

THE CONGRUENCE OF SDG COMMUNICATION IN FORMAL AND INFORMAL CHANNELS PERFORMED BY SELF-TITLED SUSTAINABLE COMPANIES

A CONGRUÊNCIA DA COMUNICAÇÃO DOS ODS EM CANAIS FORMAIS E INFORMAIS DE EMPRESAS AUTOINTITULADAS SUSTENTÁVEIS

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ABSTRACT

Objective – Identify whether companies with substantial aspects related to sustainability and corporate social responsibility (CSR) with high market values are consistent with what is presented in sustainability reports with posts on social media.

Methodology – The virtual communities investigated were based on Interbrand rankings, the most valuable brands, and the Dow Jones Sustainability Index. Twitter was the social network chosen and elements of the netnography approach were used together with content and document analysis, in addition to network analysis exploration, with support of UCINET.

Results – The *hashtags* most adopted by companies were #ClimateChange, #CleanEnergy, #climate, #climateaction, which are directly related to the Sustainable Development Goals – SDGs. The results showed that companies had communicated their actions related to the SDGs through the social network Twitter. However, some of them still do not adequately explore this tool.

Limitations/Research implications - As a limitation of the research, it was not easy to locate some communities in which companies publish their hashtags referring to the SDGs. In addition, some companies do not present the actions related to the SDGs in their sustainability reports.

Originality - The use of network analysis and content and document analysis proved to be effective in obtaining the results. This element is understood as an essential methodological contribution due to its originality in the communication of sustainable actions.

Keywords: Social Networks. SDG. Disclosure. Communication. Twitter.



RESUMO

Objetivo – Identificar se empresas que possuem fortes aspectos referentes à sustentabilidade e responsabilidade social corporativa (RSC) e que possuem alto valor de mercado possuem coerência do que é apresentado em seus relatórios de sustentabilidade com o que é postado nas redes sociais.

Metodologia – As comunidades virtuais investigadas foram obtidas por meio dos *rankings* da Interbrand, de marcas mais valiosas, e do Índice Dow Jones de Sustentabilidade. O Twitter foi a rede social escolhida e foram utilizados elementos da abordagem netnográfica em conjunto com análise de conteúdo e documental, além de exploração da análise de redes, com suporte do software UCINET.

Resultados – As *hashtags* mais adotadas pelas empresas foram #ClimateChange, #CleanEnergy, #climate, #climateaction, as quais estão relacionadas diretamente aos Objetivos de Desenvolvimento Sustentável – ODS. Os resultados do estudo demonstraram que as empresas têm realizado a comunicação de suas ações referentes aos ODS por meio da rede social Twitter, embora ainda algumas delas não explorem adequadamente essa ferramenta.

Limitações/implicações da pesquisa – Como limitações da pesquisa, houve dificuldade em localizar algumas comunidades nas quais as empresas divulgam suas *hashtags* referentes aos ODS. Além disso, algumas empresas não apresentam de forma clara as ações relacionadas aos ODS em seus relatórios de sustentabilidade.

Originalidade – a utilização de análise de redes em conjunto com análise de conteúdo e documental se mostraram eficazes para a obtenção dos resultados, sendo entendido este elemento como uma importante contribuição metodológica por sua originalidade no campo da comunicação de ações sustentáveis.

Palavras-chaves: Redes Sociais. ODS. divulgação. comunicação. Twitter.

1 INTRODUCTION

Contemporary society calls for more sustainable and conscientious consumption, in addition to an increasing need to preserve the environment and improve the quality of life of individuals, making Corporate Social Responsibility – CSR a prominent theme. Fontenelle (2017) reflects on this, treating these two trends (consumption and sustainable consumption, to which the preservation of the environment is related) as opposite and at the same time complementary, by postulating that the consumer culture is being reinvented through technologies communication and the environmental crisis. Thus, consumption for consumption is no longer justified; (by Rezende Pinto & Luna Batinga, 2016) state that being conscious and sustainable being concerned with well-being and quality of life, and the environment and natural resources, become essential aspects.

In this context, CSR has been maintained and strengthened on the international agenda in recent years, such as the 2030 Agenda, which deals with the SDGs – Sustainable Development Goals (UN, 2015). The adoption of SDGs by the United Nations contributes to spread the word “sustainable” throughout the world. It reflects the commitment of governments to work towards a society in which there is development for all.

As a strategy for systematizing the SDGs, the 5Ps were defined: people, planet, prosperity, partnerships, and peace. Through the 5Ps, the SDGs commit to eradicate poverty and ensure dignity and equality. The planet - protect natural resources and the Earth’s climate; prosperity – to ensure complete and prosperous lives in harmony with nature; to partnerships – implement the agenda through solid global partnerships and peace-promoting a peaceful, just, and inclusive society (AGENDA 2030, 2018).

Thus, according to this agenda, sustainable development must pass through the economic, social, and environmental dimensions (reinforcing the alignment with SDG). Sustainable development is comprised of a set of seventeen objectives that represent a frame of reference for policies in various fields of action that aim at the sustainability of the planet (Ali, Frynas, & Mahmood, 2017; Bastianoni, Conscieme, Caro, Marchettini, & Pulselli, 2018; UN, 2015).



In addition to the SDGs, through constant technological evolution and an accelerated migration from physical to virtual communities, organizations need to identify and adapt how their actions communicate to their target audience. In this sense, Cherif and Miled (2013) point out that online consumers seem to be more participatory, activist, and social than what happened before the emergence of social networks and their respective virtual communities. Kozinets (2014) points to a likely reason for this; according to him, these networks and new forms of interaction are treated as an extension of the real-life of individuals – there is no longer a real-life and a virtual one, the virtual is just an extension of real life.

