CORPORATE SOCIAL IRRESPONSIBILITY: AN ANALYSIS OF THE DISASTER IN MARIANA-BRAZIL

ABSTRACT

The issue of Corporate Social Irresponsibility (CSIR) has gained prominence in world literature. This study analyzes the 2015 environmental disaster caused by Samarco Mineração S.A. in Mariana (MG), Brazil, as an example of CSIR. The objective was to understand whether the population's social identification with the company, which is translated into the economic benefits, reduced punitive intention and blame attribution. The research instrument uses scales with psychometric indicators applied to 1,616 individuals. It was verified that the benefits to the local economy reduced the punitive intention in the municipalities of Anchieta and Guarapari (ES), and Mariana (MG). Also, it was observed that the disaster's severity increased blame attribution, and the punitive intention encouraged to the behavior of making negative comments toward the company. As the main conclusion, people were less likely to punish the company in the municipalities where it generated economic benefits.

KEYWORDS: Corporate social irresponsibility, economic benefits, environmental disaster.

INTRODUCTION

Corporate Social Irresponsibility (CSIR) is an emergent concept connected to the theme of Corporate Social Responsibility (CSR) (Alexander, 2015; Kotchen & Moon, 2012; Popa & Salanță, 2014). CSIR, however, is rarely explicitly discussed in the literature on CSR (Lange & Washburn, 2012), suggesting the need for more and in-depth research.

Armstrong (1977, p.185) states that "a socially irresponsible act […] involves a gain by one party at the expense of the total system," a statement that authors such as Murphy and Schlegelmilch (2013), and Olofsson and Söderholm (2014) consider was the first definition on the issue of CSIR. Lin-Hi and Müller (2013) point out some of these irresponsible acts, such as fixing prices, violating human rights, damaging the environment, providing inaccurate information about products, and misleading customers.

Lange and Washburn (2012) argue, however, that classifying an act of a company as socially responsible or irresponsible, is a judgment that needs to consider a set of cultural dimensions permeating society. Developing countries often find it difficult to address the issue

of social responsibility because people's more basic needs (livelihood and family welfare, for instance) are at the center of the immediate attention (Martínez-Alier, 1995). In countries of greater social and economic vulnerabilities, it is not rare to see cases where society is discouraged from punishing CSIR (Bazerman & Tenbrunsel, 2011) due to the economic benefits the corporation brings to the community (Velasquez, 2012).

The dynamic above can be observed in Brazil. This study analyzes how local citizens perceive an act of CSIR, based on the event of the rupture of the *Fundão* dam, in the district of Bento Rodrigues, municipality of Mariana, State of Minas Gerais. The event occurred in November 2015, and 40 municipalities in the states of Minas Gerais (MG) and Espírito Santo (ES) were affected by the disaster. The focus of the research was limited to five municipalities affected in different ways: Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES and Mariana-MG.

The research emphasizes the citizens' feelings and judgments regarding the act of CSIR. In addition, Samarco Mineração S.A., the company responsible for the event, is controlled by the Brazilian company Vale S.A. and the Anglo-Australian BHP Billiton (Samarco Mineração S.A., 2016). The question guiding the research is: Does the existence of the citizen's social identification with the company, based on the economic benefits it offers to some municipalities, reduce the punitive intention against a CSIR event and blame attribution against the company? This question led to the objective of investigating whether the social identification with the company, based on economic benefits it brings to municipalities, reduces the punitive intention and blame attribution, by using the case of Samarco Mineração S.A. in the context of the rupture of the *Fundão* dam.

The contributions of this research to the national and international literature are, first, in the fact that it brings up the concept of CSIR to the Brazilian context. The concept entails the relevance of assessing the behavior of Brazilian citizens when facing an act of CSIR, considering that this theme has not yet been nationally explored. The relevance of the study is even greater in localities where the population is socially identified with the company in the genesis of a disaster, because of the economic benefits the company offers. Second, this research offers an opportunity to reflect on the role of such economic benefits in the context of the company's social identification and the influence on the economic element in the citizen's attitude. Third, the study discusses how individuals, affected in different ways by acts of CSIR, perceive and evaluate them, which is a crucial contribution since there are only a few empirical studies in the area. Fourth, the findings show that given the economic benefit of the company,

