awareness (SRA)	SRA was developed based on the assumptions of consumer behavior that values the actions and practices of corporate social responsibility, among these are issues related to purchasing products and services from companies that have programs of engagement with the local community, ethical, honest and non-corrupt business actions, with guarantees of safety and quality of life at work, with respect for individual rights, without gender distinctions. We base these assumptions on Instituto Ethos (2015) and Gri (2015).

Source: Authors (2017).

SEM. The EFA results, with the Varimax rotation, formed four factors, with explanatory power of 62.2% total variance. The factor loadings were greater than 0.5 (HAIR Jr. et al., 2010) and Commonality presented variables lower than 0.5 (EA1=0.395; EA2=0.446; EA3=0.372), evidencing a low correlation between observable variables.

We also performed the Average Variance Extracted (AVE) (Table 3), in order to evaluate the total variance of each observable variable, through the calculation recommended by Fornell and Larcker (1981), which allows the analysis of Convergent Validity (CV) and the Discriminant Validity (DV) (De Guimarães, Severo, Dorion, Coallier, & Olea, 2016). The tests carried out in this study show that the evaluation of the quality of the responses of the scales and constructs support the measurement model (Framework) and validation of the scales.

In this context, we evaluated the integrated model through the hypothesis testing of Standardized Estimates (SE) and Unstandardized Estimates (UE), in order to measure the relationships and correlations between the constructs. In order to evaluate the adequacy of the measurement model, which predicts the covariance or correlation matrix, we followed recommendations by Kline (2005) and Hair Jr. et al. (2010), from the indexes of: i) Chi-square value divided by the Degrees of Freedom (DF) (equal to or less than 5); ii) Comparative Fit Index (CFI) (= or >0.9); iii) Normed Fit index (NFI) (= or >0.9); iv) Goodness of Fit Index (GFI) (= or >0.9); v) Adjusted Goodness of Fit Index (AGFI) (= or >0.9); vi) Root Mean Squared Error of Approximation (RMSEA) (between 0.05 and 0.08); and, vii) The root mean square residual (RMR) and the Expected Cross-Validation Index (ECVI), used to compare the initial integrated model and the

Table 2
Latent and observable variables - Varimax rotation.

Observable Variables *	Factor Loadings	Commonality
Social/Environmental Networks (SEN)		
SEN1) I usually watch/see videos/photos/texts on environmental pollution.	0.768	0.719
SEN 2) I usually watch/see videos/photos/texts on the use of clean and renewable energies.	0.784	0.696
SEN 3) I usually watch/see videos/photos/texts on recycling and waste sorting.	0.800	0.762
SEN 4) I usually watch/see videos/photos/texts on water pollution.	0.841	0.814
SEN 5) I usually watch/see videos/photos/texts on atmospheric pollution.	0.811	0.759
SEN 6) After watching/seeing a video/photo/text on environmental issues I feel motivated to adopt attitudes to improve the environment.	0.902	0.938
Mean 2.900; Standard Deviation 1.095; Cronbach's alpha 0.941; KMO 0.895; Composite Reliability 0.970		
Social Networks/Social Responsibility (SSR)		
SSR1) I usually watch/see videos/photos/texts on volunteer work.	0.689	0.569
SSR 2) I usually watch/see videos/photos/texts on the inclusion of people with disabilities.	0.762	0.664
SSR 3) I usually watch/see videos/photos/texts appreciation of women in the work environment.	0.752	0.655
SSR 4) I usually watch/see videos/photos/ on the appreciation and respect of children and adolescents.	0.777	0.691
SSR 5) I usually watch/see videos/photos/texts on the social activity of NGOs.	0.716	0.644
SSR 6) After watching/seeing a video/photo/text on social issues I feel motivated to adopt attitudes to improve society.	0.681	0.562
Mean 3.304; Standard Deviation 1.024; Cronbach's alpha 0.878; KMO 0.873; Composite Reliability 0.926		
Environmental Awareness (EA)		
EA1) I sort recyclable and organic waste at home.	0.504	0.395
EA2) In the company where I work, I sort recyclable and organic waste.	0.618	0.446
EA3) During the shower, I use the water aiming to minimize consumption.	0.532	0.372
EA4) I allocate electronic waste (alkaline batteries, batteries, lamps, cell phones) at collection points suitable for the processing of this waste.	0.782	0.636
EA5) I use environmental practices aimed at preserving natural resources for future generations.	0.773	0.644
Mean 3.467; Standard Deviation 0.947; Cronbach's Alpha 0.718; KMO 0.735; Composite Reliability 0.801		
Social Responsibility Awareness (SRA)		
SRA1) Whenever possible, I seek to know if the company has programs of engagement with the local community before acquiring a product or service.	0.630	0.506
SRA 2) I consider it fundamental to acquire products or services from companies that have an ethical, honest and non-corrupt attitude.	0.693	0.519
SRA 3) Whenever possible, I seek to know if the company has health and safety measures to improve the quality of life of its employees before purchasing a product or service.	0.633	0.502

Table 2
Cont.

