Corporate image or social engagement: *Twitter* discourse on corporate social responsibility (CSR) in public relations strategies in the energy sector

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Abstract

Social media have opened up new opportunities for the creation of innovative public relations strategies focused on establishing and cultivating relationships with stakeholders on the basis of meaningful dialogue. Consideration of the interrelation between corporate social responsibility (CSR) and public relations highlights new areas for exploration and engagement. Both the dialogical and semantic perspectives reveal the performative and conversational aspects of social media. In general, both the linguistic panorama of CSR and digital media as part of a PR strategy open new possibilities for a dialogical, interactive, meaningful relationship strategy for corporate image management. Based on the linguistic approach to CSR and the Communication Management Approach, this paper explores the linguistic use of Twitter as a primary dialogical strategy to effectively enhance interactive dialogue-based relationships with the stakeholders of the top 50 companies in the energy sector based on tweet data from 2016. Semantic analysis was conducted by advanced text mining and clustering techniques on 3042 tweets monitored in 2017 that contained the leading CSR-related hashtags and keywords. The results demonstrated that the top energy companies apply a defensive and symbolic perspective, mainly for branding purposes. The corporate discourse dominates over a meaningful conversational strategy to foster interaction with stakeholders around sustainability issues on Twitter. The study reveals a homogenized interrelation between CSR, social media, and public relations. The results reveal a tendency for isomorphy in the communication models applied by the companies in the energy sector. Furthermore, similarities in semantics and thus strong tendencies to mutually mimic dialogical strategies are also observed. The semantic narrative built around the brand indicates a limited orientation towards CSR and sustainability. As such, it does not contribute to the creation of a dialogical interaction and meaningful relationships with multiple stakeholders on *Twitter*, in the high-risk sector represented by the energy industry.

Keywords

CSR; Public relations; Sustainability; Social media; *Twitter*; Text mining; Online monitoring; Cluster methods; R software; Social networks; Semantic analysis; Dialogue.

1. Introduction

The alignment between communication of the image and message of corporations is becoming increasingly important. Recently, more studies have been reported on the interactive use of social media (SM) for CSR communication. However, they are not numerous, especially those applying a semantic approach and analyzing high-risk sectors. Starting from general overviews (Wang; Huang, 2018; Hao; Farooq; Sun, 2018), others focused on the Facebook performance of large corporations (Zeler; Capriotti, 2019), while research on *Twitter* based on the content approach (Uzunoğlu; Türkel; Yaman-Akyar, 2017; Grover; Kar; Ilavarasan, 2019) has also been published. Finally, a few studies approach this subject from a dialogical point of view by implementing qualitative methods (Monfort; Villagra; López-Vázquez, 2019).

The interrelation among CSR, social media, and public relations highlights new areas for exploration and engagement, in particular from the underexplored semantic perspective. In general, both the linguistic perspective of CSR and digital media as part of the Public Relations (PR) strategy result in new possibilities for a dialogical, interactive, meaningful relationship to manage the corporate image of companies. Dialogue on the public good, the necessity to adapt to change, and collective action, as indicated by Adger (2003), together with proper communication thereof by companies, seems to constitute the main challenge facing 21st century PR strategies in this globalized world. Nowadays, rhetorical commitments that create narrative dynamics in organizational communication are central to communication and public relations (Saxton et al., 2019). Both the content and the stakeholders are vital factors in PR strategies on social media when managing interactive and dialogical communication (Valentini; Kruckeberg, 2012; Yang; Lim, 2009; Waters; Tindall; Morton, 2010; Heinze; Hu, 2006; Capriotti; Pardo-Kuklinski, 2012) in the natural habitats of online publics (DiStaso; Mc-Corkindale; Wright, 2011). Recently, social media have been considered to be not only a useful tool for corporate visibility or publicity purposes (Yang; Kent, 2014; Gruber; Kaliauer; Schlegelmilch, 2017), but also as dialogical and interactive tools (Kent; Taylor; White, 2003; Hickerson; Thompson, 2009; McAllister-Spooner, 2008; Kent, 2013; Van-Ruler; Verčič, 2005; Saxton et al., 2019) for effective application of digital PR or PR 2.0 (Kent, 2008; 2013; 2014; Valentini; Kruckerberg, 2012; Yaxley, 2011; Grover; Kar; Ilavarasan, 2019). The development of PR adapted to the 2.0 philosophy is a growing trend among professionals (Wright; Hinson, 2009), thereby changing the whole PR industry (Allagui; Breslow, 2016).

PR has increasing importance in the age of interactivity (Moreno; Capriotti, 2009; Ciszek, 2016; Ponti-Aragón; Domingo, 2014) and may contribute to enhancing the relationships between an organization and stakeholders (Valentini, 2015; Yang; Lim, 2009; Verčič; Verčič; Sriramesh, 2015). Moreover, considering the inspiring statements on CSR in hypermodern times by Verčič, Verčič, and Sriramesh (2015), specifically affected by the social media era (Abitbol; Lee, 2017; Guillory; Sundar, 2014; Kent; Taylor, 2016; Dunn; Harness, 2019), the importance of content and linguistic studies in CSR communication from the public relations perspective becomes apparent. This should form the foundation of a strategy focused on reasoning with public expectations regarding the communication of CSR efforts (Heath; Ni, 2008). In addition, companies may have similar interpretations of CSR, resulting in similarities in how they value its potential outcomes (Pedersen et al., 2013; Ozdora-Aksak; Atakan-Duman, 2016; Rhouma; Koleva; Schaltegger, 2018). The media and public react differently to various environmental and technological controversies (Dunn; Harness, 2019; Chen et al., 2019). Therefore, it is of utmost importance to assess how this new digital cultural context impacts companies in high-risk sectors. Given that information and communication technology, and social media in particular, have affected the way that companies communicate CSR issues to their stakeholders (Verčič; Verčič; Sriramesh, 2015; Kent; Taylor, 2016), this study examines whether the PR strategies applied by companies in the energy sector demonstrate a dialogic principle in terms of engagement and interaction (Watkins, 2017; Xiong; Cho; Boatwright, 2019) from the semantic perspective using a cluster analysis applied to PR (Javed; Lee, 2018) and content-based research on Twitter (Xifra; Grau, 2010), by means of a meaningful sustainability-focused discourse (Lovejoy; Water; Saxton, 2012). Twitter is one of the universal social media platforms that enables the effective creation of a dialogic dialogue with stakeholders (Saffer; Sommerfeldt; Taylor, 2013; Etter, 2013; Watkins; Lewis, 2014; Grover; Kar; Ilavarasan, 2019; Monfort; Villagra; López-Vázquez, 2019). The aim of the current study is to examine the interrelation among social media, CSR communication, and PR strategies within the most prominent companies in the energy sector. The research attempts to answer the following question: Is the potential of new digital modes of communication reflected in proactive or somewhat defensive (reactive) PR strategies on Twitter?