individuals are less likely to punish it, a situation that may have discouraged the parent company Vale S.A. from taking appropriate measures to avoid other disasters, such as occurred in January 2019 in the municipality of Brumadinho-MG, resulting in massive environmental and material damages, and the deaths of hundreds of people (G1 Minas, 2019). Fifth, regarding the international scenario, observing that the study refers to a developing country, the research provides subsidies to carry out future comparison studies with countries presenting different socioeconomic and cultural conditions. Overall, the study reflects on how the social identification based on economic benefits can attenuate certain feelings and intentions toward a company involved in CSIR acts, so as not to hold it accountable and not intend to punish it for damages caused.

THEORETICAL FRAMEWORK AND HYPOTHESES

The theme of CSIR has inspired the development of several studies throughout history, such as the works addressing consumers' willingness to punish companies involved in CSIR acts (Sweetin, Knowles, Summey, & McQueen, 2013), exploring the relationship between CSIR and firm's performance (Kang, Germann, & Grewal, 2016; Walker, Zhang, & Ni, 2019), the inclination of consumers to engage in boycotts, protests, and negative comments against irresponsible companies (Trautwein and Lindenmeier, 2019), the permanence and succession of executives (Chiu & Sharfman, 2018; Oh, Chang, & Jung, 2018), and works on assets pricing (Lee, Lu, & Wang, 2018).

Nevertheless, there have always been cases of companies that have been or are still "environmentally damaging," which have sold products that are harmful to health, exploited employees or have contributed to global warming. These events occur mostly in developing countries. However, their population and governments rarely punish such companies in order to avoid future damage. The main reason is probably associated with the economic benefits of these companies, such as the increase of jobs, the stimulus to the economy, besides the contribution to the Gross Domestic Product (GDP) (Bazerman & Tenbrunsel, 2011; George, Kuye, & Onokala, 2012; Hilson, 2012).

Such situations also occur in developed countries, such as the United States. Some examples are the workers' exposure to asbestos and the sale of cars with manufacturing problems (Schwartz & Carroll, 2003; Schwarze, 2003). These events imply moral conflicts, since the population is not willing to end the socially irresponsible company's activities,

because they drive the economy. The rationale is that a social demand justified in the eyes of an interest group may be understood differently when observed through the moral lenses of managers, suppliers, customers, or other groups (Scherer & Palazzo, 2007). This scenario of different social groups expressing themselves about an event is related to the theory of social identification, which seeks to write, prescribe, and evaluate events, generating a consensus and shared opinion by the group, forming an internal preference (Hogg, Terry, & White, 1995).

Another theory contributing to analyze these social dynamics is the attribution theory, which aims to explain the act of blaming the responsible party for causing a harmful event. For Hamilton (1980), an event's observer may be compared both as an intuitive psychologist, who makes a judgment about the causality, and as an intuitive advocate, judging the moral responsibility. However, there are biases in judging blame attribution. Thus, many disasters that were caused by companies and brought negative consequences were perceived differently by their observers due to moral, ethical, and cultural backgrounds (Lange & Washburn, 2012).

In the case of Samarco Mineração SA, for example, the Municipality of Anchieta defended the continuity of the company's operation, informing the direct and indirect negative effects of paralyzing the mining activities under the company's responsibility, particularly regarding the tax collection (Prefeitura Municipal de Anchieta, 2017). The municipalities of Guarapari and Mariana also highlighted the economic importance of the mining company (Augusto, 2016; Avila, 2015). All these reports contributed to increasing the population's social identification with the firm and affected the way individuals analyze reality, as predicted in the theoretical perspective of the sociology of knowledge (Berger & Luckmann, 1985). In view of the above, it is possible to formulate the following hypothesis:

Hypothesis 1: The perception of the residents of Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES, and Mariana-MG about the benefits provided by Samarco Mineração SA for the local economy negatively affects blame attribution against the company because of the disaster in 2015.

The next hypothesis proposes to test the theoretical relationship between blame attribution and the punitive intention regarding the disaster in Brazil. One of the highlights of this discussion is the fact that when the observer believes that the company has a low moral responsibility, the blame attribution is also low, even if there is a high perception that the company is related to the event's causality (Lange & Washburn, 2012). Thus, different elements can influence the observers, which helps explain different assessments.

