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SUPPLY CHAIN SUSTAINABILITY REPORTING IN THE GLOBAL SOUTH: THE ROLE OF FUNDING

Relato de sustentabilidade na cadeia de suprimentos no Sul global: O papel do financiamento

Informe de sostenibilidad en la cadena de suministro en el Sur global: El papel del financiamiento

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ABSTRACT

Companies deal with increasing pressure from multiple stakeholders to report not only their sustainable practices, but also their extended supply chain sustainability (SCS). However, the literature has paid less attention to how stakeholder pressures are shaped in the Global South characterized by institutional voids related to contracting, outsourcing, and weak legislation enforcement. This study maps which stakeholder pressures are associated with SCS reporting analyzing an unbalanced panel data of 220 corporate sustainability reports from 2016 to 2018 by Brazilian listed companies. Results show that long-term oriented shareholders and creditors, company size, and adoption of GRI guidelines are all associated with higher levels of SCS reporting, while public and regulatory pressures are not, offering support to the institutional voids rationale. In the absence or weakness of regulatory pressures, long-term funding sources and access to resources seem to step-in as associated drivers of SCS reporting.

Keywords | supply chain sustainability, transparency, reporting, stakeholder, global reporting initiative.

RESUMO

Empresas lidam com a crescente pressão de stakeholders diversos para divulgar não apenas suas práticas sustentáveis, mas também a sustentabilidade da sua cadeia de suprimentos (SCS). No entanto, a forma pela qual as pressões de stakeholders são moldadas no Sul Global – caracterizado por vazios institucionais (contratação, terceirização e frágil aplicação da legislação) – é um fenômeno que tem recebido menos atenção da literatura. O estudo mapeia quais pressões de stakeholders estão associadas à divulgação de relatórios de SCS analisando um painel de dados não balanceado de 220 relatórios de sustentabilidade corporativa de 2016 a 2018 por empresas brasileiras de capital aberto. Os resultados mostram que acionistas e credores orientados para o longo prazo, o porte da empresa e a adoção da estrutura do GRI estão associados a níveis mais altos de divulgação de relatórios de SCS, enquanto as pressões públicas e regulatórias não estão associadas da mesma forma, o que embasa a lógica de vazios institucionais. Na ausência de pressões regulatórias, fontes de financiamento de longo prazo e acesso a recursos parecem emergir em associação à divulgação de relatórios de SCS.

Palavras-chave | *sustentabilidade na cadeia de suprimentos, transparência, divulgação de relatórios, stakeholder, global reporting initiative.*

RESUMEN

Las empresas se enfrentan a la creciente presión de los stakeholders para informar no solo sobre sus prácticas sostenibles, sino también sobre la sostenibilidad de su cadena de suministro (SCS). Sin embargo, la forma en que se configuran las presiones de stakeholders en el Sur Global, caracterizado por brechas institucionales (subcontratación y cumplimiento débil de la legislación), ha recibido menos atención en la literatura. Este estudio mapea qué presiones de stakeholders están asociadas con los informes de SCS mediante el análisis de un panel de datos desequilibrado de 220 informes de sostenibilidad corporativa de 2016 a 2018 de empresas brasileñas que cotizan en bolsa. Los resultados muestran que los accionistas y acreedores orientados a largo plazo, el tamaño de la empresa y la adopción de las pautas GRI están asociados con niveles más altos de divulgación de informes de SCS, mientras que las presiones públicas y regulatorias no lo están, lo que fundamenta la lógica de los vacíos institucionales. En ausencia de presiones regulatorias, las fuentes de financiamiento a largo plazo y el acceso a los recursos emergen en asociación con la divulgación de informes de SCS.

Palabras clave | *sostenibilidad de la cadena de suministro, transparencia, informes corporativos, stakeholder, global reporting initiative.*

INTRODUCTION

Corporate sustainability reporting is in the spotlight. What has been labeled as the "Super Transparency Era" pushes companies to improve reporting and amplify the risks of miscommunicating and/or ignoring external pressures (Austin & Upton, 2016).

While corporate reporting addressing environmental and social concerns has become a core corporate activity, a plethora of sustainability-related incidents have shown that sustainability breaches often happen beyond the focal company's purview in the extended supply chain (Marques, 2019). Thus, corporate sustainability reporting must include information not only about the company's activities but also about its extended supply chain (Yadava & Sinha, 2016). Reporting issues related to supply chain sustainability (SCS) should be part of corporate sustainability reporting (Marshall et al., 2016), although companies still do not properly disclose their actual and potential impacts along their supply chain.

The increased complexity of the supply chain (Wilhelm et al., 2016) imposes a significant barrier to SCS reporting. In many cases, companies may wish to report but lack visibility of their supply chains (Sodhi & Tang, 2019). Moreover, as the most relevant impacts of a supply chain take place in developing countries, different stakeholders with specific characteristics – such as more permissive regulations – will influence the level of accountability, thus, the level of companies' transparency.

As a response to the combined effects of transparency demands and the supply chain complexity, companies should map the stakeholders' pressures to filter down what needs to be prioritized. The extent to which companies can address and communicate environmental and social issues reflects how they perceive their key stakeholders' attention to these concerns (Yadava & Sinha, 2016). Successful companies must shift from a short-term/single-oriented economic focus to a longer-term/multiple-stakeholder approach that balances and incorporates multiple goals from multiple stakeholders (Reimsbach et al., 2019). The journey toward effective corporate sustainability reporting is tough, raising the importance of methodologies supporting this process, such as the Global Reporting Initiative (GRI). The GRI offers companies guidelines on disclosing how they deal with their material topics to stakeholders. The supply chain is an element of particular concern in the GRI framework (Islam et al., 2016).