Thus, the primary objective of this paper is to identify how companies in the energy sector manage their PR strategies when constructing social media discourses on social and environmental issues. Considering the recent trends in CSR and social media communication, this study aims to determine how energy corporations position themselves using their public relations strategies via online social networks from the linguistic point of view.

2. Literature review

Corporate social responsibility (CSR) and sustainability constitute fields of constant exploration and evolution (Carroll, 1979; 1999; Elkington, 1997; Valor-Martínez; De-la-Cuesta-González, 2003; Marín-Calahorro, 2008; Matten; Moon, 2008; Azuero, 2009; Gilbert; Rasche; Waddock, 2011; Scherer; Palazzo, 2011; Christensen; Morsing; Thyssen, 2011; 2017) and have been the subject of an ongoing critique (e.g., Banerjee, 2008; Woolfson; Beck, 2005). Matten and Moon (2008) point out the "contextual construct" role of business and CSR practices in the debate on sustainability. The managerial approach framed around the triple bottom line (Elkington, 1997) is the key activity within the CSR strategy,

understood on the basis of ethical business principles (**García-Marzá**, 2004). Therefore, the communication of a company's actions in this area plays a crucial role (**Ziek**, 2009; **Oliveira**; **Capriotti**, 2015; **Crane**; **Glozer**, 2016). Besides, in a short time, CSR has become a significant public relations strategy that can help to create interest in an organization (**Fog** *et al.*, 2010), hence its increasing importance in the age of interactivity (**Moreno**; **Capriotti**, 2009).

Firstly, considering the background described above, CSR and PR should be embedded in an understanding of the social meaning of CSR, as suggested by Golob et al. (2018), where the corporate world seeks legitimacy via CSR activity and communication (Colleoni, 2013). An active and strategic implementation of PR can help to legitimize a company's CSR efforts (Heath; Coombs, 2002), beyond concerns related to its corporate image (Clark, 2000). Consequently, public relations theorists and practitioners have advocated a business commitment to social issues, which could benefit the company and public alike (Rawlins, 2006; Grover; Kar; Ilavarasan, 2019). The linguistic perspective on PR is required to understand the complex social and environmental issues occurring between the company and its stakeholders in CSR communication, in particular on fast-paced digital media platforms that are dominated by symbolism (Cheney; Christensen, 2006; Van-den-Heijkant; Vliegenthart, 2018). A narrative approach considers the possibility that the use of language does not merely reflect or transmit the material aspects of CSR standards but that it is also constitutes a social reality (Christensen; Morsing; Thyssen, 2011; Cooren et al., 2011; Gill, 2015; Van-den-Heijkant; Vliegenthart, 2018). Moreover, there is a prevailing viewpoint that CSR is a performative and aspirational issue (Livesey, 2002; Livesey; Graham, 2007; Christensen; Morsing; Thyssen, 2013; Schoeneborn; Trittin, 2013; Park et al., 2019) that serves as a stimulator for further exploration and development in the sustainability arena. However, CSR can also become insulated, self-serving, and self-affirming (Basu; Palazzo, 2008). Therefore, based on its linguistics, public relations can contribute significantly to the creation of an inclusive and simultaneously performative as well as meaningful dialogue around social and environmental issues. As a result, it may shape the interpretation of the ideology and evaluation of CSR performance in each industry and society.

Moreover, as emphasized by **Heath** and **Ni** (2008), the interdependence between PR and CSR is extremely important. It should be based on a proactive instead of reactive role for public relations stemming from consideration of the bases of both functions: the recipient and the communications. Therefore, understanding the interdependence between PR and CSR will allow practitioners to add value to internal discussions and planning of the social and environmental engagement of the company via interactive and modern communication channels. In this way, the communication of CSR via social media can promote dialogue as the main strategy for communication with stakeholders (**Monfort**; **Villagra**; **López-Vázquez**, 2019). CSR has thus become an essential public relations strategy that helps to create interest in an organization (**Fog** *et al.*, 2010), based on stakeholder reciprocity (e.g., engagement and response) as well as the common good (**Freeman**, 1984), as factors necessary to achieve CSR goals (**Lim**; **Greenwood**, 2017).

Digital, and social media communication in particular, is now impacting PR strategies (Hooper-Greenhill, 2000; Gürel; Kavak, 2010; Capriotti, 2013). Digital communication offers new possibilities for dialogical and meaningful connection with stakeholders in this area (Capriotti, 2010; Allen-Greil; MacArthur, 2010; Capriotti; Pardo-Kuklinski, 2012; Padi-Ila-Meléndez; Del-Águila-Obra, 2013; Zeler; Capriotti, 2019; Monfort; Villagra; López-Vázquez, 2019), also when appl-ying public relations to communicate CSR via social media (Zeler, Capriotti, 2019; Uzunoğlu; Türkel; Yaman-Akyar, 2017; Abitbol; Lee, 2017). Capriotti (2007) was among the pioneers to examine the interplay between the communication of risk and environmental issues and the use of online media in PR strategies, followed by suggestions from other authors regarding an interactive approach to modern PR in 2.0 environments (Ciszek, 2016). Furthermore, the modern era of public relations is characterized by participation and transparency (Solis; Breakenridge, 2009). Besides, there is likely to be a trade-off between the perceptions of controllability and the credibility of communication channels; i.e., the less a channel is perceived as company controlled, the more credible the CSR message will seem from the stakeholders' perspective, and vice versa (Bhattacharya; Sen, 2003; Yoon; Gürhan-Canli; Schwarz, 2006).