Observable Variables *	Factor Loadings	Commonality
SRA 4) I consider it as paramount to purchase products or services from companies that do not use child labor and unfair remuneration.	0.720	0.576
SRA 5) I value companies that respect equal pay for men and women.	0.698	0.616
Mean 3.230; Standard Deviation 1.038; Cronbach's alpha 0.773; KMO 0.760; Composite Reliability 0.833		
Adequacy Measure by Kaiser, Meyer and Olkin (KMO)	0.913	
Bartlett's sphericity tests	34421.809	
Level of significance	0.000	

Source: Authors (2017).

final integrated model (rival models), in which the model that presents lower values is considered as better.

The moderating effect of Generations (Baby Boomers, X and Y), expressed in hypotheses H3a and H3b, was evaluated based on the recommendations by Sharma, Durand, and Gur-Arie (1981) and Baron and Kenny (1986), which state that the use of multivariate moderation analysis can be applied in order to identify how the structural model is adjusted in different pre-established groups, as well as the differences that can occur in regression coefficients, due to the change in the value of the moderator. The measurement of the intensity of relationships between the constructs was made possible by the hypothesis testing for multi-groups (Byrne, 2010), in order to evaluate the relationships between the constructs, through the measurement and comparison of Chi-square (X^2) between groups. In this test, we considered as the premise that all paths be kept fixed, except for the path that was tested, which allows evaluating if there is difference between the values of Standardized Estimate (SE) and verifying whether the differences between X^2 are statistically significant. As an addition, we compare the means of the constructs with ANOVA.

4. RESULTS

The distribution of the Brazilian population according to IBGE (2010) is composed of 26.8% of Baby Boomers, 22.2% of Generation X and 26.8% of Generation Y. However, the sample is not proportional to the population, since the Snowball and non-probabilistic methods we use for collecting data; do not provide for the proportional distribution of the sample in relation to the population.

The final sample had 2692 valid cases, comprising of 5.5% Baby Boomers, 26.9% Generation X and 67.6% Generation Y. As for gender, we highlight that 62.6% are female. We emphasize that the large number of Generation Y respondents is attributed to the intense use of social networks by this age group. In regards to work, 66.9% of the respondents do work as: i) assistant 15.4%; ii) manager 14.4%; iii) analyst/technician 14.1%; iv) teacher 9.8%; and, 46.4% in other roles. As for the economic profile, the respondents present a family income of: i) 52.6% receive up to four monthly minimum wages; and, ii) 40.5% receive monthly income from 4 to 20 minimum wages. We highlight that 80.7% of the respondents are from the South Region and 19.3% from the Southeast Region of Brazil. With regard to schooling: i) 11.2% have completed elementary school; ii) 49.5% are pursuing higher education; iii) 18.7% have completed higher education only; iv) 14.7% are pursuing postgraduate studies (MBA and Masters); v) 2.3% have completed a Masters degree; and, vi) 1.2% are PhDs.

Fig. 2 shows the intensity of the use of social networks by applications. The results demonstrate extensive use (more than 10 times a day) of WhatsApp 70%, Facebook 46.6% and Instagram 24.6%. It should be noted that a significant fraction of the respondents demonstrate that they never use Twitter (76.8%) and Linkedin (68.8%). The use of Youtube concentrates on accesses once a day (26.3%), as well as 25.3% say they access once a week.