It is already known that stakeholders play a key role in SCS reporting (Sodhi & Tang, 2019) and that front-runner companies tend to adopt frameworks such as the GRI. However, less is known about what types of stakeholders impose more pressure on SCS reporting (Okongwu et al., 2013), and even less is known about SCS reporting beyond the Global North – most research on this topic has not included supply chain-related issues and has focused on the Global North (Kuzey & Uyar, 2017). Thus, our study aims to fulfill a gap in the literature on SCS reporting focusing on the Global South, a region characterized by institutional voids that reshape how SCS can be addressed and particularly important regarding environmental and social impacts (Barkemeyer et al., 2015; Silvestre, 2015).

Institutional voids produce uncertainty due to weak control over outsourcing contracts, an untrained labor force, and a lack of enforcement of existing legislation (Marques et al., 2021). These institutional voids are all highly related to SCS, and their existence allows companies to engage in poor supply chain practices without being punished (Khanna & Palepu, 1997). Institutional voids can also reshape how stakeholder pressures co-exist (for example, governmental pressures may be weak, whereas private actors' pressure may be strong), but this aspect still needs further research. This study is based on the following research question:

> Which stakeholder pressures are associated with higher levels of supply chain sustainability (SCS) reporting in the context of institutional voids?

The following sections present the study's theoretical background on corporate sustainability reporting, SCS reporting, and stakeholder pressures, leading to hypotheses regarding stakeholders' influence on SCS reporting in the context of institutional voids. Next, the research method is presented while grounding the choice of Brazil as a representative of the Global South. The country was chosen since previous research demonstrated that institutional voids influence SCS in Brazil (Silvestre, 2015), and it has a well-developed stock market that offers robust data from listed companies issuing annual corporate sustainability reports (In 2020, Brazil was the 14th stock market in the world, and the 8th among Global South countries). The study adopts a mixed-method content analysis of 220 corporate sustainability reports released from 2016 to 2018. The implications to theory and practice are presented subsequently, highlighting that funding has two key roles in promoting SCS reporting, represented by pressure from shareholders (via participation in a sustainability index) and creditors (via long-term debt profile). The complementary perspective of access to resources is represented by company size and adoption of GRI guidelines, which seem interconnected as adherence to standards demands funding and time for knowledge acquisition and implementation.

THEORETICAL BACKGROUND

Supply chain sustainability reporting

Mentzer et al. (2001) defines supply chain management (SCM) as "the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole" (p. 18). The definition emphasizes the coordination of common goals between the focal company and its suppliers, but historically the goal of SCM has been restricted to the company's economic performance. Yet, since 2008, studies have increasingly addressed the relationship between sustainability and SCM, giving rise to the term sustainable SCM

(SSCM) (Carter & Rogers, 2008), understood as "the strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systematic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its supply chains" (p. 368). The SSCM definition thus expands the notion of common performance to the intersection of environmental, social, and economic performance.

Complementarily, supply chain sustainability (SCS) reflects the company's balanced efforts to make the extended supply chain comply with sustainability standards (Bird et al., 2019). Effective SCS reporting can "prevent or reduce reputation damages caused by the public exposure of unacceptable supplier practices or undesirable supply provenance" (Sodhi & Tang, 2019, p. 2950). Good practices related to supply chain sustainability include fair sourcing, transparent contracting conditions, and collaboration with suppliers to support their adherence to sustainability standards. Wilhelm et al. (2016) and Huq and Stevenson (2018) discuss the challenges of diffusing such practices and standards in every complex supply chain. The more complex supply chains become, the higher the number of suppliers to impose new sustainability standards and the wider the array of stakeholder pressures that might be conflicting. Therefore, companies find it hard to define exactly which social and environmental concerns they should prioritize.

The path commonly taken by firms to incorporate and prioritize social and environmental concerns along their supply chains is listening to stakeholder demands. Thus, stakeholder pressures rise as a key driving force toward adopting SCS. In other words, companies map the sustainability risks they must address according to the pressures they receive from multiple stakeholders (Reimsbach et al., 2019). In fact, misreading a stakeholder demand may be a source of risk in itself. Conversely, effective listening to and responding to stakeholder demands may help companies communicate what they have implemented or are implementing.

Companies have often resorted to guidelines such as the GRI to reflect their commitment to higher standards of public integrity and ensure quality in their SCS reporting (Islam et al., 2016). GRI guidelines emphasize the importance of reporting topics that are salient for stakeholders. The initiative offers a framework that influences how companies respond to stakeholder pressures through reporting while ensuring credibility and comparability of information, making reporting more tangible (Yadava & Sinha, 2016), reducing uncertainties, and helping financial analysts generate more accurate forecasts (García-Sánchez et al., 2019a). GRI emphasizes the importance of reporting supply chain-related issues, but many companies still fail to provide both quantitative and qualitative reporting of their supply chains (Rashidfarokhi et al., 2018). Limited information hinders data access to researchers and society (Jia et al., 2018).

There is also another challenge to SCS reporting related to the Global South reality. In the Global South context, Barkemeyer et al. (2015) and Silvestre (2015) state that companies face institutional voids that hinder and reshape SCS. Institutional voids mean lack of clarity and enforcement in outsourcing contracts, undeveloped labor market, and weak enforcement of existing regulations, all feed into turbulence and uncertainty that is less present in the Global North. These institutional voids allow companies to engage in corruption, informality and other

poor supply chain practices without punishment (Khanna & Palepu, 1997). Regional characteristics must be considered to understand SCS reporting globally (Gold et al., 2017). Yet, despite the disparities in the global reality of supply chains, the extant research has devoted more attention to the Global North (Jia et al., 2018; Kuzey & Uyar, 2017; Silvestre, 2015), and thus we face a lack of understanding of how companies translate stakeholder pressures into SCS reporting in a reality where institutional voids prevail.

The subsection below unpacks the different types of stakeholder pressures that may lead companies to engage with SCS reporting.