The present study addresses the need for replication of such work at an international level to form a bridge between theoretical and practical issues regarding dialogical models (**Russmann**; **Lane**, 2019). Furthermore, it applies more diversified methods, topics, and technologies while attempting to contribute to the advancement of the dialogical model of PR strategies (**Ao**; **Huang**, 2019) from the semantics and social media perspectives. This research stems from the original dialogical perspective contributed by **Kent** and **Taylor** (2016) and its principles for interactivity and engagement with the public (**Watkins**; **Lewis**, 2014; **Watkins**, 2017). It is applied herein to CSR communication via social media based on the use of the meaningful relevant discourse (keywords and hashtags) and focused on the interactivity and dialogical dimensions. As such, it responds to **Lane**'s (2018) call to identify the barriers to the use of dialogical principles in PR strategies.

With regard to sustainability issues in controversial and high-risk sectors, this represents a relatively new topic that has often been overlooked in the academic and scientific literature (Kent; Taylor, 2016; Lim; Greenwood, 2017; Abitbol; Lee, 2017; Uzunoğlu; Türkel; Yaman-Akyar, 2017). The present study addresses this gap by departing from the traditional research focus on media news coverage of CSR information from companies (Lunenberg; Gosselt; De-Jong, 2016). Rather, it focuses on new research trends regarding messages transmitted to stakeholders via social media (Abitbol; Lee, 2017; Uzunoğlu; Türkel; Yaman-Akyar, 2017), from an interactive and discourse perspective (Nakayama, 2017) of CSR communication via social media, and particularly on *Twitter* (Uzunoğlu; Türkel; Yaman-Akyar, 2017).

Considering the considerations above, this research focuses on two central questions:

RQ1: How do the most prominent companies in the energy sector position themselves in the *Twitter* discourse through the use of communication related to CSR?

RQ2: To what degree does this discourse applied in their PR strategies represent social and environmental engagement of companies in the energy sector via their CSR communications on *Twitter*?

The hypothesis of the study (H1) states the following: on *Twitter*, the energy sector applies an interactive and dialogical PR communication strategy to corporate social responsibility with its stakeholders, rather than developing a defensive, symbolic, and instrumental PR strategy regarding environmental and social issues.

3. Methodology

This study approaches the discourse from the semantic and semiotic perspectives, as part of the public (transparent) conversation with stakeholders, in which the role of public relations is to construct the dialogue based on contextual meanings (Capizzo, 2018). The present study applies the concept of discourse analysis (Linvill; McGee; Hicks, 2012; Waters; Jamal, 2011; Xifra; Grau, 2010), which uses the tools of advanced semantic data analysis and classification (text mining and text data clustering). In the case of Twitter as a modern digital medium, this produces various semiotic resources. The two modes that are characteristic of this social network, and of digital communication in general in terms of discourse construction, are the hashtag and the keyword. Given the diverse nature of modern digital media, this results in different semiotic resources. Given this complexity, multimodal semiotic analysis has broad potential for application in theoretical and methodological studies and may be susceptible to mathematical modeling and analysis methods, as applied herein. The present analysis thus includes the specific elements of tweets, i.e., hashtag and keywords (Uzunoğlu; Türkel; Yaman-Akyar, 2017; Scott, 2018), which are examined by means of text mining techniques and statistical linguistic analysis (Baayen, 2008; Gries, 2013; Nakayama, 2017; Baier; Frost, 2018) with the addition of semantic clustering of hashtags (Javed; Lee, 2018). Considering the energy sector, Twitter allows the extensive use of facts and symbols that are communicated using carefully chosen keywords and hashtags, thereby creating trending conversations that are focused on CSR issues (Etter; Fieseler, 2010; Etter, 2013; Uzunoğlu; Türkel; Yaman-Akyar, 2017). This methodological approach is based on a multimodal analysis of communication in all its forms, but is mainly concerned with texts that contain the interaction and integration of two or more semiotic resources -or "modes" of communication- to achieve the communicative functions of the text (O'Halloran, 2011; O'Halloran et al., 2010; Unsworth, 2008).

This study includes the 50 most prominent companies in the energy sector (based on Platts Top 250 ranking for 2016-2017) and their Twitter accounts. First, in November and December 2016, we carried out an explorative qualitative study to pre-identify 16 hashtags and keywords related to the issues of environmental and social change as primary areas of CSR activity in the energy sector in Polish, Spanish, French, and English (the languages of communications of all the selected companies). These related to general social and environmental aspects (sustainable/sustainability, environment/ environmental, social, and communities), the most critical challenges facing the sector (climate change, emissions, low carbon, energy, and recycling), the future orientation of the development of the industry (clean energy, innovation, and future energy), and the most significant controversies in the industry with both social and environmental impact (gas flaring and spills). In the energy sector, one can observe that environmental issues are emphasized more than social problems. Moreover, social issues in this industry are usually caused by environmental ones. Therefore, this choice of keywords is justified by the institutional pressures observed in the energy sector, which give priority to environmental issues, and by the fact that the industry itself shares similar interpretations of CSR, as well as the valuation of its potential outcomes (Pedersen et al., 2013; Ozdora-Aksak; Atakan-Duman, 2016). Subsequently, these preestablished words, in the form of keywords and hashtags, were applied to monitor online the tweets of the selected companies in the energy sector (50 Twitter accounts in total) in 2017. The online monitoring was carried out using Brand24 and included the tweets from all of 2016 (the last year to which Twitter grants access). As a result, 3,043 tweets containing at least

one of the monitored keywords and/or hashtags were identified and collected (classified here and denoted as "sustainability-oriented tweets") and subsequently organized into one database (including date of publication, tweet content, link, company, keyword, and hashtag). Content and performance analyses of the total number of tweets from 2016 in all languages were conducted in 2017 to analyze the frequency of the hashtags and keywords in each language, the dimensions of the sustainability-focused narrative, the context, the topics, the use of hypertextual and multimedia resources, as well as the interactivity and influence of the tweets (using Twitonomy). In 2018, the database in English (the largest one, with 2081 tweets) was subjected to text mining processes from statistical linguistic