But these differences of individual perceptions do not alter the fact that punitive intention is related to blame attribution for an event (Söderholm & Olofsson, 2014), since there is a relationship between the equity and attribution theories. The hypothesis based on these aspects is, therefore:

Hypothesis 2: Blame attribution by the residents of Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES, and Mariana-MG towards Samarco Mineração SA because of the disaster in 2015 positively affects the intention to punish the company.

The blame attribution would also have another impact factor, the severity perceived (Kelley & Michela, 1980), which reinforces the idea of individual differences in the perception of corporate damage since the emotions around events are not always the same. Therefore, how rigid the blame attribution is, depends on the perception of severity (Antonetti & Maklan, 2014; Kelley & Michela, 1980).

Lange and Washburn (2012) emphasize two characteristics that will draw attention to the damage: unexpectedness and concentration in time and space. Thus, unexpected events and/or highly concentrated in time and space, are usually classified as severe. Such an understanding takes into account that salient factors influence causal attribution (McArthur & Ginsberg, 1981), which makes it possible to develop the next hypothesis:

Hypothesis 3: The evaluation of severity of the 2015 disaster by residents of Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES, and Mariana-MG positively affects blame attribution from the public toward the company that caused the event, Samarco Mineração SA.

Another point to be discussed is that social identification influences perceptions of injustice. This understanding is supported by the work by Campbell (1995), which showed the existence of several research threads linked to the equity theory, dealing with perceptions of equity, distributive justice, and fair prices. According to the author, perceptions of injustice are based on the comparison between groups, therefore, the perception of injustice varies among people. In addition, the environmental disaster caused by the mining company resulted in the suspension of its activities, generating unemployment and reduction of the financial movement, which can affect the punitive intention. Such observations lead to the following hypothesis:

Hypothesis 4: The perception of the residents of Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES, and Mariana-MG about the benefits of Samarco Mineração SA to the local economy, negatively affects the citizens' punitive intention for the 2015 disaster caused by the company.

The relationship between severity and punitive intention is another discussion present in CSIR. Dunford and Ridley (1996) have shown that the greater the damage, the greater the intensity of punishment. Nordgren and McDonnell (2010) also demonstrated the theoretical relationship between an event's severity and the punishment applied. Carlsmith, Darley, and Robinson (2002) discuss the existence of an expectation that the offender will be punished to the same proportion as the severity of the damage. It is important to mention that severity and blame attribution are linked to the attribution theory and that punitive intention is related to the equity theory. The relationships among these elements lead to the following hypothesis:

Hypothesis 5: The evaluation of severity of the disaster by residents of Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES, and Mariana-MG positively affects the punitive intention toward the company.

Based on the work by Ping, Ishaq, and Li (2015), who analyzed the process of blame attribution and showed that it influences negative reactions from consumers, it is evident that blame attribution is among the elements preceding the intention to make negative comments. The studies by Richins (1983; 1987) demonstrate that blame attribution positively affects the expression of negative comments, and this evidence supports the hypothesis below:

Hypothesis 6: The evaluation of blame attribution against the company by the residents of Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES, and Mariana-MG because of the disaster caused by Samarco Mineração SA in 2015 positively affects the intention to make negative comments about the company.

The perception of the event's severity is a primary and needed element when it comes to the intention to make negative comments. The necessity of the severity perception has been portrayed in the literature, pointing out that the greater the severity attributed to an event, the greater society's intention to make negative comments will be (Antonetti & Maklan, 2014). This view was also advocated by Chang, Tsai, Wong, Wang, and Cho (2015), who argued that the severity of the damage causes negative comments as a reaction. These arguments find support in the attribution theory since the attribution of severity affects the intention to make negative comments. The next hypothesis was built based on this dynamic:

Hypothesis 7: The evaluation of the disaster's severity by residents of Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES, and Mariana-MG positively affects the intention to make negative comments on the company.