Stakeholder pressures and SCS reporting

Corporate sustainability reports can support internal development, favoring alignment and helping companies to detect and correct poor supply chain practices (García-Sánchez et al., 2019b). But the key objective of reporting has been decreasing information asymmetry between the company and stakeholders, legitimizing response to their demands (Fuente et al., 2017), and showing commitment (Okongwu et al., 2013). Key stakeholders may include customers, employees, regulators, investors, competitors, and NGOs (Miniaoui et al., 2019) (Hahn et al., 2015; Tate et al., 2010). Engagement with this wide array of stakeholders can decrease legal and financial risks and improve reputation (Rashidfarokhi et al., 2018). Anticipating stakeholders' demands via reporting can not only mitigate risks but also sustain competitive advantage by responding to pressures (Marshall et al., 2016).

Previous studies have aimed to establish connections between stakeholder pressures and corporate sustainability reporting. The majority has found a positive relationship between the two, covering pressures from customers (Okongwu et al., 2013; Vitolla et al., 2019), investors (Chithambo et al., 2020; Fernandez-Feijoo et al., 2014; Vitolla et al., 2019), and employees (Fernandez-Feijoo et al., 2014; Vitolla et al., 2019). Yet, there is little research about stakeholder influence on reporting focused on supply chain issues (Dubey et al., 2017) and research considering specificities of the Global South, which might reshape those pressures.

The first key stakeholder group is the customers. Customers "seek information on the environmental impact of production, customer health and safety, marketing and labeling, and customer privacy" (Vitolla et al., 2019, p. 1596). This is particularly important for companies known by their proximity to the end consumer (Fernandez-Feijoo et al., 2014). Companies close to end consumers are more easily perceived and pressured by their consumer base. Previous research found a positive relationship between customer pressure and reporting (Okongwu et al., 2013; Vitolla et al., 2019).

Supply chain research also found that companies closer to end consumers are more pressured to adopt SCS (Schmidt et al., 2017). Yet, when turning attention to the Global South, research shows that customers may have limited or inhospitable access to companies' information in order to judge their transparency (Marques et al., 2021). Therefore, classifying companies

according to their proximity to end consumers can be a proxy to investigate whether customer pressure is positively associated with SCS reporting.

H1: Customer pressure is positively associated with SCS reporting.

The second key stakeholder group is composed of non-governmental organizations (NGOs). These organizations have gained strength and changed the scenario where companies operate. NGOs can focus on a plethora of priorities, and some are more influential to focal companies than others. These NGOs can be clustered considering the two main elements of sustainability: social and environmental concerns.

Environmental NGOs aim to raise awareness among citizens (Vitolla et al., 2019), putting pressure on and affecting different industries in different ways. It is reasonable to believe that there is a higher pressure on SCS reporting focused on environmental impacts for companies perceived as the main contributors to problems like pollution and greenhouse gas emissions. Some studies have investigated the influence of environmental NGOs on sustainability reporting, finding a positive relationship between the organizations' activity and reporting (Huang & Kung, 2010; Vitolla et al., 2019).

Instead of environmental concerns, some NGOs are devoted to discussing social issues, and working conditions are a major issue related to supply chains (Stevenson & Cole, 2018). According to the Global Slavery Index (The Minderoo Foundation, 2018), 24.9 million people were working under forced labor conditions in 2016 globally. This situation is a result of suppliers around the globe that may prefer short-term economic gains to the detriment of social improvements (Huq & Stevenson, 2018), and it is observed particularly among suppliers under high-productivity incentives due to buyers' pressure (Bird et al., 2019). Therefore, supply chains are at the core of modern slavery and poor working conditions. Buying firms impose productivity gains and 'turn a blind eye' to supplier malpractice and poor working conditions, often justifying with lack of visibility and control (Marques et al., 2021).

Sometimes, an industry or sector improves while another deteriorates. For example, after the Rana Plaza disaster in Bangladesh, Huq and Stevenson (2018) found that child labor was moved from the garment industry to other more harmful activities, such as construction. In Brazil, as another example, even though the partnership between the Public Ministry of Labor and ILO has intensified in the last years, the challenge of illegal work is still a problem to overcome (SmartLab MPT/OIT, 2017). As pressure from NGOs grows, companies increasingly engage in processes to improve transparency regarding SCS (Benstead et al., 2018).

Hence, it is possible to hypothesize a positive association between both dimensions of NGO pressure (social and environmental) and SCS reporting.

H2: Environmental NGO pressure is positively associated with SCS reporting.

H3: Social NGO pressure is positively associated with SCS reporting.

Corporate sustainability reporting has often been a result of shareholder pressure. Conscious shareholders, activist shareholders, and long-term-oriented shareholders are terms used to describe those that demand higher levels of compliance and who are increasingly interested in reinforcing a long-term investment strategy by funding companies that can provide evidence of sustainability/SCS (Chithambo et al., 2020; Fernandez-Feijoo et al., 2014; Vitolla et al., 2019). Vittola et al. (2019), for example, indicate a positive influence of shareholders on reporting quality but measured in terms of shareholder concentration, in line with Chithambo et al. (2020). An alternative perspective would be to consider the shareholders' long-term orientation, captured by sustainability-oriented stock market rankings.

By the same token that shareholders are sources of pressure, creditors may also pressure SCS reporting (Chan et al., 2013). In more debt-leveraged companies, creditors become more influential, calling for more monitoring of opportunistic behaviors and integrity, ultimately avoiding future penalties and fines (Huang & Kung, 2010). Previous research has found conflicting evidence: while Chithambo et al. (2020) found a negative relationship, Chan et al. (2013) found a positive one. Common to both studies, creditor pressure was measured in terms of the ratio between debt and equity. We turn our attention to two different angles. First, we look at long-term debt as a sign of a creditor with a long-term orientation. Such creditors may tend to engage with the recipient companies through a strategic rather than transactional approach, and this might lead to stronger pressures toward SCS reporting. Second, we focus on one single country to avoid uncontrolled institutional influences.

Taken together, shareholder pressure and creditor pressure represent the recent ESG trend (an acronym for environmental, social, and governance) in long-term-oriented investment analysis. Previous research has shown that different types of investors may impact reporting differently (García-Sánchez et al., 2020). Therefore we hypothesize that both shareholders and creditors, when long-term-oriented, are expected to be positively associated with SCS reporting.