After the application of the EFA, with the Varimax rotation, we considered the use of SEM suitable. The descriptive statistics of the data demonstrated an overall mean of observable variables of 3.214 and a standard deviation of 1.331, which shows the agreement of the respondents and low variability, configuring that the respondents identified the existence of the attributes questioned in the research. The calculations of AVE (Table 3) to measure CV, resulted in the constructs of Social/Environmental Network (SEN) (CV=0.843) above recommended (=or>0.7), whereas the Social Networks/Social Responsibility constructs (SSR) (CV=0.676), Environmental Awareness (EA) (CV=0.458) and Social Responsibility Awareness (SRA) (CV=0.507) present the CV close to or lower than the recommended, indicating that some observable variables of this study are little integrated to the construct, which can be evidenced by Pearson's Commonality and Correlation. This is an important measure; however, these results do not invalidate the measurement scale, and therefore, we kept all observable variables for the analysis of the integrated model.

The CR evaluation (Table 2), identified that the values were above the level recommended (>0.7) by Hair Jr. et al. (2010) and Marôco (2010) in the constructs and in the set of all observable variables (CR=0.975), which indicates the consistency and reliability of data.

The analysis of Pearson's Correlation identified some correlations with values above 0.7 between the variables SEN1<–>SEN4 (0.717), SEN1<–>SEN6 (0.817), SEN3<–>SEN6 (0.799), SEN4<–>SEN5 (0.817), SEN4<–>SEN6 (0.866) and SEN5<–>SEN6 (0.838). These results may indicate the multicollinearity between variables; however, we decided to maintain these variables by the importance in the formation of the construct. Nonetheless, we used these correlations as the basis for the construction of the final integrated model, because they are extremely important for understanding the research.

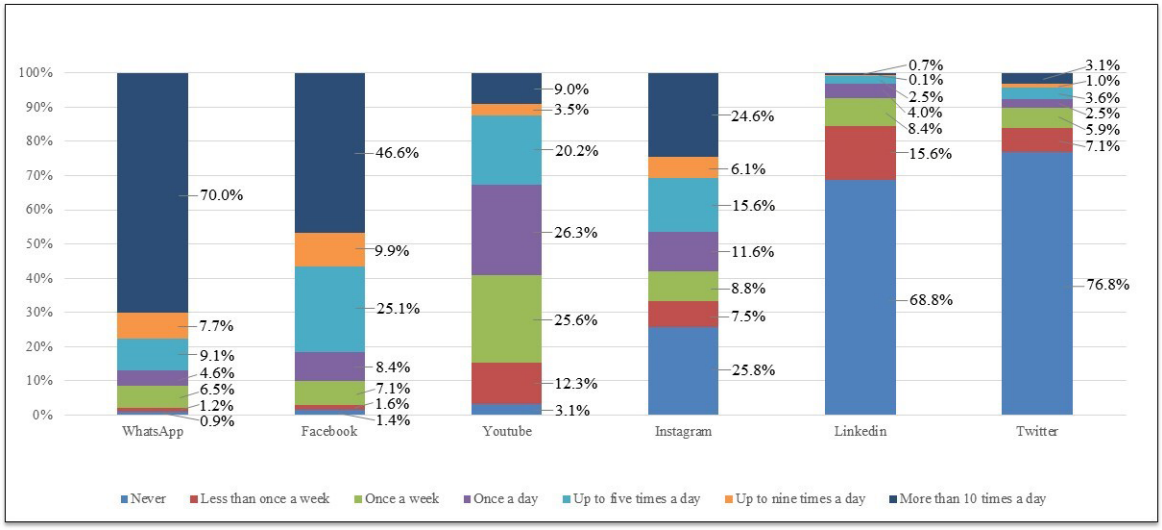

Figure 2. Use of social networks.
Source: Authors (2017).

We emphasize that the tests of Bartlett's sphericity, KMO, Cronbach's alpha, CR, CV, DV, Pearson's correlation and EFA statistically validate scales and constructs, which allows considering the consistent model for the application of SEM analysis, and the hypothesis testing to evaluate the relationships of the Initial Integrated Model (Fig. 1).

The results of the hypothesis testing (H1 and H2) (Table 4) of the Initial Integrated Model, were significant (p<0.001). Those where relationships were measured using the values of the Standardized Estimate (SE) and Unstandardized Estimate (UE), which shows the positive influence of the constructs SEN–>EA (H1) and SSR–>SRA (H2). In the Initial Integrated Model, causal relationships prove that SEN and SSR are antecedents of social and environmental awareness and behavior. The SEN construct positively influences EA in a moderate intensity (SE=0.393) and SSR positively influences SRA with a high intensity (SE=0.523). These research findings are important for civil and governmental entities to use social media channels more in order to influence individuals, to an active social and environmental attitude in face of the scarcity of resources and the development of society.