Text transformation ### toSpace <- content_transformer(function (x , pattern) gsub(pattern, "", x)) docs <- tm_map(docs, toSpace, "@" docs <- tm_map(docs, toSpace, docs <- tm map(docs, toSpace, "¥¥|") ### ### Cleaning the text ### # Convert the text to lower case docs <- tm_map(docs, content_transformer(tolower))</pre> # Remove numbers docs <- tm map(docs, removeNumbers) # Remove common stopwords docs <- tm_map(docs, removeWords, stopwords("english")) #docs <- tm_map(docs, removeWords, stopwords("spanish"))</pre>

Figure 1. Text transformation commands in *R* text mining. Source: *R* analysis, 2018.

analysis using R software: semantic cloud construction and word clustering techniques (Figure 1). The URL from the tweets corpus (https:) and links to tweets were removed to avoid their effect on the top word count statistics as well as the word clustering objective and balance. Similarly, whitespace, numbers, and stop words were also eliminated by the program to retain fresh linguistic content.

Subsequently, the procedure transformed the expressions to lower-case letters and was set up to save the originals. Emoticons and different signs were not taken into account. Two methods were applied regarding punctuation: One analysis was run without removing punctuation to keep the hashtag. Subsequently, punctuation removal was implemented to read the general keyword cloud. The word matrix was built with a frequency threshold of 15 occurrences, below which the keywords and/or hashtags were removed from the word cloud library and list of top expressions. The text mining method explores standard terms and their associations. As the final result, the word cloud and clusters were produced (Figure 2).

Additionally, correspondence analysis (CA) was carried out on the semantic data using the *corresp* function in the *MASS* package of *R* software to determine the dimensions of the *Twitter* discourse and thus establish the degree of similarity and symbolism within the sector. The document-term matrix was calculated by text mining against the 2081 English tweet data. Then, by

### findFreqTerms(dtm,	lowfreg = 15)				
[1] "-releases"	"#bp"	"#bpstats"	"#climatechange"	"#descalzi"	"#enel"
[7] "#energy"	"#eniday"	"#eo"	"#alobe"	"#innovation"	"#makethefuture
[13] "#natgas"	"#ongc"	"#renewable"	"#renewables"	"#solar"	"#sustainability
[19] "#sustainable"	"#theenimodel"	"#wind"	"'re"	"access"	"also"
[25] "around"	"award"	"believe"	"best"	"better"	"big"
[31] "billion"	"build"	"business"	"can"	"carbon"	"cashless"
[37] "ceo" [43] "come"	"change"	"check"	"chief"	"clean"	"climate"
[43] "come" [49] "create"	"committed" "day"	"communities" "demand"	"companies" "develop"	"company"	"convenience" "discover"
[49] create [55] "economic"	"efficiency"	"emissions"	"enel"	"development" "energising"	discover
[61] "energy."	"engie"	"environment"	"environment."	"every"	"energy" "find"
[67] "first"	"follow"	"francesco"	"fuel"	"future"	"future."
[73] "gas"	"get"	"global"	"great"	"green"	"growing"
[79] "growth"	"head"	"help"	"helping"	"hess"	"ideas"
[85] "impact"	"important"	"indianoil"	"industry"	"innovation"	"innovative"
[91] "ioin"	"keen"	"key"	"know"	"learn"	"like"
[97] "live"	"local"	"look"	"low"	"low-carbon"	"made"
103] "make"	"meet"	"mix"	"needs"	"need"	"new"
109] "news"	"next"	"now"	"oil"	"one"	"outlook"
115] "part"	"partner"	"people"	"play"	"pledge"	"power"
121] "production"	"project"	"projects"	"proud"	"provide"	"read"
127] "ready"	"reduce" "see"	"release:" "shell"	"renewable"	"report" "solar"	"role" "solutions"
133] "save" 139] "starace"	"story"	"suncor"	"social" "support"	"sustainability"	"sustainable"
145] "take"	"taking"	"talk"	"talks"	"team"	"tech"
151] "technology"	"tepco"	"thanks"	"think"	"today"	"together"
157] "top"	"total"	"towards"	"transaction."	"transition"	"use"
L63] "using"	"value"	"via"	"visitors"	"want"	"watch"
169] "water"	"way"	"will"	"wind"	"work"	"working"
L75] "world"	"year"	"years"			
• ### Explore frequ	ent terms and their	associations			
- ###		associations			
<pre>### findFreqTerms(dtm [1] "access"</pre>	, lowfreg = 15)	associations "around"	"award"	"believe"	"best"
<pre>### findFreqTerms(dtm [1] "access" [7] "better"</pre>	, lowfreq = 15) "also" "big"	"around" "billion"	"award" "bpstats"	"believe" "build"	"best" "business"
<pre>### findFreqTerms(dtm [1] "access" [7] "better" [13] "can"</pre>	, lowfreq = 15) "also" "big" "carbon"	"around" "billion" "cashless"	"bpstats" "ceo"	"build" "challenge"	"business" "challenges"
<pre>### findFreqTerms(dtm [1] "access" [7] "better" [13] "can" [19] "change"</pre>	, lowfreq = 15) "also" "big" "carbon" "changing"	"around" "billion"	"bpstats"	"build" "challenge" "cities"	"business" "challenges" "clean"
<pre>### findFreqTerms(dtm [1] "access" [7] "better" [13] "can"</pre>	, lowfreq = 15) "also" "big" "carbon" "changing" "climatechange"	"around" "billion" "cashless" "check" "collaboration"	"bpstats" "ceo" "chief" "come"	"build" "challenge" "cities" "committed"	"business" "challenges" "clean" "communities
<pre>### findFreqTerms(dtm [1] "access" [7] "better" [13] "can" [19] "change" [25] "climate"</pre>	, lowfreq = 15) "also" "big" "carbon" "changing" "climatechange"	"around" "billion" "cashless" "check" "collaboration"	"bpstats" "ceo" "chief" "come"	"build" "challenge" "cities" "committed"	"business" "challenges" "clean" "communities
<pre>* ### * findFreqTerms(dtm [1] "access" [7] "better" [13] "can" [19] "change" [25] "climate" [31] "companies" [37] "day"</pre>	, lowfreq = 15) "also" "big" "carbon" "changing"	"around" "billion" "cashless" "check"	"bpstats" "ceo" "chief" "come" "convenience"	"build" "challenge" "cities"	"business" "challenges" "clean" "communities "customers"
<pre>* ### * findFreqTerms(dtm [1] "access" [7] "better" [13] "can" [19] "change" [25] "climate" [31] "companies" [37] "day"</pre>	, lowfreq = 15) "also" "big" "carbon" "changing" "climatechange" "company"	"around" "billion" "cashless" "check" "collaboration" "conference" "descalzi"	"bpstats" "ceo" "chief" "come" "convenience" "develop"	"build" "challenge" "cities" "committed" "create" "development"	"business" "challenges" "clean" "communities "customers" "digital"
<pre>### findFreqTerms(dtm [1] "access" [7] "better" [13] "can" [19] "change" [25] "climate" [31] "companies"</pre>	, lowfreq = 15) "also" "big" "carbon" "changing" "climatechange" "company" "demand"	"around" "billion" "cashless" "check" "collaboration" "conference" "descalzi" "economy"	"bpstats" "ceo" "chief" "come" "convenience" "develop" "education"	"build" "challenge" "committed" "create" "development" "efficiency" "energy"	"business" "challenges" "clean" "communities "customers"
. ### findFreqTerms(dtm [1] "access" [7] "better" [13] "can" [19] "change" [25] "climate" [25] "climate" [21] "companies" [37] "day" [43] "discover" [43] "emissions" [55] "eniday"	, lowfreq = 15) "also" "big" "carbon" "changing" "climatechange" "company" "demand" "economic" "enel" "environment"	"around" "billion" "cashless" "check" "collaboration" "conference" "descalzi"	"bpstats" "ceo" "chief" "come" "convenience" "develop" "education" "everv"	"build" "challenge" "cities" "committed" "create" "development" "efficiency" "find"	"business" "challenges" "communities "customers" "digital" "efficient" "engie" "first"
. ### findFreqTerms(dtm [1] "access" [1] "better" [13] "can" [19] "change" [25] "climate" [31] "day" [31] "day" [43] "discover" [43] "eissions" [55] "eniday" [55] "eniday"	, lowfreq = 15) "also" "carbon" "changing" "chimatechange" "company" "demand" "economic" "enel" "environment" "francesco"	"around" "billion" "cashless" "check" "collaboration" "conference" "descalzi" "economy" "enelgreenpower "environmental" "fuel"	"bpstats" "ceo" "chief" "come" "convenience" "develop" "education" "energising" "every" "fuels"	"build" "challenge" "cities" "create" "development" "efficiency" "energy" "find" "future"	"business" "challenges" "clean" "communities "customers" "digital" "efficient" "engie" "first" "aas"
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Analysis no. 2 – without #