H4: Long-term-oriented shareholder pressure is positively associated with SCS reporting.

H5: Long-term-oriented creditor pressure is positively associated with SCS reporting.

The governments represent the fourth stakeholder group. Regulation can play a central role in promoting reporting practices due to their power over companies (Vitolla et al., 2019). Government institutions may fine enterprises that violate socio-environmental regulations or even force companies to cease their activities. Research shows that higher levels of environmental disclosure are positively related to fines paid due to violations of environmental legislation (Huang & Kung, 2010). Therefore, it is expected that companies penalized by government agencies and under higher regulatory pressure are more prone to be active players in SCS reporting. As much as environmental requirements, companies that fail to meet social requirements – such as working conditions – may face penalties and negative media (Chithambo et al., 2020).

Yet, when driving research attention to the Global South, it is expected that governmental pressures might be lower due to institutional voids related to weak contracting legislation and room for malpractice in outsourcing schemes (Khanna & Palepu, 1997). Companies operating in the Global South can navigate in a context where regulation is weak, and even when existent, enforcement is limited, allowing corruption and informality (Marques et al., 2021). Although we expect less governmental pressure overall for industries under specific regulatory scrutiny (such as mining, for example), we expect to see a positive effect on SCS reporting on both the environmental and social dimensions.

H6: Environmental government pressure is positively associated with SCS reporting.

H7: Social government pressure is positively associated with SCS reporting.

The last stakeholder group refers to the internal stakeholders – i.e., the employees. Research has shown that employees can influence SCS (Meixell & Luoma, 2015). Vitolla et al. (2019) found that employee pressure affected the quality of integrated reporting among companies from different industries and regions. The same result was found by Huang and Kung (2010), which state that workers have the power to make use of organized unions to "make sure their voices reach the managerial levels in the firm" (Huang & Kung, 2010, p. 440). In addition, unions contribute to more coupled labor conducts and practices among suppliers (Bird et al., 2019).

Since previous empirical research (cross-country or focused on the Global North) has shown a positive influence of employee pressure related to unionization, in countries where institutional voids prevail, the role of unions tends to be fragile or incipient (Khanna & Palepu, 1997). Therefore, although employee pressure may also be present, fragile regulation may hinder its effectiveness; hence further research is needed. We hypothesize that employee pressure will be positively associated with SCS reporting.

H8: Employee pressure is positively associated with SCS reporting.

In addition to the stakeholder pressures previously discussed, one final key driver is the adoption of GRI as a framework for SCS reporting. The adoption of GRI has been used as a tool to access good-quality data and to homogenize the sample (Fernandez-Feijoo et al., 2014). GRI adoption has been posited as an indicator of higher reporting levels (Tran & Beddewela, 2020). Indeed, higher levels of sustainability disclosure were found to be positively correlated to GRI adoption (Kuzey & Uyar, 2017). For example, Islam et al. (2016) found a significant difference in the reporting levels after six large banks joined GRI. Barkemeyer et al. (2015) found that GRI promoted the dissemination of sustainability reporting globally, particularly in Asian and South American countries. Such evidence suggests a significant and positive impact of GRI adoption on SCS reporting.

H9: GRI adoption is positively associated with SCS reporting.

METHODOLOGY

Research method

This research frames Brazil as exemplar of the Global South due to (a) extant research showing how institutional voids reshape SCS in the country, (b) the availability of corporate sustainability reports from publicly listed companies, and (c) the scale of adoption of GRI as a standard among these listed companies (GRI, 2013). To assess the level of SCS reporting, we conducted a mixed-method content analysis.

First, specific keywords were defined to reflect how much attention each report had given to SCS. The selection of keywords reflects those words considered determinants of SCM, in line with previous literature reviews (Marques, 2019) and thematic analysis (Tate et al., 2010) on the topic. The difference from lists used before was the elimination of "supply network," as in Portuguese this term is not used, and the addition of "third-party," which by the same token is largely used in Portuguese to reflect suppliers. The final list was composed of: (in both English and the Portuguese counterpart): suppl* (*fornec**), sourcing (*suprimento*), purchas* (*compra**), procurement (*contrata**), outsource* (*terceiriz**), third-party/third party.

The keyword search was followed by a qualitative assessment of the meaning of the words to avoid misuse of the terms. Such qualitative data cleanup has eliminated words that were not related to SCS. For example, mentions related to "*contrata**" were often associated with human resources hiring policies unrelated to SCM, therefore, excluded. In case of doubt, the reading was expanded to paragraphs before and after the identified word for a better assessment. Some headings or subheadings without further contextualization were ignored. After this laborious process, the number of mentions on each.

The stakeholders' perspective was obtained by searching the most critical industries in terms of social, economic, and environmental impact, according to the GRI (2013) Topics report. The GRI Topics was a study that involved 194 different organizations representing all sorts of stakeholder groups, listing 1,612 material topics for 52 business activity groups, and was supported by over 600 documental sources (GRI, 2013). Among the stakeholders included, the report mentions "business associations, labor representatives, civil society organizations, information users, and experts" (GRI, 2013, p. 8). The report helped to limit the number of industries covered in this study.

Sample definition

The same keywords used to analyze sustainability reports were used to search the most critical industries regarding social, economic, and environmental impact in the GRI Topics report (GRI, 2013). In total, 159 out of 1,612 sensitive topics in the report were related to SCS issues, and 150 were considered since nine were excluded for not dealing with SCS directly – materials

management, for example. Thus, industries with at least one topic related to SCS were initially considered as potentially critical regarding social, economic, and environmental impact, reducing the range of industries or sectors from 52 to 33.