In research conducted by Ho Lee (2017) and Araujo and Kollat (2018) on the use of microblogs, such as Twitter, indicate that the communication of sustainable actions in this social network shows that it is an excellent tool to build a communication space for organizations, leading to the engagement of different types of stakeholders.

Taking this virtuality as a premise, Bastianoni et al. (2018) defend the need for data to invest in information and knowledge of the SDGs, especially in the environmental area, as this helps in the development of technical tools, such as systemic indicators, as fundamental means for sustainability policies. Complementarily, (Subandi, Hermanto, Keumala, & Putri, 2019) sought to understand how social networks can help develop the fourth objective of the SDGs – Quality Education. Finally, Losa-Jonczyk (2020) argues that companies that significantly impact society and the environment should play a prominent role in promoting and implementing the SDGs, which suggests that their communication is vital for the success of its adoption.

Thus, emphasizing the role of organizations, Yang, Basile, & Letourneau (2018) point out that companies should use social media as an engagement tool and not simply a platform to post their SDG information and focus on creating a dialogue open and engage with multiple stakeholders. In this sense, it is worth highlighting the observation of Losa-Jonczyk (2020), in which he exposes three necessary elements of communication for the SDGs: process, dialogue, and search for change. Kent and Taylor (2016) also indicate social media as a channel through which it is possible to build relationships between organizations and the public, justifying the importance of research on the topic. Similarly, in other works (Kopnina, 2017, 2020), definitive studies seek to understand better how it should happen, and the benefits obtained from teaching the SDGs can be detected.

The SDG Compass (GRI, 2015; García-Sánchez, Rodríguez-Ariza, Aibar-Guzmán, B., Aibar-Guzmán, C., 2020) is a tool that explains how to integrate the SDGs into business strategies, transforming their sustainability reports in a strategic tool. However, no studies deepen and identify consistency in companies posted on social networks with the disclosure in their sustainability reports. According to the study by García-Sánchez et al. (2020), the SDG Compass works as a guide to help companies integrate sustainability into their organizational culture and activities. Also, reporting to foreign investors and pension funds on their performance concerning the SDGs since the proper disclosure of this information is essential to monitor the business contribution to the 2030 Agenda. In this sense, according to Sullivan, K., Thomas, S., & Rosano, M. (2018), such contribution becomes unquestionable, and the objectives must be part of companies' CSR strategy.

The study by Losa-Jonczyk (2020) about disseminating SDGs specifically in ICT (Information and Communication Technology) companies and places as future research requires investigating how to work on communication about SDGs in other industries not covered in his article. The author points out in his findings that companies prefer the SDG strategy in communication through unilateral communication tools, such as websites and non-financial reports, as already pointed out by Etter (2014). When communicating through social media (two-way communication tools that allow the exchange of opinions and experiences), the companies surveyed apply the Corporate Skill strategy, and most of the messages posted aim to promote products and services. Furthermore, Reilly and



Larya (2018), with what they call formal and informal sustainability channels, state that a good line of research would be to examine the role of hashtags in sustainable initiatives.

When communicating through social media (two-way communication tools that allow the exchange of opinions and experiences), the companies surveyed apply the Corporate Skill strategy, and most of the messages posted aim to promote products and services. Furthermore, Reilly and Larya (2018), with what they call formal and informal sustainability channels, state that a good line of research would be to examine the role of hashtags in sustainable initiatives. According to this context, exploring gaps and future research agendas, the question arises: are the actions taken by so-called sustainable companies about the SDGs consistent with the communication carried out by them on social networks? Thus, this article aims to identify and analyze convergences between the posts on social networks and the actions in the sustainability reports of a group of companies belonging to the interconnection between Interbrand and DJSI – Dow Jones Social Index rankings.

This work is divided into five sections: this introduction, theoretical foundation, methodology, analysis of results, and final considerations. In the theoretical foundation, we approach sustainable actions in virtual communities focusing on SDGs and Greenwashing. In the methodology, we describe how the study was conducted. In analyzing the results, we identified the convergence of information, where there was a loss of communication power and when the company focused on its communication. Finally, the final considerations and future research agendas were identified.

2 THEORETICAL FOUNDATION

In September 2015, the United Nations General Assembly accepted the 2030 Development Agenda, being one of its paragraphs, which defined 17 sustainable development goals (SDGs) and 169 goals associated with these goals.

The SDGs aim to achieve and improve people's lives, seeking prosperity, partnership, peace on Earth, and the planet's betterment in general. This agenda continues the Millennium Development Goals, which had broad participation from working groups and civil society.

According to various perspectives of human needs, the 17 SDGs can be classified into three large dimensions, according to Wu et al. (2018): sustainable social, economic, and environmental development. The authors categorized several related SDGs into smaller groups within each dimension according to different perspectives of humanity's needs, such as self-fulfillment, psychological, and basic needs. Recently, several pioneering actions and thoughts have emerged to improve the implementation of the SDGs. For example, Holden, Linnerud, & Banister (2017) proposed a model for the SDGs, which could reflect the satisfaction of human needs, increased social equity, and respect for environmental constraints.

2.1 The communication of sustainable actions in virtual communities

According to Kozinets et al. (2010), virtual communities or online communities represent significant social networks of consumers' knowledge and companionship, affecting their behavior. The main differences of virtual communities with social networks include a thematic orientation – comprehensive and general in a social network compared to a virtual community, limited and focused, evidencing a difference in degree and not in type. Another difference is the strong connection between community members concerning a social network – the latter more generic than the former.

Some authors, such as Hew (2011) and Dhir, A., Kaur, P., & Rajala, R. (2018), agree that networks SNS – Social Network Sites allow individuals to create profiles for sharing photos, personal



and group information. These networks are, in fact, the primary means of interaction in the digital world and sharing emotions. It is essential to mention that Cherif and Miled (2013) postulate that online consumers seem more active, participatory, resistant, activist, fun, social, and community than before. Other authors (Bagozzi, Bergami, Marzocchi, & Morandin, 2012; Brogi, 2014; Snehota, 2014) agree that consumers exchange information in online social networks, share opinions and ideas continually redefine what products and brands mean in their lives.