Figure 2. The words excluded from clustering because they fell below the threshold of 15 occurrences. Source: *R* clustering analysis, 2018.

aggregating the document-term matrix for each company, the data representing the word frequency and affinity for each company were calculated.

4. Results of the analysis

4.1. Tweets data

Overall, the results demonstrated a very active PR strategy implemented on *Twitter* for CSR management, meaning a high level of publication activity (with a median of 49,113 followers per corporation in 2016), although CSR issues are underrepresented, being overwhelmed by a primary corporate focus, substantially limiting the coverage of environmental or social problems (with only 24% including CSR in the narrative). The data revealed a high level of hashtag use in comparison with hypertextual content, with a bare minimum of audiovisual material. The English language dominated the communication strategy but with low technical sophistication, e.g., facilitating links or directing traffic to other corporate sources. The corporate communications, representing the energy sector in general, included 41,638 tweets in 2016, with an average of 849.7 tweets per company annually and 4.8 per day (with *IndianOil* and *PBC* being the most active, with over 50 tweets per day). The 3,043 sustainability-oriented tweets constituted only 7% of all the tweets issued by the companies in 2016. This means that 93% of the messages on *Twitter* from companies in the energy sector do not include the topic of sustainability in any way. Among the sustainability-oriented tweets, a large fraction (2,081 tweets) were published in English, followed by 734 in Spanish, while French and Polish were the least-used languages among the analyzed companies. Among all the tweets from 2016, hashtags were used almost twice as often as links (30,547 and 17,483, respectively), with an average of 0.74 hashtags per tweet and 0.48 links per tweet.

4.2. Use of keywords and hashtags on Twitter

The content analysis of the 16 monitored keywords and hashtags in all four languages revealed the frequency patterns of language usage in *Twitter* communication (Table 1). In general terms, the linguistic model of PR strategies for CSR communication is based on the use of universal and symbolic terms, together with commonly known expressions regarding environmental or social issues, while simultaneously avoiding controversial topics, thus preventing the creation of a solid and differentiated conversational trend. The sectorial and corporate orientation of communication dominates over the environmental and social engagement of the companies. Regarding their influence on conversations as a trending topic, the order was #energy, #innovation, and #sustainability. In terms of the symbolic use of expressions in the form of

keywords, it was "energy," "environment," and "sustainable." Besides, universally shared hashtags without unique positioning (#climatechange) or corporate hashtags (#bpstats) were also observed. This reveals that self-referencing is the dominant approach among the corporations in the energy sector. Innovation is referred to in an attempt to influence, proving once again the sector's perspectives and priorities. Because of its very common use by almost all the companies, it does not constitute a differentiation factor. Sustainability as a trending topic appears in third place, being symbolically represented by keyword use, with a general or mainly universal orientation towards the environment, albeit without any specific connotations. In both cases, there is a general and somewhat symbolic use of these two expressions, without the strong presence of sustainability-specific issues, projects, or events. First, this proves that the commercial initiative in the sector is focused on innovation as a topic and, secondly, that the meaning or scope of activity in the area of sustainability is not specified under these broad terms.