Eight of the 33 industries were excluded. NGOs and public agencies, for example, had raised concerns from their stakeholders about SCS practices in the GRI Topics report but were excluded from this study as they do not trade shares and are not required to be fully transparent on internal information. Other industries or sectors were excluded due to the absence of reporting (such as companies in the media, software, and services industries). After this analysis, the remaining 25 industries identified from the GRI Topics report were matched with the industry classification adopted by the Brazilian Stock Exchange. The procedure was based on the description of economic activities, resulting in a potential sample of 275 listed companies.

The final step was excluding companies from sensitive SCS industries but with no reporting, or comprehensive SCS information, i.e., short statements that poorly covered SCS issues and did not configure corporate sustainability reporting. The final sample was composed of 220 reports released by 88 listed companies on the Brazilian exchange market (32% of the total 275). Both sustainability and annual/integrated reports were downloaded from companies' websites and/or the GRI Database. Data collection was conducted between May 25 and June 7, 2020, with the intent of compiling three years of panel data. In May 2020, many companies had not yet released their reports since the COVID-19 outbreak delayed corporate reporting significantly in early 2020. Thus, the final dataset covers 2016, 2017, and 2018. Reports in both Portuguese and English were considered valid. Table 1 presents the demographics of the sample by industries and years.

Table 1. Data sample – Number of reports by industry and year

		Reports per Year			
Industry	**Number of Companies**	**2016**	**2017**	**2018**	**Total Reports**
Banks Diverse Financials and Insurance	17	14	15	16	45
Food and Beverage Processing	6	5	6	6	17
Oil and Gas	5	5	5	4	14
Retailing	6	4	5	5	14
Agricultural and Animal Source Food Production	4	4	4	4	12
Forest and Paper Products	5	4	5	3	12
Mining	5	3	5	4	12
Telecommunications Services	4	4	4	4	12
Automobiles and Components	5	3	4	2	9
Consumer Durables Household and Personal Products	3	2	3	3	8
Education Services	4	2	2	4	8

Continue

Table 1. Data sample – Number of reports by industry and year

Concludes

		Reports per Year			
Industry	**Number of Companies**	**2016**	**2017**	**2018**	**Total Reports**
Pharmaceuticals Biotechnology and Life Sciences	3	3	3	2	8
Ground Transportation Highways and Railtracks	2	2	2	2	6
Chemicals	2	2	2	1	5
Construction Engineering and Home Building	3	3	1	1	5
Construction Materials and Building Products	2	2	2	1	5
Ground Transportation Trucking	2	1	2	2	5
Electrical Equipment and Machinery	2	1	2	1	4
Food and Consumers Staples Retailing	2	1	1	2	4
Aerospace and Defense	1	1	1	1	3
Air Transportation Airlines	1	1	1	1	3
Technology Hardware Equipment and Semiconductors	1	1	1	1	3
Trading and Distrib companies Com Serv and Supplies	1	1	1	1	3
Textiles Apparel Footwear and Luxury Goods	1	1	1	-	2
Professional Services	1	-	-	1	1
Total	**88**	**70**	**78**	**72**	**220**

The sample was composed of unbalanced short panel data. The most representative industry was Banks, Diverse Financials, and Insurance, with the contribution of 45 sustainability reports from 17 different companies. Reports are reasonably balanced across the three years.

Definition of variables

The hypotheses were operationalized by multiple regression to know which stakeholder pressures influence SCS reporting.

The dependent variable, here labeled *supply chain mentions* (*SC mentions*), consisted of the total number of citations of the predefined terms presented previously as keywords, with a further qualitative analysis if the words were indeed related to SCS. The number of citations was transformed into a natural log scale to control for differences in the length of the reports – assuming that more comprehensive reports have a higher number of citations. This allowed the distribution of the dependent variable to accommodate a possible influence of the variability on report length and be significantly less skewed – the descriptive statistics subsection (Table

3) shows that SC mentions presented almost the same mean and median values, added to a standard deviation close to 1.

Table 2 presents the independent variables and the control variables.

Table 2. List of independent and control variables

Independent Variable	Term used	Level of analysis	Proxy	Calculation	Reference / Source
Customers Pressure	Customer	Industry	1 if consumer proximity industry, 0 otherwise	Consumer proximity industries: Energy utilities, financial services, healthcare, household, and personal products, waste management, retailers, telecommunications, textiles and apparel, food and beverage products, and water utilities	Fernandez-Feijoo et al. (2014); Sweeney and Coughlan (2008); Vitolla et al. (2019)
Environmental NGO Pressure	EnvNGO	Industry	1 if environmentally sensitive industry, 0 otherwise	Environmental sensitive industries: agriculture, automotive, chemical, construction, construction materials, energy (oil & gas), energy utilities, forest and paper products, metal products, mining, textiles and apparel, and water utilities	Branco and Rodrigues (2008); Fernandez-Feijoo et al. (2014); Huang and Kung (2010); Kuzey and Uyar (2017); Okongwu et al. (2013); Sweeney and Coughlan (2008); Vitolla et al. (2019)
Social NGO Pressure	SocNGO	Industry	1 for industries with the highest number of people rescued from modern slavery working, 0 otherwise	Modern slavery-intensive industries: Agriculture, construction, forest and paper products, mining, textiles, and apparel.	Reporter Brasil (n.d.); SmartLab MPT/OIT (2017); The Minderoo Foundation (2018)
Shareholders Pressure	Shareholder	Company	1 if member of ISE during the year, 0 otherwise	ISE index list	B3 (n.d.)
Creditors Pressure	Creditor	Company	Long-term debt	Long-term Debt / Equity ratio	Economatica
Environmental Government Pressure	EnvGov	Company	1 if the company had any IBAMA fine during the year, 0 otherwise	IBAMA is a Brazilian Institute responsible for monitoring and inspecting environmental activities and exert national policies regarding environmental issues.	Huang and Kung (2010) Data - IBAMA (n.d.)
Social Government Pressure	SocGov	Industry	Natural log of number of fines applied due to labor penalties per year	Fines applied due to labor penalties per year	Brazilian Ministry of Economy (n.d.).