Finally, one of the variables that precedes negative comments is the punitive intent,

since the comments are a response from society as a form of punishment. In addition, Buttle (1998) mentions three punitive actions taken by society against a company: ending the relationship, demonstrating dissatisfaction, and making negative comments. The theory behind this relationship is the equity theory, because intention to make negative comments would be a response to an iniquity practiced. It is also emphasized that in situations of anger, people are more likely to punish (and make negative comments about something to others is a form of punishment). Thus, this study's last hypothesis expresses this relationship:

Hypothesis 8: The punitive intention on the part of residents of Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES, and Mariana-MG, related to the disaster caused by Samarco Mineração SA in 2015 positively affects the intention to make negative comments about the company.

Taken together, these hypotheses resulted in the model introduced in this study, which relates economic benefits and CSIR (Figure 1). This model is supported by the theories presented and the empirical findings cited in this literature review.

Figure 1. **Hypotheses of the model relating economic benefits with IrSE.**
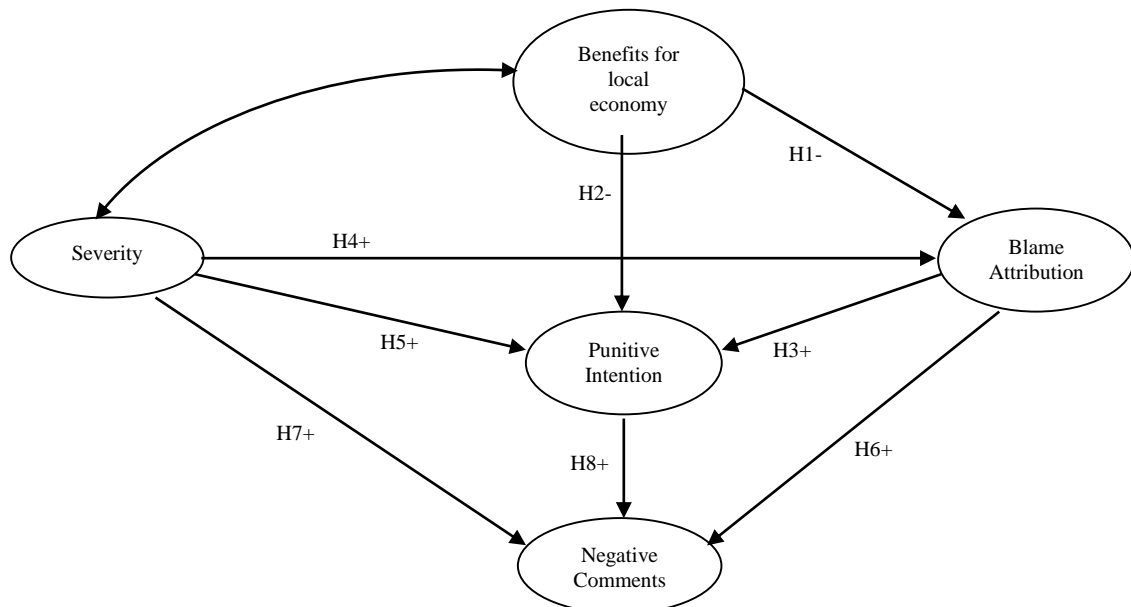
METHOD

The five municipalities included in the research were Anchieta-ES, Colatina-ES, Guarapari-ES, Linhares-ES, and Mariana-MG, chosen based on the way the 2015 disaster affected each one of them. The municipalities of Anchieta-ES and Guarapari-ES were not directly impacted by

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the disaster (they are located in the southern part of the State of Espírito Santo). They were affected economically because of the suspension of the activities of Samarco Mineração S.A. As for Colatina-ES and Linhares-ES, located in the north of the state and crossed by the river *Rio Doce* (river), they have suffered the environmental impact of the disaster, but were not benefited economically by the mining company. Mariana-MG was the municipality where the disaster occurred, and it suffered both environmentally and economically as a result of the suspension of the company's activities (Augusto, 2016; Avila, 2015; Folha de S. Paulo, 2015; Gonçalves, Fusco, & Vespa, 2016; TV Gazeta ES, 2016). Table 1 shows details of the type of benefit and the environmental effect in each municipality.