Hashtag	Number	Keyword	Number	Hashtag	Number	Keyword	Number
#energy	528	energy	860	#energía	12	energía	403
#innovation	181	innovation	147	#innovación	13	innovación	70
#environment	19	environment	118	#sostenible	22	sostenible	63
#sustainable	35	sustainable	105	#cambioclimático	16	cambio climático	52
#communities	1	communities	73	#emisiones	0	emisiones	45
#social	0	social	60	#comunidad (es)	0	comunidad (es)	41
#emission	7	emission	58	#energía(s)limpia(s)	0	energía(s) limpia(s)	37
#sustainability	108	sustainability	54	#social	0	social	25
#climatechange	45	climate change	44	#sostenibilidad	26	sostenibilidad	19
#lowcarbon	8	low carbon	14	#reciclaje	0	reciclaje	0
#futureenergy	1	future energy	11	#bajocarbono	0	bajo carbono	0
#cleanenergy	7	clean energy	7	#derramesdepetróleo	0	derrames de petróleo	0
#recycle	3	recycle	6	#llamaradadegas	0	llamarada de gas	0
#spills	0	spills	3	#environmental	0	environmental	0
#gasflaring	0	gas flaring	0	#bajocombustiblefósil	0	bajo combustible fósil	0
				#energíadefuturo	0	energía de futuro	0

Table 1. Keyword and hashtag frequencies in English and Spanish

Subsequently, we determined the contextual orientation of the PR linguistic strategies developed through 3,043 (2,081 in English, 734 in Spanish, and 228 in French and Polish) sustainability-oriented tweets and 50 *Twitter* accounts in 2016, which resulted in two dimensions, i.e., corporate communication and social change/progress. The former refers to brand management as a primary PR strategy, while the latter is focused on CSR with a sustainability-oriented initiative aimed at improving the environment and the community of the entity.

4.3. Narrative contextualization of Twitter messages

An exploratory linguistic analysis by means of statistical text mining techniques performed on 2,081 sustainability-oriented tweets in English determined the narrative contextualization of CSR communication using tweets (in addition to the monitored hashtags and keywords). Word clustering carried out on the most frequent words indicated significant changes in the keyword and hashtag statistics when carried out without (analysis no. 1) versus with (analysis no. 2)

Analysis no. 2

	wSums(m),decrea: ame(word = name:	
> head(d, 10)	allie (wor u = riallie:	s(v), neq-
	word	freq
energy	energy	1365
innovation	innovation	264
future	future	179
sustainability	sustainability	161
sustainable	sustainable	134
bpstats	bpstats	127
enel	enel	126
new	new	118
environment	environment	110
will	wi11	99

	Sums(m),decreasi	
	me(word = names()	v),fr
head(d, 10)		
	word	freq
nergy	energy	791
energy	#energy	432
opstats	#bpstats	126
innovation	#innovation	121
uture	future	116
ew	new	116
ill	will	97
nnovation	innovation	96
ustainable	sustainable	94
sustainability	#sustainability	89

Analysis no. 1

Figure 3. The most frequent words in the tweets with sustainability orientation. Source: R clustering analysis, 2018.

Corporate image or social engagement: *Twitter* discourse on corporate social responsibility (CSR) in public relations strategies in the energy sector

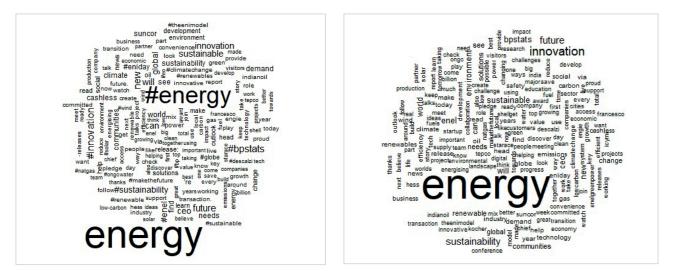


Figure 4. Word cloud: with # (left) and without hashtag (right). Source: R analysis, 2018.

punctuation analysis. *R* analysis of the word cloud and clusters demonstrated (Figure 4) that the narrative content of the digital CSR strategy was self-referential in both cases (with and without hashtags), indicating the prevailing approach to symbolic communication on the one hand (with universal terms generally being used in CSR/sustainability-oriented communication strategies) and corporate/branding topics on the other. They both became more visible in content-based techniques than in the creation of the trending topic.

The word cloud allows the reconstruction of the trending narrative and content narrative. In the case of the former, the popular hashtags illustrate the dominant discourse of global thinking regarding the belief in general change that considers the need for a new future and contemplating the role of CEOs (management), but without specifying particular solutions or issues within the trends in the conversations. In the case of the latter, the general narrative context is even more defensive and symbolic, lacking any clear and real examples of CSR or social change engagement, covering the appropriateness of considering a better economy, future technology, observing the environmental landscape, performing a substantial transition (but without clarifying its real meaning), belief in projects, etc. In the first place, the CSR narrative in the PR strategy of the energy sector is clustered around these three aforementioned lines of self-referenced sectorial talk, in terms of both the trending of the conversation and the content of discourse. In the second place, the corporate discussion seems prevalent in influencing the conversations developed, implementing the traditional CSR perspective of reporting. The concern regarding the future of the sector and the company, in general, is the third most widely observed cluster of PR narrative regarding CSR on *Twitter*, in terms of both the dominant trends and content.

4.4. Performance of Twitter messages: interactivity and similarity

Additionally, this study examined the representation of a document's topic by means of the frequency of semantically significant terms. As such, companies with few tweets and words of low frequency are not significant for this analysis (Figures 5 and 6). The correspondence analysis (CA) used the words with frequency of over 15, excluding companies

with fewer than 50 tweets. Furthermore, an analysis of 13 companies was performed including 164 words. The contingency table for the 164 expressions obtained from the CA illustrates the two-dimensional configuration of the companies. Comparison of this two-dimensional structure of the firms and words clarifies the relationship between the corporations and terms.