Continue

Table 2. List of independent and control variables

Concludes

Independent Variable	Term used	Level of analysis	Proxy	Calculation	Reference / Source
Employee Pressure	Employee	Industry	Union membership rate (%) per year	Information provided by the National household sample survey (PNAD - 2018), developed by the Brazilian Institute of Geography and Statistics (IBGE).	IBGE (2019)
GRI adoption	GRI	Company	1 if GRI-based report, 0 otherwise	Corporate sustainability reports	Kuzey and Uyar (2017); Tran and Beddewela (2020)
Company Size	Size	Company	Natural log of total employees	Employees reported	Gamerschlag et al. (2011); Lo et al. (2014) Data - Corporate websites/ sustainability reports
Year 2016	Year_2016	Company	1 if the company reported in 2016, 0 otherwise	Year reported	Corporate sustainability reports
Year 2017	Year_2017	Company	1 if the company reported in 2017, 0 otherwise	Year reported	Corporate sustainability reports
Year 2018	Year_2018	Company	1 if the company reported in 2018, 0 otherwise	Year reported	Corporate sustainability reports

Some variables are invariant through time - Customer, EnvNGO and SocNGO. Another factor is the variation within companies (Shareholder, Creditor, EnvGov, GRI, and Size) or only within industries (Customer, EnvNGO, SocNGO, SocGov, and Employee). Financial information, including long-term debt (LTDebt) and equity, was collected from Economatica Database. We choose LTDebt instead of the whole debt structure (short + long-term debt), which is more prominent in the literature (Chithambo et al., 2020; Kalu et al., 2016; Kuzey & Uyar, 2017) because short-term debt holders do not necessarily have enough power and interest to change corporate policies regarding long-term sustainability actions.

Some proxies had to be adapted to the Brazilian reality, such as governmental pressure. For example, companies are not legally required to disclose their environmental and social performance or release sustainability reports in Brazil. Thus, alternative measures were defined to evaluate the enforcement of the regulation on companies. For EnvGov pressure, a binary code was applied due to data dispersion (i.e., some companies had a high number of fines while others had never been punished). The social perspective qualifying the NGO pressure was included since most studies just operationalize this specific stakeholder pressure on environmentally sensitive industries.

FINDINGS & DISCUSSION

Descriptive results and statistical tests

The descriptive statistics for the variables included in the model are presented in Table 3.

Table 3. Descriptive statistics of variables

Variables	Min	Mean	Median	Max	Std dev
SCmentions	0,00	3,66	3,81	5,74	1,10
Customer	0,00	0,50	0,50	1,00	0,50
EnvNGO	0,00	0,42	0,00	1,00	0,50
SocNGO	0,00	0,27	0,00	1,00	0,45
Shareholder	0,00	0,25	0,00	1,00	0,44
Creditor	-23,70	1,92	0,92	110,96	7,96
EnvGov	0,00	0,25	0,00	1,00	0,44
SocGov	7,50	9,32	9,27	11,18	1,28
Employee	0,05	0,17	0,17	0,24	0,04
GRI	0,00	0,83	1,00	1,00	0,37
Size	4,83	9,18	9,45	12,80	1,61

Note: SCmentions - natural log of number of SCS mentions per report; Customer - consumer proximity industry criteria; EnvNGO – environmental sentitive industries criteria; SocNGO - modem slavery intensive industry criteria; Shareholder - ISE membership; Creditor – LTDebt/E quity ratio; EnvGov- IBAMA fines criteria; SocGov - natural log of number of fines due to labor penalties; Employee - union membership rate; GRI - GRI-based reporting; Size – natural log of total employees per company and year.

The median for customer pressure is 0.5, which means that half the companies are from industries close to the end customer. The means for EnvNGO and SocNGO are below 0.5, i.e., most companies are not under pressure from social or environmental NGOs. In addition, most companies were not fined by IBAMA during the period searched - expressed by the variable EnvGov pressure, which presented a median of zero with a mean close to the same number. Such findings may contradict the fact that most companies are classified in the group of environmentally sensitive industries. This leads to two possible interpretations: either the companies have followed environmental regulations, or the monitoring/execution of fines failed. Results from the variable shareholder show that, in general, companies are not engaged in the best Brazilian voluntary reporting practices – 67 out of 88 companies did not join the ISE initiative. However, most of the sample adopted the GRI framework during the three years (183 out of 220 reports). Regarding creditors, some companies presented negative values due to losses on net income for specific companies and years.

In order to run the regression model with no problems of multicollinearity, a Spearman correlation matrix with the respective correlations and significances among dependent, independent, and control variables was produced (see Appendix A). At this stage, EnvNGO and SocNGO presented high correlations, and the former was dropped from the equation. As a result, H2 could not be verified in this study.

It is also interesting to notice that industries with significant union membership rates (Employee) tend to have more people rescued from modern slavery work conditions (SocNGO), 0.35, p-value 0.00, and less fines applied due to labor legislation penalties (SocGov), -0.3, p-value 0.00. In conclusion, it seems that the pressure imposed by organized workers in Brazil has positively impacted the application of labor law. However, it is not possible to affirm that companies have stopped violating labor laws in their supply chains, regardless of legal punishments.

Also, larger companies were found to be significant and positively correlated with environmental law violations (EnvGov), 0.26, p-value 0.00, and membership on ISE (Shareholder), 0.22, p-value 0.00. The latter, incidentally, is usually related to GRI adoption. In this regard, it is possible to observe a movement where companies that adopt the best sustainability practices are also more likely to engage in reporting. This may be explained by the fact that the marginal costs of joining initiatives related to sustainability are lower for them compared to less responsible companies.

Multiple regressions were performed subsequently, using the three main approaches to panel data. Pooled OLS, fixed effects, and random effects methods were run and tested to determine which method would offer the best estimates for the model proposed. Table 4 shows the statistical results.