Table 1. **Information of the municipalities regarding the environmental disaster and the company *Samarco Mineração* S.A.**

Municipalities	Type of economic benefits generated by Samarco	Environmental disaster – Type of effect	Population[a]	GDP[b] (R$ Thousands)	GDP *per capita*[b] (R$)	Primary economic activities
Anchieta-ES	High	Indirect effect	28,546	2,758,914	99,873.80	Industry (Mining), family farming, livestock, and fishing
Colatina-ES	None	Direct effect	124,525	3,194,789	26,048.87	Clothing, agriculture, and granite
Guarapari-ES	Medium	Indirect effect	123,166	2,041,157	17,037.76	Commerce, Services, and tourism
Linhares-ES	None	Direct effect	169,048	5,239,007	32,011.14	Industry (furniture), Oil and gas, Agriculture, and livestock
Mariana-MG	High	Direct effect	59,857	3,099,191	52,705.53	Mining, cultural tourism, and commerce

Source: Research data (2017), IBGE (2018a, 2018b, 2018c, 2018d, 2018e), IDEIES (2016), Prefeitura Municipal de Anchieta (2018), Prefeitura Municipal de Colatina (2018), Prefeitura Municipal de Guarapari (2018), Prefeitura Municipal de Linhares (2018), and Prefeitura Municipal de Mariana (2018).
Note: (a) Estimated for 2017; (b) 2015.

These municipalities were not the only ones affected. The disaster caused damages to all the cities of Minas Gerais (MG) and Espírito Santo (ES), located on the banks of the rivers Gualaxo do Norte, Carmo, and Doce. It is estimated that 40 municipalities were affected (IBAMA, 2015). Figure 2 demonstrates the extent of the event.

Figure 2. **Map with the location of the municipalities impacted in the disaster**.
Source: Fiocruz (2016).

For the application of the research, the study adopted an instrument with psychometric scales that made it possible to measure the judgment and feeling certain individuals presented when confronted with a CSIR act. These scales were previously adopted by Antonetti and Maklan (2014, 2016) and Grégoire et al. (2010). As they were originally developed in English, they underwent a transcultural translation and adaptation process to follow national (Giusti & Befi-Lopes, 2008) and international standards (Sperber, 2004). The instrument was formed with 15 items in the question format, distributed in four scales: "blame attribution," "severity," "punitive intention," and "negative comments."

A sample of 249 university students from a college in Guarapari-ES carried out the instruments' psychometric validation. The sample was assembled based on convenience, by the criterion of ease of access. The data factorability was tested by the indicator Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO = 0.91) and by Bartlett's Sphericity Test (Chi-square = 3,979.14; $p < 0.001$) (Hair, Black, Babin, Anderson, & Tatham, 2009). Cronbach's alpha (α) was above 0.7 at all scales and factorial loads met the generally accepted minimum of 0.32 (Tabachnick & Fidell, 2012).

The research used another scale to measure the company's "benefits to the local economy," which was found in the work by Lima (2012) and formed by 7 items. Since the scale was developed in Portuguese, translation and adaptation was not necessary in this case.

The statistical technique used to test the model was the structural equation modeling (SEM), which "can examine a series of dependence relationships simultaneously. It is particularly useful in testing theories that contain multiple equations involving dependence relationships. […] Thus, a hypothesized dependent variable becomes an independent variable in a subsequent dependence relationship." The test of the hypotheses was conducted by applying the model in each of the five municipalities, collecting a total of 1,616 questionnaires. Data collection focused on city halls, colleges, technical colleges, and schools, as well as through e-mail, sending the forms to addresses given by other respondents and searched for on social media.

In the SEM, the Weighted Least Squares Robust (WLSMV) method was used, based on the ordinal nature of the items. After specification and estimation of the model, its adjustment was evaluated adopting the following indicators: chi-square, Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA). The Chi-square (χ^2), as a criterion, should not be significant and if it were, we adopted the chi-square ratio parameter by degrees of freedom less than 5.0. The TLI and CFI should have values ideally higher than 0.95 and values above 0.90 are acceptable to indicate the suitability of the model to the data. Finally, we considered the cut-off point lower than 0.06 of the parsimony index of the model – RMSEA (Hu & Bentler, 1999).