As for the communication that aims to disseminate the SDGs, leading to critical thinking by the various stakeholders, some recent works (Kopnina, 2017; Subandi et al., 2019; Meschede, 2019) deserve attention and effectiveness in the approaches.

Kopnina's (2017) study seeks to involve students in critical discussions, allowing for reflection on issues and paradoxes that characterize the broader discourse of sustainability. The study emphasized the students' ability to think critically, imaginatively, and innovatively about the SDGs. More specifically, recommending that the SDGs be taught critically. In the study by Subandi et al. (2019), the authors are emphatic in stating that the use of social media encourages young people to seek higher education and expose the importance of gathering feedback from the community to improve this adherence, contributing to the goal of teaching quality for all – Quality Education. Although the work by Meschede (2019) focused on developing websites of German cities on SDGs, it was identified that the most related topics to the theme are education, climate protection, fair trade, energy, and mobility. The study showed that cities have different strategies to inform about the objectives. The author pointed out, as future research, the need to study the corresponding social network accounts.

From another perspective, through content analysis, Miotto, Polo, & Rom's (2019) study analyzed sustainability reports of the 50 best business schools in the world, preparing a "Code Frequency Report" based on objectives 4 and 5. In this study, it was identified that the communication priorities of business schools related to projects and policies. Equality policies are a source of positive impact and legitimacy for leading business schools.

Despite studies focusing on communication of sustainable actions in one aspect or another, no evidence of studies verify the coherence between what is disseminated in the networks. Moreover, the actions that were carried out and listed in the companies' official reports.

2.2 Greenwashing

The knowledge of an already known term that emerged in the 1980s and is still current is Greenwashing. It became popular as misleading or exaggerated practices with sustainable actions that were or would be performed by companies to gain market share and manage the public perception of their brand (Dahl, 2010).

Authors such as Kahle and Gurel-Atay (2015) and Mayrand eTrottier (2011) pointed out that the term was also known as eco-bleaching, whitewashing, greenwashing, green makeup, or green image washing. It was translated into misleading advertising to promote an organization's products, objectives, or policies and thereby increase the benefits added to a particular company's product. Greenwashing, therefore, is a gap between the ideals of the company and society and the practical actions performed by organizations.

Other authors such Zhang, Li, Cao, & Huang (2018) and Musgrove, Pilsik, & Cox (2018) point out aspects of the influence of Greenwashing on purchase intentions for green products. Zhang et al. (2018) identified that consumer perceptions directly negatively impact green shopping intentions and have indirect adverse effects via word of mouth communication – WOM (word of mouth). The authors also suggest that companies promote substantial environmental initiatives instead of Green-



washing to gain consumer loyalty and increase sales (Zhang et al., 2018). The study by Musgrove et al. (2018) addresses consumer skepticism. It identifies negative perceptions of green marketing claims, with the results showing an interaction between the type of green marketing disclosure and corporate credibility in consumer skepticism. In this way, it will be verified, in this study, if companies propose actions or intend to carry out actions relevant to social and environmental issues or if this is just a form of Greenwashing to gain their gains through its disclosure.

3 METHODOLOGY

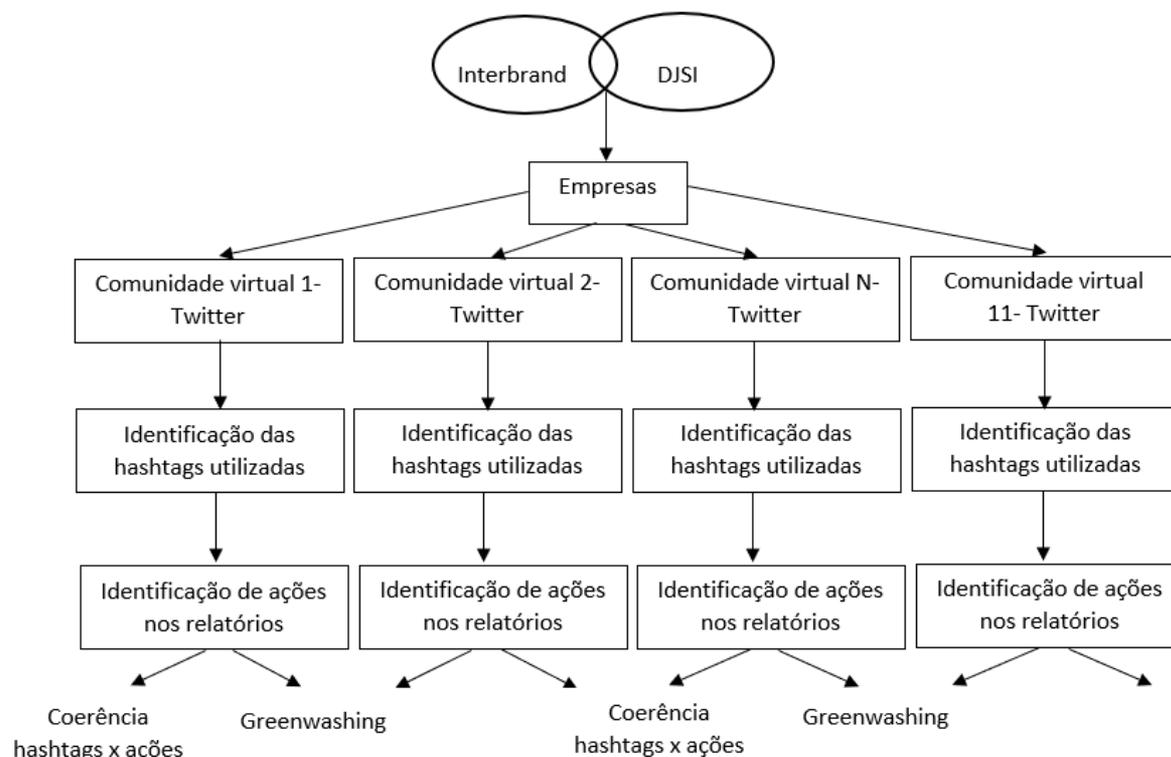
This research used elements of netnography as defined in Kozinets (1998, 2002, 2010, 2012, 2014), content analysis according to Bardin (2016), document analysis (Yin, 2001), and network analysis following Borgatti's studies, Everett & Freeman (2002).