Table 4. Multiple regression models

	Pooled OLS			Fixed Effects			Random Effects		
	Coeff.	Std Error	p-value	Coeff.	Std Error	p-value	Coeff.	Std Error	p-value
Intercept	0,652	0,67	0.333	-	-	-	0,75	0.92	0.415
Customer	0,021	0,12	0.863	-	-	-	0,015	0.18	0.936
SocNGO	**0.390*** **	0,13	0.004	-	-	-	**0.378***	0,2	0.060
Shareholder	**0.359*** **	0,14	0.010	**0.468***	0,24	0.056	**0.415****	0,16	0.011
Creditor	0,006	0,01	0.400	**0.007***	0.00	0.063	**0.007***	0.00	0.069
EnvGov	0,061	0,13	0.644	0,041	0.10	0.686	0,048	0.09	0.600
SocGov	0,007	0,05	0.878	-0.061	0,18	0.732	0,017	0,07	0.794

Continue

Table 4. Multiple regression models

Concludes

	Pooled OLS			Fixed Effects			Random Effects		
	Coeff.	**Std Error**	**p-value**	**Coeff.**	**Std Error**	**p-value**	**Coeff.**	**Std Error**	**p-value**
Employee	-2.271	1.83	0.216	1,459	6.78	0.830	-1.573	2,38	0.508
GRI	**1.484*** **	**0,15**	**0.000**	**-0.217**	**0,47**	**0.643**	**1.196*** **	**0.20**	**0.000**
Size	**0.198*** **	**0,04**	**0.000**	**0.046**	**0,28**	**0.868**	**0.188*** **	**0,05**	**0.000**
Year_2016	0,07	0,15	0.632	-0,06	0,24	0.803	0,09	0.10	0.366
Year_2017	0,034	0,14	0.810	-0,056	0.18	0.762	0,036	0,09	0.684
Adj R^2	45,76%			0,00%			27,71%		
F-statistic (p-value)	17.80 (0.000)			0.96 (0.477)			80.81 (0.000)		

** Significant at 1%. ** significant at 5%. * significant at 10%

Hausman test (χ^2) *16.28*

p-value 0.061

Note: Customer - consumer proximity industry criteria; SocNGO - modem slavery intensive industry criteria; Shareholder - ISE membership; Creditor – LTDebt/E quity ratio; EnvGov- IBAMA fines criteria; SocGov - natural log of number of fines due to labor penalties; Employee - union membership rate; GRI - GRI-based reporting; Size – natural log of total employees per company and year; Year. 2016 - sustainability reporting in 2016; Year 2017 - sustainability reporting in 2017. Year 2018 was excluded because its correlation with SCmentions was zero.

The Lagrange-Multiplier test was performed to determine whether the model would consider effects and time variance. The null hypothesis (H_0) was not supported (10.71, p-value 0.00), i.e., there is a significant effect to examine. The Hausman test assessed what type of effect should be employed (fixed or random), resulting in a chi-square value of 16.28 (p-value = 0.061), supporting the H_0 in favor of the random effects model. Finally, Breusch-Pagan test revealed that the random effects model was homoscedastic. The H_0 was supported with a value of 15.52 (p-value = 0.16). However, autocorrelation was detected in Breusch-Godfrey tests for first and second orders (41.94, p-value 0.00; 44.80, p-value 0.00, respectively). The study employed the robust covariance matrix estimation to correct the problem above and achieve lower standard error levels. Huber/White cluster robust method was applied, generating the results in Table 5.

Table 5. Random panel regression (Huber/White covariance robust matrix)

	Random Effects		
	Coeff.	**Std Error**	**p-value**
Intercept	0,75	0,86	0.386
Customer	0,015	0,17	0.931
SocNGO	**0.378****	**0,17**	**0.023**

Continue

Table 5. Random panel regression (Huber/White covariance robust matrix) Concludes

	Random Effects		
	Coeff.	**Std Error**	**p-value**
Shareholder	**0.415****	0,17	0.015
Creditor	**0.007*****	0.00	0.000
EnvGov	0,048	0,07	0.517
SocGov	0,017	0,06	0.782
Employee	-1.573	2.13	0.460
GRI	**1.196*****	0,32	0.000
Size	**0.188*****	0,05	0.000
Year_2016	0,09	0,09	0.319
Year_2017	0,036	0,08	0.670
Adj R^2	27,71%		
F-statistic (p-value)	257.77 (0.000)		

** Significant at 1%, ** significant at 5%, * significant at 10%

Note: Customer - consumer proximity industry criteria; SocNGO - modem slavery intensive industry criteria; Shareholder - ISE membership; Creditor – LTDebt/E quity ratio; EnvGov- IBAMA fines criteria; SocGov - natural log of number of fines due to labor penalties; Employee - union membership rate; GRI - GRI-based reporting; Size – natural log of total employees per company and year; Year. 2016 - sustainability reporting in 2016; Year 2017 - sustainability reporting in 2017.

Discussion of the results

At the final stage, customer pressure, previously significant, lost statistical significance when added to panel regression models (0.015, p-value = 0.93, not supporting H1). Customer pressure has been previously associated with both SCS adoption (Svensson et al., 2018) and higher reporting levels (Okongwu et al., 2013), which was the first evidence that institutional voids may be playing a role. In other words, in a context where there is a lack of transparency regarding poor corporate practices, customers have either less accessibility or no access to key information to support their judgment. Moreover, they lack the tools to enforce change even when faced with information about poor practices (Marques et al., 2021).

Also, at the final stage, social government pressure, previously significant, lost statistical significance when added to panel regression models (0.017, p-value = 0.78, not supporting H7), and environmental government pressure remained not relevant (0.048, p-value = 0.52, not supporting H6). Taken together, the non-significance of both governmental pressures reinforces the argument that institutional voids are in place, characterizing weak law enforcement (Khanna & Palepu, 1997).

In line with the previous results (H1, H6, and H7 were not supported), employee pressure was also not relevant (-1.573, p-value = 0.46, not supporting H8). This fourth rejection completes a cluster of results that corroborate the presence of institutional voids in a Global South country. Previous research has shown that employee pressure is present in the Global North. In Germany, for example, employees have been perceived as the most influential driver for SCS adoption (Maas et al., 2018). However, voids related to weak professionalization and unionization can hinder employee pressure, and this lack of association is present in our study.