RESULTS

The exploratory analysis identified a few missing random values that were replaced by the average and in some cases rounded to the categories immediately following or previous, thus avoiding the creation of new categories. The descriptive analysis indicated scores close to a normal distribution.

After the exploratory analyzes, the latent structure models were tested for each of the municipalities. The initial analysis of the SEM showed that the model did not have a good fit in any of the cities. We then verified the changes suggested by the Modification Indices (MI) and obtained eight correlations among errors of items from the same scales. When performing the analysis of each of the suggested modifications, we observed that the correlation of the errors was linked to the similarity in the content of some items. Thus, after the adjustments suggested by the MI, the model presented acceptable adjustment indexes (Table 2). The adjusted model led to the SEM results presented in Table 3.

Table 2. **Indexes of errors correlation adjusted model**

Municipa-lities	Observa-tions (N)	χ^2 (172)	χ^2/ df	RMSEA	90% CI, Lower limit	Upper limit	CFI	TLI
Anchieta-ES	292	362.779*	2.109	0.062	0.053	0.070	0.950	0.938
Guarapari-ES	281	340.952*	1.982	0.059	0.050	0.068	0.950	0.939
Mariana-MG	330	325.015*	1.890	0.052	0.043	0.061	0.969	0.963
Colatina-ES	337	349.371*	2.031	0.055	0.047	0.064	0.951	0.940
Linhares-ES	376	415.371*	2.415	0.061	0.054	0.069	0.937	0.923

Source: Research data (2017).

Note: * p < 0.001, Chi-square (χ^2), Degree of freedom (df), *Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI).*

Table 3. **Result of the structural equation modeling for the adjusted model**

Constructs (Standard coefficients)	Anchieta	Guarapari	Mariana	Colatina	Linhares
Structural model					
Blame attribution –> Punitive intention (H2+)	-0.352	-0.236	0.245	0.247	0.228
Benefits local economy –> Punitive intention (H4-)	-0.424*	-0.252*	-0.294*	-0.048	-0.025
Severity –> Punitive intention (H5+)	0.691	0.633	0.252	0.242	0.3127
Benefits local economy –> Blame attribution (H1-)	-0.037	0.030	-0.034	-0.032	-0.062
Severity –> Blame attribution (H3+)	0.951*	0.949*	0.945*	0.910*	0.902*
Punitive intention –> Negative comments (H8+)	0.786*	0.923*	0.972*	0.819*	0.829*
Blame attribution –> Negative comments (H6+)	-0.028	-0.045	-0.249	-0.357	-0.300
Severity –> Negative comments (H7+)	0.046	0.075	0.246	0.378	0.347
Number of observations	292	281	330	337	376

Source: Research data (2017).

Note: Significance: * p<0.001

As for hypotheses confirmation, the analysis shows that two hypotheses (H3 and H8) were supported in the five municipalities, while hypothesis 4 was supported only in Anchieta-ES, Guarapari-ES, and Mariana-MG. The other research hypotheses were not supported. These results will be discussed in the next section, in light of the literature.

DISCUSSION

The study explored the notion of CSIR, using a background of the environmental disaster caused by Samarco Mineração S.A. in the municipality of Mariana-MG. The objective was to understand whether the social identification with the company – related to economic benefits – reduces punitive intention and blame attribution. It is possible to say that, for the municipalities researched, the perception of the event's severity increased the blame attribution, and the punitive intention increased the intention to make negative comments. In addition, the benefits the company generated to the local economy reduced the punitive intention of the residents of Anchieta-ES, Guarapari-ES, and Mariana-MG. So, in the cities where the company generated benefits, people were less prone to punish it. This reality is intriguing, as it does not encourage

the company that caused damage (and its parent companies), to take measures that may prevent future disasters, such as another event that occurred a few years later, on January 25, 2019 in the municipality Brumadinho-MG, caused by Vale S.A. (Jornal Nacional, 2019; Schreiber, 2019).

Among the results, it is important to emphasize the confirmation of hypothesis 3, showing that the event's severity increased blame attribution. The evidence found that this positive relation persists even in municipalities where the company generated economic benefits.

In addition, blame attribution is related to the perception of a particular event's severity (Kelley & Michela, 1980), i.e., the damages caused by socially irresponsible companies produce negative emotions that are influenced by the severity attributed to the event (Antonetti & Maklan, 2014; Kelley & Michela, 1980).

