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RESEARCH ARTICLE

Impression Management in Corporate Social Responsibility Reporting: An Analysis of Chief Executive Officer Letters in the Oil and Gas Sector

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ABSTRACT

This study aims to investigate the external and internal determinants that lead Chief Executive Officers (CEOs) of oil and gas companies to obfuscate and manipulate Corporate Social Responsibility (CSR) reporting. The analysis focuses on CEO letters from CSR and integrated reports of 24 companies, between 2008 and 2021. A total of 336 company-year observations were analyzed. Quantitative methods based on readability indexes, descriptive, inferential, and regression analysis are adopted. Macroeconomic conditions, CSR reporting frameworks, and cultural backgrounds determine the readability of CEO letters. The length of the letters, company's size, CEOs' age, and female representation on boards also influenced CEOs to engage in impression management (IM). The findings allow stakeholders to have a more truthful view of the impact of IM on CSR reporting. This study highlights an unstudied perspective on the impact of external and internal determinants on the readability of CSR reporting in an environmentally sensitive sector.

1 | Introduction

Corporate Social Responsibility (CSR) reporting is vital across all industries. However, the oil and gas sector presents a compelling example of how companies strategically disclose information. The oil and gas companies continue to display several biased behaviors, unscrupulous activities, irregularities, and fraud in the practice of CSR (Du and Vieira 2012; Kwarto et al. 2024). Thus, the activities of oil and gas companies are both environmentally sensitive and controversial (Du and Vieira 2012; Hackston and Milne 1996; Reverte 2009), with effects on global sustainable development, climate change, the environment, society, health, and safety (Comyns and Figge 2015; Doni et al. 2022; Pizzi et al. 2021).

The textual characteristics of CSR disclosure, such as reading ease, play a vital role in conveying information effectively and ensuring transparency (Du and Yu 2021; Fisher et al. 2020). Analysis of companies' CSR reporting is essential to determine whether they are truly committed to clarity and transparency or whether they just use them as an impression management (IM) tool to shape messages based on specific motivations (Merkl-Davies and Brennan 2007, 2011). IM it is considered as an attempt to distort or affect the public's perceptions of companies' results (Aerts and Cormier 2009; Hooghiemstra 2000; Merkl-Davies and Brennan 2011; Tata and Prasad 2015).

Such IM techniques can lead to biased representations that obfuscate the negative aspects of their performance and

compromises the transparent and complete disclosure of companies' true environmental and social impacts (Du and Yu 2021; Nazari et al. 2017; Wang, Hsieh, et al. 2018). Obfuscation is "a narrative writing technique that obscures the intended message, or confuses, distracts or perplexes readers, leaving them bewildered or muddled" (Courtis 2004, 292). Thus, reading ease manipulation is considered an IM and obfuscation technique, which focuses on concealing negative news by manipulating the presentation of information (Merkl-Davies and Brennan 2007).

By identifying whether the CSR reporting is unbiased or whether it is a tool to obfuscate negative information, this study addresses a research gap: How and to what extent is reading ease manipulation used in CEO letters in CSR reports in the oil and gas sector? The determinants of IM can be in the organizational and the external context (Merkl-Davies and Brennan 2007). Therefore, we adopted an approach that considers external determinants, such as the financial, normative, and cultural contexts, and internal determinants, such as the characteristics of the companies, to engage in IM and an analysis based on theories from economics and cognitive and social psychology.

This study aims to investigate the external and internal determinants that lead Chief Executive Officers (CEOs) of oil and gas companies to manipulate and obfuscate CSR reporting. To achieve this purpose, we selected CEO letters from CSR and integrated reports of 24 companies classified in the World Benchmarking Alliance's (WBA) Oil and Gas Benchmark 2023, between 2008 and 2021. We adopted the following quantitative multi-method approach: (i) calculation of readability indexes using ReadablePro software; (ii) definition of the independent and control variables; (iii) descriptive data analysis; (iv) inferential analysis using parametric and non-parametric tests; and (v) multiple regression for panel data using random effects and mixed effects models.

Our results show that the CEO letters in the oil and gas sector reveal a consistent pattern of obfuscation, since they are very difficult to read. This behavior is aligned with the obfuscation hypothesis, suggesting CEOs strategically use complex language to conceal negative CSR information. This biased behavior is particularly problematic given the sector's ongoing social, environmental, and ethical issues.

We also found that the external determinants significantly influence CEOs to obfuscate CSR reporting. During the COVID-19 pandemic, CEO letters became harder to read, unlike during the global financial crisis (GFC) and sovereign debt crisis (SDC). The shift from GRI G3 to G4 frameworks increased complexity, while the International Petroleum Industry Environmental Conservation Association (IPIECA) guidelines and Sustainability Accounting Standards Board and Task Force on Climate-Related Financial Disclosures (SASB-TCFD) recommendations led to a greater ease of reading. The tendency to obfuscate CSR disclosure is also influenced by the cultural contexts in which companies operate. Regarding the internal determinants, company size, letter length, CEO age, and female board representation impact the readability level. These results confirm that obfuscating negative CSR reporting, maintaining a positive image, or delaying negative reactions depends very much on the contexts in which they operate.