Regarding NGO pressure, while environmental pressure (H2) was dropped during data analysis, social pressure was confirmed (0.378, p-value = 0.02, thus supporting H3). This may indicate the rising presence of NGOs in the corporate arena and aligns with recent research discussing the role of non-traditional stakeholders (Tate et al., 2010).

Turning our attention to the remaining hypotheses, we see that shareholder pressure has been confirmed (0.415, p-value = 0.01, supporting H4). Shareholder pressure has been noted as positively related to disclosure among German listed companies (Gamerschlag et al., 2011) and a sign of higher reporting quality in a multi-country study (Vitolla et al., 2019). Yet, these studies were looking at shareholder pressure from the perspective of shareholder concentration. This study conversely innovates by looking at shareholders with a long-term orientation. The fact that an association was found may indicate that within the context of institutional voids, long-term-oriented shareholders rise as a key driver of SCS reporting. In fact, the correlation was the strongest among all tested drivers.

In line with what was found in H4, creditor pressure has also been confirmed (0.007, p-value = 0.00, supporting H5). Creditor pressure was also found positive regarding SCS adoption and reporting. Kalu et al. (2016) found a positive relationship between voluntary carbon emission disclosure and creditor pressure among Malaysian companies, and Yunus et al. (2020) found that creditors' influence among Australian listed companies drives carbon reduction strategies. Implications of these results are twofold. While Chithambo et al. (2020) have found a negative association between creditors and reporting, their focus was on credit leverage. In our study, the focus has changed to long-term-orientation creditor. The fact that the study showed a positive association corroborates results from the long-term-orientation shareholder and together indicate both sources of funding – investors and creditors – may be associated with advancements in SCS reporting (Chan et al., 2013). This also reflects the recent trend in ESG funding analysis.

The two final hypotheses can also be discussed as a cluster. First, GRI adoption was positively associated with SCS reporting (1.196, p-value = 0.00, supporting H9). And the control variable for size (number of employees) was also confirmed (0.378, p-value = 0.02). Results are in line with Gamerschlag et al. (2011), Chithambo et al. (2020), and Kalu et al. (2016), who considered number of assets instead of number of employees as a proxy for size. While adopting the GRI framework is an indication of knowledge and maturity in SCS reporting, it is also costly, and thus it is expected that larger companies will more often subscribe to the GRI framework. Resource availability may explain these results. The planning, preparation, and execution of sustainability reports, alongside the adherence to GRI standards, require human and financial resources often unavailable for smaller companies (Svensson et al., 2018).

CONCLUSION

Main contributions to theory and practice

This study offers complementary evidence to the literature by analyzing the association between stakeholder pressures and levels of SCS reporting (Okongwu et al., 2013) and delineates contributions to theory and practice regarding the study of institutional voids and SCS.

Theoretical implications emerge from results showing that drivers associated with SCS reporting can be clustered in three angles. First, we found no association between pressures from customers, employees, and the government and SCS reporting. This implies that in a context of weak law enforcement, professionalization, and unionization, pressure from these stakeholder groups may be hindered (Khanna & Palepu, 1997). Future research should look further into these interactions between different stakeholder pressures and reporting, which may lead to refining the stakeholder theory and the concept of stakeholder salience in the context of the Global South (Ali, 2015). Conversely, our study shows a positive association between pressures related to long-term funding (shareholders and creditors) and SCS reporting. Second, the long-term perspective observed in these two variables shows novel evidence regarding the association of funding and reporting, in line with recent research (Kim et al., 2019). Finally, the third angle relates to GRI adoption and company size, which may reflect access to resources. The profile of companies leading SCS reporting is associated with pressure from funding sources, adherence to standards, and access to resources.

Practical implications emerge from the association between SCS reporting and the long-term profile of funding sources. This indicates that investors and creditors with a long-term orientation may influence both the company's financial and sustainability reporting (García-Sánchez et al., 2020). It also corroborates the importance of adherence to standards. Ultimately, it calls attention to the fact that even in countries characterized by institutional voids, there may still be rising pressures for SCS reporting. When legislation fails, other pressures may eventually replace it. Although further research is still needed, it is possible to argue that companies not advancing on the road to better SCS, even when operating in contexts of institutional voids, will be increasingly subjected to market challenges.

Limitations and future research

Our study is based on self-reporting. However, it is plausible to believe that some companies may not report the salient impacts of their activities or may not have mentioned strategic projects they do not want to make public. Companies may engage in selective reporting and disclose only "good news" (Sodhi & Tang, 2019). Moreover, mentions of supply chain issues do not guarantee the quality of the practices being reported. Our focus has been on reporting rather than actual practice. Future studies complementing reporting data with primary data (interviews and other data collection methods) could better evaluate the quality of the SCS practices reported.

Our study looks only at GRI as a framework. GRI currently acknowledges the need to improve its focus on SCS. For example, Mancini and Sala (2018) found that some health and safety aspects were not included in the G4 guidelines (2021 version); the same case was observed for poor working conditions. The increasing attention devoted to supply chains should indicate the importance of SCS reporting to both GRI and companies.

The lack of information available explains the absence of companies not listed in the stock market. In most countries (and Brazil is no exception), a large share of small and medium companies is not listed. Future studies should find ways to incorporate this share of companies in the data analysis, although this is a challenging endeavor.

Finally, the scarcity of studies on the Global South calls for further studies in countries other than Brazil to allow confirmation of the role of institutional voids. The current paucity of studies focused on the region leaves question marks related to the adequate proxies for each stakeholder pressure and other issues that are particular to companies operating in the Global South. Proxies for regulation, for example, were particularly difficult to be defined due to the absence of systematic enforcement.

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CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

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Rodrigo Freire Lins; Conceptualization, Data curation, Formal Analysis, Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing.

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