In this research, we used the absolute measures of fit (Table 5), in order to identify the degree to which the measurement model predicts the covariance matrix, using the AMOS software, in which we noticed that indexes CFI, NFI, GFI and AGFI, in the Initial Integrated Model, resulted in values lower than the recommended of 0.9 (Kline, 2005; Hair Jr. et al., 2010), as well as the RMSEA having a value above the recommended (< or =0.08). From these results, we sought to improve

Table 3
Convergent validity and discriminant validity – Initial integrated model.

Constructs	SEN	SSR	EA	SRA
Social/Environmental Networks (SEN)	0.843[a]			
Social Networks/Social Responsibility (SSR)	0.604[b]	0.676[a]		
Environmental Awareness (EA)	0.393[b]	0.474[b]	0.458[a]	
Social Responsibility Awareness (SRA)	0.538[b]	0.523[b]	0.548[b]	0.507[a]

[a] Average Variance Extracted (AVE) – Convergent Validity (CV).
[b] Construct Correlation – Discriminant Validity (DV).
Source: Research Data (2017).

Table 4
Hypothesis testing (Covariance and Correlation) – Initial and final integrated model.

Hypothesis				Initial Model		Final Model	
				SE*	UE*	SE*	UE*
H1	Social/Environmental Networks (SEN)	→	Environmental Awareness (EA)	0.393	0.253	0.411	0.256
H2	Social Networking/ Social Responsibility (SSR)	→	Social Responsibility Awareness (SRA)	0.523	0.443	0.551	0.476
	Social/Environmental Networks (SEN)	↔	Social Networks/ Social Responsibility (RSS)			0.639[a]	0.798[a]

* Standardized Estimate (SE) and Unstandardized Estimate (UE) level of significance p<0.001.
[a] Correlation between constructs.
Source: Research Data (2017).

the measurement model, considering the correlations between the constructs (SEN<–>SSR) and based on Pearson's correlation we included the correlations between the observable variables in the model (SEN1<–>SEN4; SEN1<–>SEN6; SEN3<–>SEN6; SEN4<–>SEN5; SEN4<–>SEN6; SEN5<–>SEN6). These correlations formed the Final Integrated Model (Fig. 3), which resulted in significant improvements in the indexes of fit of the model (CFI; NFI; GFI; AGFI; RMSEA), with these being closer to the recommended one. We highlight that there was a significant improvement in the comparative indexes (RMR; ECVI) between the Initial and the Final models, assessing the improvement of the final Integrated Model.

We note that the direct relationship between SSR–>SRA is greater than that of SEN->EA; therefore, people are more sensitive to social issues, which is evidenced by the means of responses in SEN=2.9 and SSR=3.3. People's sensitivity to social issues and the correlation between the search for social and environmental information can be an important way of increasing environmental awareness, by working on these themes in an integrated way.

To evaluate the moderating effect of generations (Baby Boomers, X and Y) on the relationships between the constructs, which compose hypotheses H3a and H3b, we initially performed the ANOVA test to compare the means of the responses between the constructs, which identified statistically significant differences ($p<0.001$), corroborating the possibility of the moderation effect. The hypothesis testing (Covariance and Correlation), by means of the multi-group analysis, which evaluate the differences between the relationships, considering the moderation effect, are expressed in Table 6.

The results show that there are differences between SE values among the generations, as well as a statistically significant difference between the Chi-square, which supports H3a and H3b hypotheses. We emphasize that the relationship SEN–>EA Baby Boomers and Generation Y seek more information on environmental issues and consequently this has more influence on the

Table 5
Goodness of fit indexes.

Integrated Model	X^2	DF	X^2/DF	CFI	NFI	GFI	AGFI	RMSEA	RMR	ECVI
Initial	4977.393	205	24.1	0.861	0.856	0.863	0.832	0.093	0.378	1.884
Final	3761.538	201	18.7	0.896	0.891	0.884	0.854	0.081	0.172	1.438

Level of significance $p<0.001$.
Source: Research Data (2017).

Table 6
Hypothesis testing of the moderating effect – Generations (Baby Boomers, X and Y).