Another hypothesis supported was H4, in Anchieta-ES, Guarapari-ES, and Mariana-MG, pointing out that when the company generates economic benefits individuals tend to have less punitive intention. In fact, this relationship proved to be stronger in Anchieta-ES, a municipality that has its largest tax revenue source in the mining company (Prefeitura de Anchieta, 2017).

Guarapari-ES, was the municipality that presented the lowest coefficient for these variables, i.e., a smaller negative relation between benefits to the local economy and the punitive intention. On the other hand, the result for this hypothesis in Mariana-MG deserves attention, considering the dimension of the environmental disaster that directly affected the region, causing destruction and death. In Mariana-MG, therefore, the economic benefits generated by Samarco Mineração S.A. reduced the punitive intention against the company among the population.

These results are in line with the findings by Lange and Washburn (2012) when arguing that individuals' social identification with a firm, may influence by minimizing reactions contrary to CSIR. Therefore, as previously expected, the residents of Anchieta-ES, Guarapari-ES, and Mariana-MG tended to have less punitive intention because of their social identification with the mining company, based on the economic benefits. As for Colatina-ES and Linhares-ES, the results were also congruent with expectations, considering that there was no social identification, based on direct economic benefit, with the mining company. In these municipalities, what prevailed among the population was the perception of the disaster's

impact.

The third hypothesis supported was H8. The positive relation was evidenced in the five localities, confirming that the punitive intention increased the intention to make negative comments. Hypotheses H1, H2, H5, H6, and H7, were not supported. This finding demonstrates that the literature predicting the relationship between the variables did not find statistical support in the case studied. The statistical evidence shows that although the benefits to the local economy negatively influence the punitive intention in Anchieta-ES, Guarapari-ES, and Mariana-MG, no evidence was found that these benefits negatively influenced blame attribution (H1). This result pointed out that even in municipalities benefited by the company, individuals did not reduce blame attribution. Also, the company did not exempt itself from the responsibility of the event.

Returning to the literature on the process of blame attribution, it is important to remember that this is a process of a social group (Lange & Washburn, 2012). Therefore, blame attribution becomes negatively less when the observer has social identification with the company causing the damage. But this did not occur in the case of Samarco Mineração S.A., because the residents clearly blamed the company.

However, it is significant that in none of the municipalities blame attribution positively affected punitive intention (H2). Although the theoretical framework pointed out this relationship, the hypothesis was not supported. However, there are authors suggesting that in several developing countries people were less likely to punish companies due to the economic benefits the business brought to the community (Bazerman & Tenbrunsel, 2011; Hilson, 2012). In addition, the study found that the disaster's severity did not positively influence punitive intention (H5). This finding is associated with the social and economic condition of Brazil since developing countries are considered less likely to punish a company.

The findings suggest that different social groups may perceive CSIR in different ways. When considering the population of these municipalities as social groups, it is possible to observe that they perceived the disaster differently. The difference in perception is also related to the different benefits the company generates to each municipality. Thus, the views of social groups vis-a-vis a corporation may be misaligned, especially when the company brings certain benefits for the community (Hogg et al., 1995; Scherer & Palazzo, 2007).

Thus, considering that the perceptions of injustice or inequity are affected by the social identity, which is connected to the benefits generated, the punitive intention may be affected

considering that punishment occurs if the society perceives that the company has committed some injustice. It should be noted that the variable blame attribution does not positively influence the variable negative comments (H6). This characteristic is not in line with the findings in the literature and suggests a passive behavior of the Brazilian society when it comes to the company's economic influence. Therefore, the severity variable (H7) did not positively influence the variable negative comments. This observation indicates that Brazil behaves differently from other countries, considering that this hypothesis was supported in the work of Antonetti and Maklan (2014).

Therefore, it is possible to conclude that the economic benefit offered by the company had little impact on blame attribution, but impacted on the punitive intention. This finding complements the results pointed out by Antonetti and Maklan (2014, 2016), since they did not explore the effects of economic benefits on blame attribution and punitive intent.