Figures 5 (above) and 6 (below) show the difference in the characteristics of the tweets between *Suncor, Enel*, and *BP*, which are located far from the origin as compared with the other companies. Contrasting the two-dimensional configuration of the companies and words, it is possible to clarify the relationship between them. Each company tweeted using words in a similar direction from the origin. Suncor, Enel, and *BP* exhibited very different characteristics

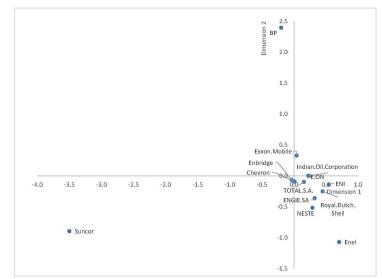


Figure 5. Contingency table of two-dimensional configuration of tweets (dimension 1 and 2). Source: *R* analysis, 2019.

from the other corporations when tweeting about CSR and sustainability in the energy sector. The results of the two-dimensional configuration in dimension 1 and 3 revealed that Suncor, BP, and Enel used the same communication style in dimensions 1 and 2. This indicates that these companies want to position themselves differently. Other companies that were located near the center of the structure seemed to tweet by applying many words whose directions from the origin were similar. However, the associations between these companies and words were weak, because the corresponding vectors from the source are short. Note that this communication about the sustainability of

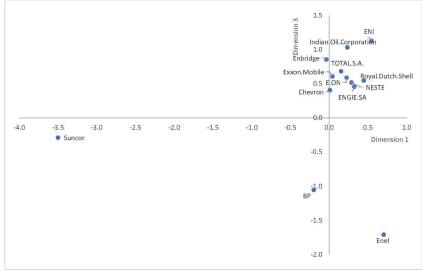


Figure 6. Contingency table of two-dimensional configuration of tweets (dimension 1 and 3). Source: R analysis, 2019.

the energy sector on *Twitter* shows a tendency towards homogeneity and follows symbolic approaches to legitimization. Moreover, the results reveal a tendency among the energy companies to follow similar patterns in their *Twitter* communication also regarding sustainability issues. In addition, a comparison between the particular players indicates an attempt to support or replicate each other's discourse, content, and topics among the top energy corporates as far as *Twitter* communication is concerned. Only three companies adopted a different approach.

5. Discussion and conclusions

This study expands the research on Public Relations (PR) strategies for Corporate Social Responsibility (CSR) communication on social media (Zeler; Capriotti, 2019) towards semantic research by using textual data mining techniques. The findings reveal that firms in the energy sector generally implemented a passive, ceremonial, and symbolic linguistics model for their PR strategy in CSR communications via social media, in this case Twitter. This reconfirms the findings of Monfort, Villagra, and López-Vázquez (2019) among sustainability companies. It is significant that the sector chooses universal expressions of corporate and symbolic discourse "towards a more innovative and sustainable future." Simultaneously, this eliminates to a greater extent the more specific and controversial social or technical issues, expressions, and digressions from the Twitter discourse and dialogue, despite the high institutional and social pressures exerted on the energy industry. Furthermore, we can observe similarities and tendencies toward isomorphy in terms of the semantic construction of meaning and the contextualization of discourse in these online interactive conversations. Regarding CSR communication, Twitter is used to present created impressions rather than allowing these impressions to arise as a consequence of the company's activity. As demonstrated by the use of keywords and hashtags, the narrative built around the brand and general topics indicates a limited orientation towards CSR in general as well as sustainability in the PR strategy on Twitter in the case of the energy sector. Therefore, the message and content do not provide a robust opportunity for interaction or engagement (Uzunoğlu; Türkel; Yaman-Akyar, 2017). Instead, the CSR communication strategy is mainly aimed at branding purposes as well as reputation protection, without exploring the performative character of social media. The enterprises seem to observe and mutually imitate their corporate communication, including the semantic strategies implemented via social media in the areas of CSR and sustainability. In general, they do not use the potential of a dialogical approach to PR, as observed by Russmann and Lane (2019). The semantic perspective helped to identify the limitations of and barriers to the application of dialogical principles (Lane, 2018). These are related to meaning construction in public discourse (Capizzo, 2018): most of the mainstream gestures related to social and environmental involvement are purely representational, as performed by key companies in the energy sector. They do not opt for innovative and ground-breaking PR strategies based on meaningful semantic content and contexts that would facilitate an engaging and dialogical discourse. As confirmed by other authors, the companies seem passive in this regard, with a few exceptions. This proves their defensive and façade engagement when it comes to the narrative and contextualization of sustainability issues via online conversations with stakeholders. Indeed, these lack the unique and influential semantic approach of digital PR strategies, as the trending topics are mainly self-referential (regarding both the sector and the company), symbolic (#innovation, #sustainability), universally shared without unique positioning (#climatechange), or corporate (#bpstats). As such, hashtags are far less applied than keywords. The results of this work therefore demonstrate limited interest in creating trends in social conversations about CSR engagement. The media relations and corporate use of interactive resources (links and multimedia) offer further evidence of the general focus on corporate/brand issues rather than a strong social change strategy. The results revealed a tendency among the energy companies to follow similar patterns in their Twitter communication about social and environmental problems. It is significant that the sector chooses rather general expressions of corporate and symbolic discourse on a vague future orientation towards a "more innovative and sustainable future." At the same time, the more specific and controversial social or technical issues are excluded from the *Twitter* discourse, even though the energy industry is under institutional pressure regarding these matters.

In conclusion, the communication of the analyzed companies from the energy sector was mainly static and limited as far as semantics is concerned. In turn, this results in rather limited interactivity with the public. Therefore, the dialogical approach and principles seem to be overlooked, excluding the use for client service purposes. The majority of tweets do not indicate a high level of interaction (with an average response level of 34.5%, an average number of tweets published by each company of 850 per year, an average of 4.8 tweets per day per company, and 41% of tweets attracting a mention within the sector) and are declarative, with a symbolic orientation regarding sustainability and CSR issues. As such, they are focused on image and brand creation purposes. The dominant hashtags indicate a clear corporate strategy, sectorial approach, and image tactics, although the social conversations on *Twitter* lack a unique positioning, as far as social or environmental change is concerned.

The hypothesis of the study that, on *Twitter*, the energy sector applies a more proactive approach to sustainability and corporate responsibility instead of maintaining defensive and instrumental communication about social and environmental issues cannot be confirmed. The high levels of symbolism in the application of linguistics together with the strong tendency for mutual imitation among the PR strategies of the energy companies result in reduced levels of interaction and engagement with CSR communication with stakeholders via *Twitter*. The analyzed companies do not take advantage of the dialogical potential of social media or their use in public relations strategies. Furthermore, the interactivity and engagement with the public via CSR communication are rather passive, defensive, symbolic, and corporate, demonstrating a trend towards homogeneity.