Hypotheses				Baby Boomers	Generation X	Generation Y	Chi-square difference (X^2)
				SE	**SE**	**SE**	**p**
H3a	SEN	→	EA	0.441	0.410	0.390	***
H3b	SSR	→	SRA	0.561	0.439	0.545	***

*** Level of significance $p<0.001$.
Source: Research Data (2017).

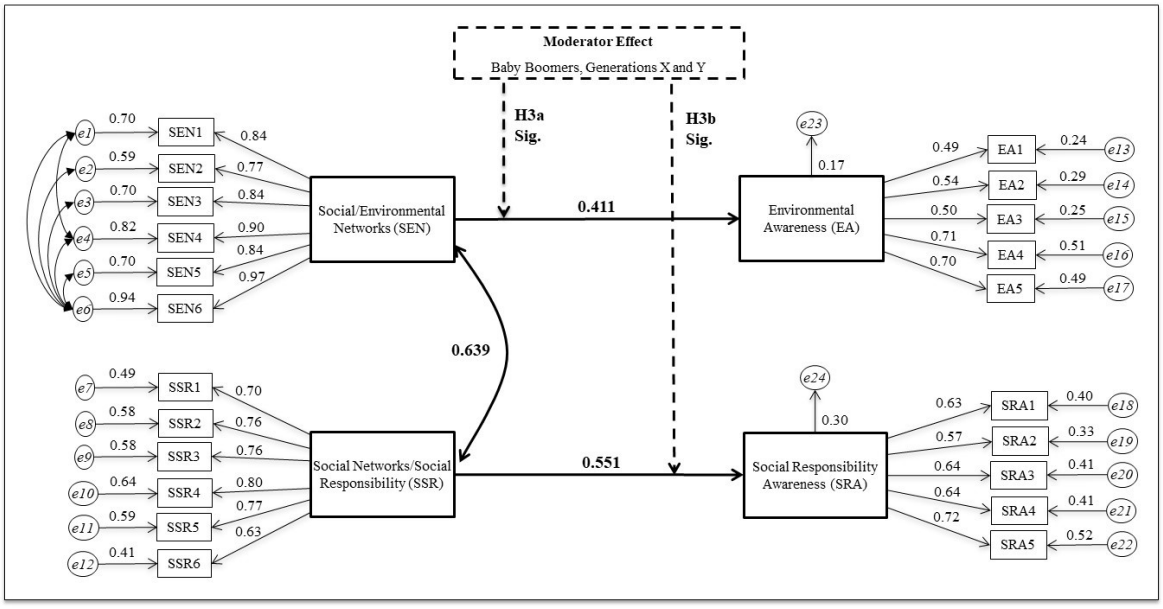

Figure 3. Final integrated model.
Source: Research Data (2017).

formation of environmental awareness, whereas for social issues Baby Boomers and Generation X are more sensitive to these situations, directly influencing the awareness of social responsibility.

5. DISCUSSION

The descriptive statistics data analysis and the EFA, with the Varimax rotation, present results to support the hypotheses of the research and indicate findings that contribute to academic studies. Among the results, we initially observed that the lowest mean response is in the RSA construct (2.9), suggesting that the people surveyed still do not actively seek information on sustainability. These findings do not meet the assumptions by Altin et al. (2014) and Mei et al. (2016), which emphasize that environmental awareness is aligned with actions and attitudes, highlighting that the active participation in environmental issues (Vergragt et al., 2016). However, Chugh et al. (2016) show concern due to the lack of environmental awareness, because it is necessary to avoid the degradation of natural resources, for the sustainability of future generations.

The analysis of DV (Table 3) measuring the correlation between constructs, presented DV values higher than CV in the correlation EA<–>SRA (CV=0.548), suggesting that EA is broadly correlated with SRA practices, evidencing that individuals with environmental awareness are also socially responsible, corroborating with research of Schroeder and Anantharaman (2017), because the more knowledge on environmental issues, the greater the sustainable attitude. Garay and Fonte (2012) and Boulouta and Pitelis (2014) emphasize that social responsibility is not necessarily only for altruism, but rather a combination of innumerable reasons, with the emergence of environmental premises (Schroeder & Anantharaman, 2017).

Hypothesis testing confirms that individuals who are exposed to information (videos, photos, texts) related to social responsibility and environmental sustainability are positively influenced in the formation of social awareness and respectively of the environmental awareness, which confirms H1 and H2 hypotheses.