As in the case of Shell, which spilled oil in the Niger Delta for decades, but did not have its activities suspended due to impact on Nigerian GDP (George et al., 2012), this situation repeated in the case of the environmental disaster of Mariana-MG, since soon after the event Samarco Mineração S.A. made clear its economic importance to the states of Minas Gerais and Espírito Santo (Samarco Mineração SA, 2016). This information was also confirmed when 3.9% of Espírito Santo GDP fell, in addition to the reduction in Minas Gerais GDP, attributed to the suspension of the activities of the company (Fundação João Pinheiro, 2016; G1 ES, 2016). Thus, the affected states suffered not only from the rupture of the dam and the residues spilled but also from the economic impact from the suspension of the firm's activities.

In this sense, it is understandable that the result points to an attribution of blame to Samarco Mineração S.A., but this attribution does not influence negative comments and punitive intention. Thus, while on the one hand the population of the five municipalities recognizes the company's blame for the damages of the environmental disaster; on the other, there is no punitive intention, possibly for fear that this will affect the economy, as happened in other environmental accidents around the world (George et al., 2012; Hilson, 2012). This reality may have influenced both the company and its parent companies Vale S.A. and BHP Billiton not to take measures to avoid future disasters such as that which occurred in January 2019 in Brumadinho-MG.

CONCLUSION

Although the theme of CSIR has been discussed for years, the subject is not usually presented explicitly in the literature on CSR (Lange & Washburn, 2012). The Brazilian literature has shown little study on CSIR, which has instigated this research. The purpose of this study was to determine whether the social identification with Samarco Mineração S.A., based on the economic benefits the company offers, reduces punitive intention and blame attribution against the company due to the environmental disaster it caused.

The study concluded that in the cities where the mining company generated jobs and benefited the economy (Anchieta-ES, Guarapari-ES, and Mariana-MG), the population had a greater perception of benefits, negatively affecting the punitive intention. On the other hand, the perception of benefits to the economy in these three cities did not negatively affect blame attribution. One of the explanations of this finding was that, by using impression management strategies the company did not seek to escape responsibility, but made it clear how much it contributed to the economy of Espírito Santo and Minas Gerais states, and the actions that would be taken to overcome the disaster (Samarco Mineração SA, 2016, 2018).

In addition, blame attribution by the researched population did not positively affect the punitive intention against the company. It should be noted that the Brazilian perception of punishment is somewhat impaired due to disbelief in the national judicial system (Reichenheim et al., 2011). In addition, developing countries usually pay little attention to problems related to pollution (Surroca, Tribo, & Zahra, 2013).

Regarding the evaluation of the severity of the event, this perception positively affected blame attribution also in the tests in locations where the company's economic contribution was significant. However, there was no evidence that the evaluation of the event's severity affected the punitive intention against the company. Although there is theoretical evidence that reports the existence of this relationship, it was not confirmed by the research.

Consequently, no evidence was found that the blame attribution positively affected the intention to make negative comments against the mining company. In addition, if the blame attribution did not positively affect the punitive intention, the expectation was that the blame attribution would not have an effect on the intention to make negative comments, considering that making negative comments can also be considered a punishment (Buttle, 1998). In addition, the evaluation of severity did not positively affect the intention to make negative comments against the company.

The study found that the punitive intention of the population positively affected the

intention to make negative comments. These results are aligned with the theoretical evidence (Buttle, 1998). All these findings have opened space for future research seeking to evaluate feelings, judgments, and attributions that may be observed in disasters caused by companies.

As for the limitations, this research was carried out in a single moment, which may have increased the possibility of bias in the results. Another point is that the evaluations are restricted to a single event and the sample represents the opinion collected in five municipalities. Therefore, it is not possible to generalize the results for other events and localities.

This study provided insights for future research, pointing to the relevance of conducting qualitative research using interviews and focus groups, collecting data to confront the results presented here. This type of study would allow a better understanding of the nuances of the subject. It is also suggested that studies continue to investigate acts of CSIR by other companies or in other places, such as the recent environmental disaster of January 2019 in Bumadinho-MG, comparing the new results with those evidenced here. Finally, longitudinal studies following affected populations periodically may be a useful form of evaluating the several aspects related to CSIR and environmental disasters.

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