Within netnography, initially, it will be described how the research corpus was built. It was time to get to know the places online in the planning and entry phases and get familiarized with the appropriate virtual communities. As well as list those that seemed more relevant (that appeared on the Twitter social network), with active, interactive, substantial posts, heterogeneous and data-rich, as Kozinets (2014) highlighted. The author considers this an essential element for netnographic studies, as it is a beacon due to the immense amount of data available on the network. In addition to this factor, another reason for adopting Twitter came from the research by Losa-Jonczyk (2020). It was shown that communication using this social network increases the identification of consumers with an organization.

In the data collection phase, Interbrand and DJSI rankings were used. The Interbrand ranking (2018) annually elects the most valuable companies globally, evaluating the different forms of influence of the brand on the organization's performance. Notably, economic profit, the role of the brand, and the strength of the brand, according to the impact that exercises on its stakeholders (consumers, employees, suppliers, and investors). The DJSI – Dow Jones Social Index, on the other hand, has strict auditing aspects regarding the adoption of management and governance practices focused on long-term value creation, jointly evaluating both economic, social, and environmental performance. The two rankings intersection (Figure 1), with the companies that are part of both, represents the companies with sustainability at the center of their business. Therefore, large organizations with vital aspects related to sustainability and corporate social responsibility, and high market value were evaluated (DJSI, 2018). Thus, it is interpreted that the sample is significant in terms of companies that communicate CSR actions with the public and, consequently, seek to disclose their actions related to the SDGs.



Figure 1 – Methodological Design



Source: Elaborated by the authors (2021).

The stratification of this first stage resulted in the following companies: 3M, Adidas, Adobe, Allianz, Axa, Burberry, Caterpillar, Cisco, CITI, Coca-Cola, Danone, HP, Hyundai, Microsoft, Nestlé, Samsung, Santander, and Siemens. Next, the specific communities that deal with sustainable themes were identified. Then, the hashtags used by them express their actions or intentions of actions concerning the SDGs.

Therefore, these hashtags work to give public visibility to tweets and make them potentially targeted to everyone interested in matters related to the hashtag's theme (Arvidsson & Caliandro, 2016). Thus, hashtags provide an understanding of the participants' discourse (companies or individuals) about the themes of interest of these communities, serving as a device to connect actions or intentions of actions of these organizations. Also, in the data collection phase, which sometimes we can understand as an analysis of the virtual content of netnography itself, information was collected about the hashtags that presented elements that corresponded to the SDGs. For three months, all the hashtags referring to topics related to the SDG on Twitter of the companies mentioned in the initial step were identified and manually stratified. These themes were collected and included in a separate file for further analysis.

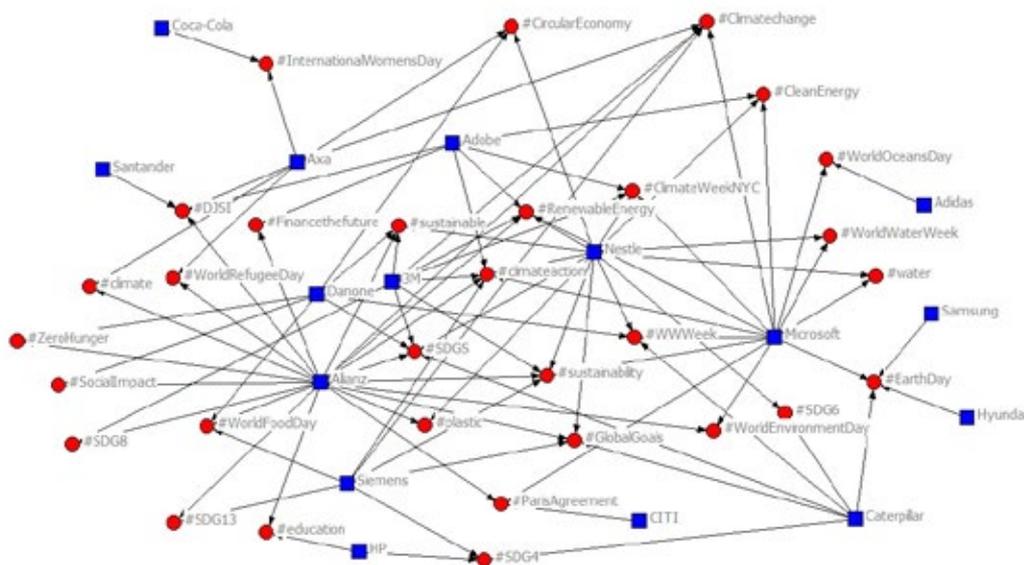
One of the analysis phases was done with the support of the UCINET network analysis software, based on the understanding that software of this nature allows for a more comprehensive view of the relationships – in the case of this article, between hashtags and companies. In a more concise and clarifying way, UCINET was used to understand graphically and with statistics referring to the network's density, the degree of centrality, and how these actors' interrelationships occur.