We emphasize that the hypothesis testing of the Final Integrated Model (Table 4) support the H1 and H2 research hypothesis, adding the research finding that there is a high correlation between SEN<–>SSR (SE=0.639; UE=0.798). The intense correlation between SEN and SSR indicates the existence of a strong trend of individuals who seek information on Social Responsibility also seek information on Environmental Sustainability. These findings show that social networks allow interaction between their members, the exchange of information, as well as the union of ideas around shared values and interests (Nohria & Eccles, 1992; Evans, 2009; Rauniar, Rawski, Yang, & Johnson, 2014). This research finding corroborates the premises by Kamaruddin et al. (2016) and Ghali et al. (2016), because social networks can promote information for the awareness of various environmental problems, as well as for social issues (Wasserman & Faust, 2007).

The results of the H3a and H3b hypothesis testing show a statistical difference between the generations, in relation to the exposure of environmental and social information in the relationship of influence on environmental and social awareness. We emphasize that we did not identify a predominance; however, it is worrisome that generation Y presented the lowest means in responses (SEN=2.85; SSR=3.26), related to the search for information on environmental (SEN) and social issues (SSR), which is relevant for society, since according to Maniero and Sulivan (2006), and Zopiaris, Krambia-Kapardis & Varnavas (2012), this generation seeks challenges and risks; along with being highly creative and innovative.

In this context, the research findings are not intentional in regards to generation Y, since this generation is highly connected with social networks; however, it presents different behavior of other generations (Akhras, 2015; Chakraborty & Balakrishnan, 2017). In this scenario, there are many implications associated with generation Y, as it is the 'Digital Native' that grew up in the electronic age, online environment with maximum sophistication in social networks (Lissitsa & Kol, 2016; Radzi et al., 2018). This group of individuals typically adapts to change easily, learning new operating systems and performing computer-based jobs with more competence and speed than Generations X and Baby Boomers (Kosterlitz & Lewis, 2017).

Being comfortable with social media means that generation Y is experienced in self-promotion allowing better and feeds connections through online media. However, the research findings emphasize that this generation has less motivation to improve the environment and society. The research findings are in line with the study by Severo et al. (2018), which proves that Generation Y has a lower environmental and social awareness. Also, the study conducted by Zahari and Esa (2016), points out that the consumers of Generation Y do not show great importance with the adoption of environmental practices, such as the use of renewable energies.

Among the limitations of this study, we can highlight that the scale is composed of a self-response questionnaire to collect data of variables simultaneously which allows the possibility of the Common Method Variance (CMV) occurring (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003; Chang, Van Witteloostuijn, & Eden, 2010). Moreover, the risk of response bias formation, due to the faulty generalization effect (halo), which is issued from a single person, and may have the influence of social desire, which can increase or reduce the relationships between the constructs (Bagozzi & Yi, 1991; Podsakoff et al., 2003). Another limitation of the research is regarding the Snowball and non-probabilistic methods we used to collect data, which contributed to restrict the amplitude and proportional distribution of the sample.

6. CONCLUSION

This research contributes to the discussion on the formation of social and environmental awareness, and when proposing a Framework (Fig. 1) for the analysis of the relationships between

the constructs, and to the statistical validation of the scale of Social/Environmental Networks (SEN), Social Networks/Social Responsibility (SSR), Environmental Awareness (EA) and Social Responsibility Awareness (SRA).

An important finding of the research refers to the result that Generation Y seeks less information about environmental and social actions, which is evidenced by the lower means in the SEN and SSR constructs. Therefore, these results show the need for government agents and educational institutions; to stimulate Generation Y to increase interest in socio-environmental issues.

The main contribution of the research emerges with the identification of a strong correlation between SEN and SSR constructs. This correlation indicates that individuals exposed to environmental information are related to people who also access information on social issues. The finding of the research suggests that there is a greater possibility of success in the formation of awareness, both social and environmental, if people have integrated information on these issues. With these results, we can affirm that social and environmental responsibility, in an inseparable way, have a greater influence on the formation of awareness, which is expected to result in environmentally and socially responsible behavior.

This alert can be considered as a stimulus to Teaching Institutions, Civil and Governmental Agencies, as well as companies, where young people transit and work, to carry out actions to promote information on social and environmental responsibility, in order to engage generation Y for sustainable development.

Based on the results of this study, we suggest new research questions for future scientific investigations: How can regional factors interfere in the relationships between constructs? What are the main actions that Civil and Governmental Organizations use to disseminate information on social and environmental responsibility? In what way do the intensity of social and environmental awareness convert into effective behaviors? The propositions of these research questions can contribute to the dynamic understanding between the researched constructs and the sustainable development of society, considering the influence of the different agents on the biopsychosocial being.

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