First, the results of the present research expand the dialogical perspectives in public relations by the use of social media (Kent; Taylor, 2016) and provide a new semantic insight into the theorizing and operationalization of dialogical PR strategies via social media (Ao; Huang, 2019), because of its linguistic approach to CSR communication models. This study tried to move the focus from a purely reporting or disclosure-focused approach of CSR towards interactive and dialogical perspectives. Social media communication offers an opportunity to shape relations with the company's stakeholders, as confirmed by other authors, but the key role is the semantic construction of the appropriate discourse and its contextualization, all of which is particularly crucial regarding the CSR strategies of high-risk companies (Capriotti, 2013; Dunn; Harness, 2018; Chen et al., 2019). Moreover, the interrelationship between CSR and social media allows the concept of engagement in public relations to be explored (Smith; Taylor, 2017; Jonhston; Taylor, 2018), in particular in terms of the application of meaningful linguistic models to PR strategies. Nevertheless, the study points out that these approaches are not adequately identified and applied in practice. In effect, our findings suggest that CSR discussions on social change represent a venue for a symbolic representation. In this case, there is strong support for the statement that CSR communication to external stakeholders serves internal business purposes such as reinforcing corporate identity. Interactive, two-way, dialogic communication on CSR issues is not used enough as a tool to improve the companies' legitimacy at a social level. This reveals the need for relevant semantic models and further semantic studies on the use of social media in public relations strategies for CSR communications. Examination of social media communication strategies from the discourse perspective will provide new insight into reputation management to allow the construction of dialogical relationships with stakeholders and shape the relevant interactive reputation strategies (Aula, 2010), considering the growing importance of evidence-based approaches (Aula; Heinonen, 2016) via comprehensive linguistic models as a new methodology and theory (Ao; Huang, 2019). Additionally, the results of this study provide an analysis of regular, long-term communication via Twitter, combining PR and CSR strategic management and focusing on a semantic exploration of discourse content as an essential part of PR strategies on social media.

From a practitioner's point of view, this study indicates that the new potential rising from the interrelation among CSR communication, discourse analysis, and PR via social media channels is widely overlooked by the energy sector in this case. The following elements are omitted from the PR practice on *Twitter* of the energy sector: its interactive side and dialogical usefulness with stakeholders, enhancement by means of language use through hypertextual tools, and shaping of trends via hashtags and strategic use of keywords to boost proactive and performative CSR communication. The results of this research highlight other areas of improvement in dialogical PR strategy via discourse shaping: the use of the semantic potential of SM to enable online conversations with stakeholders on sustainability, the linguistic gaps in CSR communication management, and the overall reputation management activity based on the corporate function. This reveals new areas of CSR usage in public relations communication by creating a contextualized dialogue and public engagement around sustainability and socioenvironmental issues, by correctly implementing semantics into the conversations. In general, this may help to create a positive emotional perception of an organization that can nurture a unique brand among the fragmented and numerous *Twitter* conversations. Social media have enormous potential for PR communication of CSR business activity, mainly in terms of semantic differentiation. Interactive tools such as hashtags, audiovisual content, hypertext, and finally semantic framing of issues will represent significant advantages of a successful strategy.

Finally, the semantic methods and models in PR analyzed herein using algorithmic tools such as R software, text mining methods, and cluster analysis techniques offer new potential for the exploration of textual data on social media, beyond the channel's usage or performance. Online monitoring techniques allow companies to observe online conversations in order to capture the language that engages the public and fosters dialogue in order to construct the discourse around

the brand in a more interactive and dialogical manner. In turn, this will allow them to redesign their digital PR strategies to manage their reputation and help to position themselves as sustainable businesses and brands in front of but without replicating the discourse of their competitors. Text mining, plus the wide range of analytical techniques in linguistics, offers interesting and practical insights for professional practice and allows the design of linguistic models of PR strategies for social media in general, and CSR topics in particular, considering its growing importance for diverse stakeholders in the age of climate change. The isomorphic nature of social media implementation and the crisis of the dialogical model in PR can be overcome by conscious use of semantics and by shaping the discourse via interactions with stakeholders.

First, text mining using machine-learning algorithms requires further development to accurately identify and analyze other languages, taking into account their peculiarities. However, the usage of advanced text mining tools, such as *R*, proves the usefulness of this approach in innovative PR research. Such analysis requires multiple tests and attempts to delimit the language use based on some specific linguistic practice and thereby provide accurate results. Further adaption of the algorithm is necessary, as well as training the *R* software using input with more specific linguistic content. The analysis does not include the corresponding source of data collection, which could identify the motivators and reasoning behind such usage of this communication channel and specific PR strategies in CSR management. Future studies should contemplate a few more questions to explain the data obtained: Is the fact that the potential of dialogical rules for creating discourse is not fully implemented an issue related to this new medium or to the company's strategies? Does the specificity of the industry affect its usage? Are sustainability issues minimized to avoid controversy and criticism? It would be interesting to expand the semantic analysis to other sectors to provide a comparative perspective. Longitudinal reviews or panels performed from the point of view of professionals would also help to enhance understanding of the overall tendencies.

Furthermore, the issue of homogeneity and isomorphy should be further analyzed based on the dialogical and semantic aspects of shaping the PR strategies, in this and other sectors. In addition, research could also identify motivators or drivers for symbolic communication in digital PR strategies. Moreover, this study opens the avenue to further exploration of CSR communication via SM as part of PR strategies and brand diversification, not only in the energy sector. Finally, it encourages investigation of the potential of social media communication for sustainability idea construction from the semantic perspective of discourse creation in public online conversations with stakeholders. These may represent new forms to put into practice dialogical principles to enhance the engagement of the public in corporate and CSR communication via social media. The next step is to collect a wide range of textual data across many sectors and periods and apply text mining methods to build a semantic model of dialogical PR for social media communication strategies, both in the CSR area and in general for corporate/brand management. Finally, social media provides a new avenue for the engagement and resonance of CSR initiatives and opens up broad possibilities for different theoretical perspectives and methodological approaches. Such studies could enrich our understanding of CSR-focused corporate communication across diverse sectors and businesses.

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