At the end of this stage, a documental analysis executes, verifying the websites sustainability reports of these companies, the content and discourse of them that referred to themes related to the 17 SDGs. This search was based on specific strings such as, SDG (whether or not followed by



As can be seen in Figure 3, the mentioned hashtags (in red) were: #CircularEconomy, #CleanEnergy, #climate, #climateaction, #Climatechange, #ClimateWeekNYC, #DJSI, #EarthDay, #education, #Financethefuture, #GlobalGoals, #InternationalWomensDay, #ParisAgreement, #plastic, #RenewableEnergy, #SDG13, #SDG4, #SDG6, #SDG8, #SDGS, #SocialImpact, #sustainability, #sustainable, #water, #WorldEnvironmentDay, #WorldFoodDay, #WorldOceansDay, #WorldRefugeeDay, #WorldWaterWeek, #WWWeek, #ZeroHunger. Considering these hashtags, it is worth noting that Allianz, Nestlé, Microsoft, 3M, Siemens and Danone are the ones that have the most posts in common, with 20, 14, 13, 8, 7 and 7 respectively.

Figure 3 - Network graph of the most used Hashtags in Twitter posts



Source: UCINET data elaborated by the authors (2021).

From identifying hashtags, it is noticeable that companies studied to prove their nature of social responsibility. This fact also meets one of the premises of choice made at the beginning of the work - that the companies are part of the Dow Jones Sustainability Index – DJSI. These hashtags reflect topics relevant to the topic that communities intend to communicate and discuss – topics aimed at improving the quality of life of their customers and the community in general.

To complement the graphic analysis shown in Figure 3, two indicators are relevant to complement the visual analysis shown in Figure 3: the density and centrality of the network. Density presents the network connectivity – whether high or low, is expressed as a percentage, measured between the number of existing relationships with possible relationships; the greater the density, the more intense the exchange of information in that network. In the case presented, we have 95 ties or connections and 47 nodes. The calculation is performed as follows: there are 47 nodes and 95 relationships out of 2162 possible, or: $47 \times (47 - 1) = 2162$, therefore: $95/2162 = 4.4\%$, which means a low level, i.e., that there is little collaboration between the nodes, that is, it is considered a poorly connected network, because, proportionally, there is a dispersion between companies and hashtags.

On the other hand, centrality or the degree of centrality shows the number of actors with which an actor is directly related (Figure 04). We can conclude that the central actors of the network in terms of received interactions Eigenvector or eigenvector are #climateaction, #sustainability,

and #RenewableEnergy, with indices of 0.349, 0.316, and 0.312, respectively. In other words, these hashtags are the most posted by the companies studied, indicating that themes with broad names – almost generic are more common to be adopted by the companies in the studied sample than more specific hashtags.

Figure 4 - Degree of centrality of the network

		Degree	2-Local	Close	Betweenness	Eigen
						vector
1	#CircularEconomy	0.188	0.054	0.585	0.028	0.122
2	#CleanEnergy	0.188	0.067	0.603	0.010	0.168
3	#climate	0.125	0.052	0.594	0.011	0.111
4	#climateaction	0.375	0.137	0.760	0.057	0.349
5	#Climatechange	0.313	0.109	0.760	0.087	0.263
6	#ClimateWeekNYC	0.250	0.083	0.623	0.015	0.220
7	#DJSI	0.250	0.067	0.633	0.068	0.147
8	#EarthDay	0.250	0.042	0.576	0.096	0.090
9	#education	0.125	0.044	0.576	0.029	0.096
10	#Financethefuture	0.125	0.052	0.585	0.004	0.124
11	#GlobalGoals	0.250	0.095	0.704	0.032	0.224
12	#InternationalWomensDay	0.125	0.014	0.458	0.045	0.019
13	#ParisAgreement	0.188	0.069	0.679	0.057	0.158
14	#plastic	0.125	0.069	0.633	0.006	0.164
15	#RenewableEnergy	0.313	0.123	0.731	0.038	0.312
16	#SDG13	0.125	0.054	0.576	0.003	0.129
17	#SDG4	0.188	0.030	0.514	0.020	0.064
18	#SDG6	0.125	0.040	0.535	0.004	0.096
19	#SDG8	0.125	0.056	0.576	0.002	0.144
20	#SDG5	0.313	0.111	0.717	0.043	0.270
21	#SocialImpact	0.125	0.054	0.585	0.004	0.122
22	#sustainability	0.313	0.125	0.745	0.040	0.316
23	#sustainable	0.250	0.099	0.655	0.017	0.247
24	#water	0.125	0.054	0.567	0.003	0.135
25	#WorldEnvironmentDay	0.125	0.067	0.667	0.012	0.155
26	#WorldFoodDay	0.188	0.069	0.603	0.010	0.159
27	#WorldOceansDay	0.125	0.028	0.521	0.045	0.065
28	#WorldRefugeeDay	0.125	0.052	0.594	0.011	0.111
29	#WorldWaterWeek	0.125	0.054	0.567	0.003	0.135
30	#WWWeek	0.250	0.081	0.633	0.029	0.189
31	#ZeroHunger	0.125	0.054	0.585	0.004	0.122

Source: UCINET data elaborated by the authors (2021).

Figures 3 and 4 indicate that although all companies are part of the DJSI index. They have environmental actions linked to the SDGs, only a few have a direct relationship with the sustainable development goals in their posts, as noted in #ClimateChange, #CleanEnergy, #climate, #climateaction, and also in hashtags directly connected to the SDG names themselves, such as #SDG4, #SDG6, #SDG8, for example. On the other hand, it is also evident that some companies do not use specific hashtags that refer to this, for not disclosing this information or for not taking any action on it.

With the virtual content analysis step, a distinction was made between what was consistent between posts and sustainability reports, what was in the sustainability report and not on Twitter, and finally, what was not in the sustainability report and so little on Twitter (Figure 5). For the sample studied, no alleged Greenwashing action was identified. No companies disclosed something on Twitter and did not have any corresponding action in their sustainability report.



Figure 5 – Classification of companies referring to the SDGs

CLASSIFICAÇÃO	EMPRESAS
Está no Twitter e no relatório de sustentabilidade (alinhamento entre as duas fontes – está ocorrendo divulgação de suas ações)	3M; Adobe; Allianz; Axa; Caterpillar; Cisco; Danone; Hyundai; Microsoft; Nestlé; Samsung; Santander; Siemens; Citi; Hewlett Packard Enterprise
Está no relatório de sustentabilidade e não no Twitter (empresa está perdendo oportunidade de evidenciar ações concretas)	Coca-Cola; 3M; Axa; Allianz; Honda
Não está no relatório de sustentabilidade e nem no Twitter (empresa está apenas nos índices base DJSI e Interbrand)	Adidas; Burberry.

Source: elaborated by the authors (2021).

4.1 Convergence of information – is on Twitter and in the sustainability report

Below are some examples of companies' actions regarding the disclosure on Twitter and the sustainability report, as reported in Table 1. Due to the number of actions on social networks, not all will be listed, and some show the achievement of the objectives of this research.

In consultation with its 2018 report, the 3M company highlights the actions related to consuming raw materials, consumed water, sustainable energy, and the training of people. The generic hashtags posted on Twitter are consistent with some actions proposed in its sustainability report. Such as its commitment to a 10% reduction by 2025 concerning wasted manufacturing of its products. Its global operations have already reduced by 11.7% this indicator, even exceeding the previously established target. The company reports an advance of 0.7% of the 10% established as a consumption reduction target about water consumption. "We have a strong record of leadership in setting goals that guide environmental management and pollution prevention, as well as promoting health and safety in communities around the world" (3M, 2018, p. 6). It indicated that the actions taken by the company are related to some SDGs disclosed in Agenda 2030. Among them, SDG 08, which refers to sustained, inclusive, and sustainable economic growth; SDG 07 related to the use of clean energy, SDG 06 referring to water consumption and management. Finally, SDG 03 and SDG 04 are related to health and education.

France-based insurance company AXA disclosed seven sustainable development goals in its report. To achieve these goals, it created investment funds that generated positive and measurable benefits in various impact themes in the priority areas of financial inclusion, education, and health. Of these 7 SDG (SDG 01; SDG 03; SDG 05; SDG 10; SDG 13; SDG 14; SDG 15) that the company published on its Twitter, it presented some actions, for example: in SDG 01 it has already benefited 2,151,970 low-income students in 16 emerging countries; in SDG 10, its investment funds in India have already benefited more than 4,000 small farmers through innovative technologies in the food, agriculture, and rural economy.

When analyzing the report of the company Allianz, the actions related to the consumption of raw materials, use of sustainable energy, and the training of people were verified. The hashtags that refer to sustainable themes posted on Twitter are consistent with some actions proposed in its sustainability report. Such as combating plastic and pollution in the world's oceans, replacing plastic with biodegradable products, reducing carbon emissions, replacing air conditioners for energy-efficient models, and asking employees for suggestions on ways to become greener in their daily lives. It indicated that these actions are related to some sustainable development goals presented in the 2030 Agenda. Among the SDGs stand out the SDG 12, which refers to the plastic replacement actions, the SDG 07 referring to the energy actions efficiency and carbon reduction, SDG 14 related to actions to combat pollution in the oceans, SDG 08, which relates to the inclusion of employees in



the company's actions.

In the analysis of the Caterpillar company's annual report, the actions related to water consumption, use of sustainable energy, and people training were verified. The hashtags posted on Twitter are consistent with the actions in its sustainability report, they are: Water consumption (SDG 06) reduced 38% since 2016; the emission of CO₂, SDG 13, decreased 44% since 2016; Use of renewable energy (SDG 07) in 2018 was 32.5% of the total used; Programs for training people (SDG 04) were created in 12 countries in Africa, Arabia, and the Caribbean. Furthermore, gender equality increased after surveys and programs were launched to increase networking between men and women (SDG 05). (CATERPILLAR, 2018).

According to Danone's annual report, the company committed to achieving the 7 SDG (2, 3, 6, 8, 12, 13, and 17) and presented some related actions: 78% of volumes sold at the end of 2018 are under the company's nutritional goals for 2020, that is, the company is investing in technologies to use more nutritious ingredients in its products, contributing to achieving food safety and improved nutrition (SDG 02) and ensuring a healthy life (SDG 03); 48% reduction in water consumption intensity in 2018 (SDG 06). In addition, it ensured the availability and sustainable management of water; promoted sustained, inclusive, and sustainable economic growth (SDG 08). In addition, it ensured sustainable production and consumption standards (SDG 12) by making about 87% of all packaging recyclable and reusing 12% of packaging. It took urgent measures to combat climate change and its impacts (SDG 13), reducing carbon emissions by 20.3% of its plants and using 34% renewable energy; All these actions were developed in partnerships (SDG 17). (DANONE, 2018).

In its social network, Microsoft uses the community called @Microsoft_Green to publicize its actions and goals related to corporate social responsibility and SDG. The company disclosed in its account hashtags referring to climate change (SDG 13), use of clean and sustainable energy (SDG 07), terrestrial life (SDG 15), life in the oceans (SDG 14), among others. In consultation with its report, SDG 13 launched bulk packages tailored to specific needs, using fewer materials and reducing carbon emissions due to distribution efficiency. As for SDG 14 created programs for monitoring, treatment, and conservation of the oceans; in SDG 15, it recycled over 3.8 million pieces of equipment in landfills (MICROSOFT, 2018).

The actions taken by Siemens seek to contribute to achieving all the SDGs. However, the company's impact shows more significant results in Good Health and Well-Being (SDG 03), Accessible and Clean Energy (SDG 7), Industry, Innovation and Infrastructure (SDG 09), Sustainable Cities and Communities (SDG 11), and Climate Action (SDG 13), as disclosed in its report and on the social network Twitter. They are SDG 03. With Healthy@Siemens, we have developed a company-wide program to identify health risks early and promote health resources. Even in the digital world, to maintain the health and performance of our long-term employees; SDG 07 – In the fiscal year 2019, a significant portion of establishments in Germany, United States, United Kingdom, Austria, Spain, Portugal, Czech Republic, Netherlands, and Denmark were already supplied with "green" electricity. Overall coverage of "green" electricity was 58% in FY 2019. From this result, CO₂ emissions can reduce by more than 550,000 tonnes by purchasing electricity from renewable sources (SDG 13). SDG 17 Siemens' global enterprise unit, called Next47, provides capital to help developing companies. (SIEMENS, 2018).

The high incidence of convergence between posts and actions evidenced in the sustainability reports of the companies demonstrates that they meet the new trends in the use of social networks for such purposes, as evidenced by He and Balmer (2007), Araujo and Kollat (2018) and Losa-Jonczyk (2020). These authors claim that communication using Twitter increases the level of identification of stakeholders with organizations. When contacting an organization through social media, stakeholders can usually build a solid and lasting relationship. Furthermore, this is even more



evident and important, as pointed out by Kopnina (2017), as this communication involves the target audience in issues and paradoxes that characterize the broader discourse of sustainability since, at the same time they are present in social networks, are also in an official company report.

Although the use of social networks to communicate the SDGs was substantially perceived in this study, previous research, such as that by (Losa-Jonczyk, 2020) shows that sustainable development was addressed in small numbers in the posts examined in their research. The same authors also reinforce that research has proven that organizations rarely use this tool to communicate CSR actions, which also differs from current research.

4.2 Lost of communication power – is in the sustainability report and not on Twitter

On its official Twitter account, the Coca-Cola company did not publish hashtags referring to the SDG. However, in its annual sustainability report, actions related to the SDG are highlighted. With SDG 01 and SDG 02, the company has helped more than 1,400 farmers in India with sustainable agriculture programs. SDG 05 benefited 200,000 women by training them in programs such as success is me; in SDG 10, it invested 1.5% of the company's operating revenue in local communities; in SDG 13 reduced CO2 emissions by 60%. In addition to these, there was also disclosure of actions concerning SDG 17 - Partnerships and means of implementation, actions formed and carried out in conjunction with the most diverse partnerships established by the company (COCA-COLA, 2018).

3M, despite disclosing several actions on Twitter by its sustainability report, this was not reflected in actions such as those referring to health and safety. The company has been conducting more than 98,000 training sessions on its platform—virtual learning, as evidenced in the report. In addition, US\$ 66.3 million have been invested in education and development. Corresponding to 50% of the goal established for the development of its employees. (3M, 2019).

Despite not having published on the social network, a similar case is that of AXA. The company presented actions such as using renewable energy-related to SDG 07, in which more than 1,200,000 units of clean energy products were distributed. SDG 02 and SDG 10 saved more than 8,210 tons of food waste, promoting the circular economy. In its 2019 sustainability report, the company did not present shares on SDG 05, SDG 14, SDG 13. However, it announced the Investment Fund III in which it aims to invest 200 million euros in actions for climate development - SDG 13 and SDG 14 – Gender Equality – SDG 05 (AXA, 2018).

Allianz presents in its report that in 2018 it achieved a reduction of 356 tons per year in carbon emissions, through optimization of construction technology, with air and heating technology (SDG 07). However, there was no disclosure on Twitter (ALLIANZ, 2018). Microsoft evidences in its sustainability report some actions and even some awards it won for actions related to the SDGs, but which did not present a coherent disclosure in the studied social network, they are: SDG 03 ensuring a healthy life and promoting well-being for everyone where it received awards such as 2018 and 2019 the most ethical company in the world; SDG 06 where it implemented water quality tests in its factories and also applied questionnaires to its suppliers and 77% of them participated; SDG 07 sponsored solar energy panels for its suppliers and what generated the most, generated an amount of 401,238 kWh of energy; SDG 08 Delivered training programs to 21 suppliers in Taiwan to improve factory work management; SDG 12 claims to have recycled 92% of the paper and fibers used in the manufacturing process of its equipment.

Honda's annual report illustrates its commitment to contributing to the achievement of some SDGs. Especially SDG 13 "Take urgent measures to combat climate change and its impacts"; SDG 7 "Ensure access to affordable, reliable, sustainable and modern energy for all"; and SDG 3 "Ensure a healthy life and promote the well-being of everyone at all ages."



To reach SDG 13, Honda is taking advantage of all new business opportunities and advancing the development of pluggable hybrid electric vehicles (PHEV), electric vehicles (EV), and fuel cell vehicles (FCV). The company is also partnering with other companies to prepare a hydrogen infrastructure involving companies such as hydrogen stations. Thus, it is possible to say that it is also achieving SDG 17 due to entering into partnerships with other companies and participating in related projects. Concerning the other two SDG signed, which are SDG 07 and SDG 03, there are some targets, but it was not possible to find related actions. (HONDA, 2018).

Based on results from this group, it can be concluded, as demonstrated by (Losa-Jonczyk, 2020) that, although companies engage in activities for the implementation of the SDGs and report these actions, some companies prefer to adopt communication strategies through unilateral tools such as websites and non-financial reports. This lack of dialogue on social networks characterize a loss of communication power on these companies and, consequently, a loss of opportunity to talk to a more significant number of stakeholders. Bachmann and Ingenhoff (2016) had already found in their findings that the communication of sustainable actions has a positive effect on the legitimacy of companies, a fact that may not occur with this omission of companies.

4.3 Company without focus on its communication – is not in the sustainability report or on Twitter

Companies like Adidas and Burberry are in both rankings (DJSI and Interbrand), but there was no disclosure of actions referring to the SDGs. In particular, Adidas claims that it uses recycled material in its production but has not released more detailed information.

In short, these companies stand out for the lack of use of communication power, as they do not disclose their sustainable actions in their sustainability reports. Nor the social media study, leading to the belief that there is no data to prove this and implying that they lose contact and engagement with an extensive range of stakeholders. Generally speaking, they do not develop any of the communication phases reported by (Etter 2014): broadcasting strategy – communication in which the company only informs, without answering questions; reacting strategy, a conversation in which the company reacts in the virtual environment to comments and questions that arise, leaving the user unanswered; and engaging strategy, in which questions and citations from users who interact with the company are encouraged.

5 FINAL CONSIDERATIONS

This study sought to identify whether companies with substantial sustainability and corporate social responsibility aspects have a high market value. Post their SDG-related initiatives on their social networks (in the case of this study on Twitter), and prove them through their corporate reports. The study results showed that companies had communicated their actions related to the SDGs through the social network Twitter, although some still do not adequately explore this tool. It is also important to emphasize that the results are unilateral, as they reflect the company's view of the SDGs, as they make the reports and execute the posts, despite some stakeholders who are more attentive to these actions.

In the study by Olofsson and Mark-Herbert (2020), there is a correlation between SDGs integration, communication maturity. The contribution of these SDGs reinforces the need for organizations to maintain consistent communication with their target audience. The statement by Cherif and Miled (2013) argues that online consumers seem more active, participatory, resistant, activist, fun, and social than before, which presupposes greater engagement when they receive information about the SDGs or related to the defense of the environment and the improvement of society.



These facts corroborate the need for companies to be present on social networks, in addition to just official reports on their websites. As already postulated by ElAlfy, Darwish, & Weber (2020), the results also proved that if tweets about SDGs were exclusively motivated by legitimacy theory, companies would tweet about the most popular SDGs. Such evidence was absent. An absolute truth, as the posts, do not occur exclusively in hashtags that refer directly to the SDGs, such as #sdg3, #sdg4, #sdg5, but differently. In other words, the theory of legitimacy is present, but companies do not only communicate with the motivation arising from obtaining legitimacy. The hashtags most adopted by the companies were #ClimateChange, #CleanEnergy, #climate, #climateaction, which are directly related to the SDGs. In addition, hashtags derived from #SDG with the respective objective number are also used, for example, #SDG 12 or #SDG 13. Some companies, such as Coca-Cola, carry out actions related to the SDG. However, they do not disclose this information on their social networks, such as Twitter. As a result, the company is losing the opportunity to publicize its actions to the virtual community and gain visibility within the scope of sustainable development goals (SDGs).

Among the companies studied, Allianz, Nestlé, Microsoft, 3M, Siemens, and Danone have stood out for presenting more posts among themselves. On the other hand, only Adidas and Burberry did not disclose actions related to SDGs on Twitter, and no reports were located on them. It is noteworthy that none of the companies studied disclosed actions that they did not carry out, a term known as Greenwashing. This factor would increase skepticism concerning the companies' attitudes. Figure 5 shows the participating companies in the studied categories: those that have hashtags posted on Twitter and that present actions in their sustainability reports; those that do not have Twitter hashtags but have some actions that can be related to the SDGs; and finally, those that do not have shares and do not have hashtags on their Twitter referring to the SDGs. Therefore, the first item is the one with the most companies, indicating commitment on the part of these companies, with the other items showing only two companies in each, respectively.

The results of this study contribute to the advancement of scientific knowledge in the area of sustainability, as well as the use of social networks for the communication of SDGs by companies, proving the existence of communication of sustainable themes informal channels (corporate reports), informal (networks social) and both together. It is suggested, therefore, that organizations use both channels to communicate with their target audience better. Communication should not focus only on users of traditional reports, which are viewed only by a small portion of stakeholders, and not only users of virtual communities. Nevertheless, they are present in both channels so that the opportunity to communicate with a more significant number of users is not lost, enabling greater engagement with their target audience. Furthermore, this two-way communication strengthens and legitimizes their actions with the studied topic.

As a limitation of the research, it was not easy to locate some communities where companies publish their hashtags referring to the SDGs. In addition, some companies do not present the actions related to the SDGs in their sustainability reports, and it is necessary to identify the action and relate it to the SDG in question.

Future studies can continue applying this research to analyze the evolution of the communication relationships of companies in the virtual community regarding SDG actions. It is recommended to apply the survey on other social networks to deepen studies in this area, such as Facebook, Instagram, Youtube, or LinkedIn. However, it previously identified that Twitter has greater interactivity and critical mass communication about other social networks. Changing the rankings used in this research (Interbrand and DJSI) by others that measure only the degree of sustainability, such as the Newsweek Green's Ranking or even the Sustainable Brand Index, would be an exciting way of comparing this study.



Another research possibility would be to replicate the same study in companies in the same field of activity. Identifying which companies are in the right direction for their communication of the SDGs and, consequently, those that can engage their customers to a greater or lesser degree according to the type of communication they carry out (formal and informal channels). It would be interesting to analyze a specific segment to identify posts from customers of these companies, through a netnography, evaluating the possible different actions of both groups concerning their skepticism to brands or even with the consumption of its goods and services.

Finally, we hope to have made a significant methodological contribution to this research, using network analysis and content and document analysis to communicate sustainable actions.

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1. Definition of research problem	√	√	√	
2. Development of hypotheses or research questions (empirical studies)	√	√		
3. Development of theoretical propositions (theoretical work)				
4. Theoretical foundation / Literature review	√	√		
5. Definition of methodological procedures	√		√	
6. Data collection	√		√	
7. Statistical analysis				
8. Analysis and interpretation of data	√		√	
9. Critical revision of the manuscript	√	√		
10. Manuscript writing	√	√		
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