This investigation has fundamental contributions that distinguish it from previous IM research. Unlike other sectors, the oil and gas industry faces intense public pressure and a growing need for greater transparency and quality and accountability (Doni et al. 2022; Du and Vieira 2012; Kwarto et al. 2024), making CSR reporting a reputational asset. From a theoretical perspective, our findings contribute to the literature on IM and CSR reporting by examining whether variations in textual complexity indicate opportunistic behavior or genuine efforts to disclose CSR activities. This analysis is set within a context where oil and gas companies are responsible for several environmental and social problems that continue to persist and are likely to intensify CSR efforts in ways that may not be applicable to less contentious industries.

The study also has practical contributions such as: (i) it highlights the importance of considering obfuscation techniques when assessing CSR performance, equipping investors and organizations with an integrated perspective on how CSR reporting concealment is managed and how effective high-quality reporting can be achieved and enabling more informed, reliable and objective decisions; and (ii) it promotes a foundation for regulatory initiatives to mitigate obfuscation behaviors and promote clear language and enhance the quality and transparency of CSR disclosures, fostering genuine corporate responsibility in the oil and gas sector.

The remainder of the paper is organized as follows. First, the theoretical framework, a literature review on reading ease manipulation in accounting narratives, and the research hypotheses are presented. Then, the methodological procedure of this study is summarized. The results obtained through the descriptive, inferential, and regression analyses are summarized next. Finally, the main conclusions and limitations are outlined, and suggestions are given for future research.

2 | Literature Review and Hypothesis Development

2.1 | Theoretical Approaches to Impression Management

Explanations on the behavior of those preparing the information depend on how the relationship between the organization and its environment is conceptualized. Four theoretical approaches can be used to justify the motivations that lead the preparers of accounting narratives to engage in IM: economic, cognitive and social psychology, critical, and sociological approaches. By applying these approaches, it is possible to obtain a more comprehensive understanding of the use of IM in company reports (Merkl-Davies and Brennan 2011). In this study, we focus on the economic approach, which has been one of the predominant approaches in the study of IM in corporate reports (Merkl-Davies and Brennan 2011), and the cognitive and social psychology approach, since the concept of IM has its origins in social psychology (Hooghiemstra 2000).

Economic rationality is the basis for the economic approach (Merkl-Davies and Brennan 2011). This type of rationality postulates that individuals are in control of their choices, make them

intentionally and strictly opportunistically, and consider potential consequences and benefits (Hechter and Kanazawa 1997). Furthermore, economic agents are highly rational and select the choice that maximizes their expected utility from the probable effect of any action on their total wealth (Von Neumann and Morgenstern 2004). Regarding corporate reporting, CEOs can use IM to take advantage of information asymmetries to maximize their wealth (Adelberg 1979; Rutherford 2003). Signaling and agency theory are the main theories for this approach.

Agency theory focuses on two organizational problems: the conflicts of interest created by the divergence between the objectives of shareholders and managers and the difficulty for shareholders to analyze managers' actions (Eisenhardt 1989). From an IM perspective, management's disclosure strategies are considered opportunistic, and the information provided is motivated by self-interest (Abrahamson and Park 1994; Aerts 2005; Courtis 1995; Hooghiemstra 2000; Rutherford 2003). Whenever conflicts of interest arise between managers and shareholders, managers are led to manipulate the audience's perceptions (Aerts 2005).

Signaling theory analyzes the signaling environment, where the sender must choose whether and how to communicate that information, and the receiver must choose how to interpret this signal. This theory is useful for explaining the influence of information asymmetry on the behaviors of two parties (Connelly et al. 2011). Regarding the obfuscation hypothesis, CEOs take advantage of information asymmetry and choose how to signal the desired information (Merkl-Davies and Brennan 2007; Rutherford 2003; Smith et al. 2006; Smith and Taffler 1992b).

The cognitive and social psychology approach is bound to instrumental rationality (Merkl-Davies and Brennan 2011), presupposing that each individual is concerned with the coherence between the means available to take an action and the desired objectives. This type of rationality is subjective because the agent has a biased perception of their states and the states of the environment. Thus, this approach focuses on a choice based on information that is not yet available and that is necessary for decision-making (Walliser 1989). Therefore, through corporate reporting, CEOs can follow an intended representation of themselves (Li 2008; Merkl-Davies and Brennan 2011).

Attribution theory is the main theoretical basis of this approach, as it seeks to explain how individuals behave by means of the way they perceive the causes of everyday experience, through external or internal attributions (Buss 1978). Attribution is influenced by three factors: the information available, the beliefs of the person making the attribution, and the motivation behind the action (Kelley and Michela 1980). According to attribution theory, information preparers can be driven by a self-serving bias, which consists of attributing positive organizational results to internal factors and negative ones to external circumstances (Clatworthy and Jones 2003; Li 2008; Lim et al. 2018; Smith et al. 2006).

2.2 | Reading Ease Manipulation

Concerning the preparer's motives, Merkl-Davies & Brennan (2007, 13–14) categorize managerial IM behavior into two main categories: concealment and attribution. The authors identify six concealment techniques. Reading ease manipulation is one of these IM techniques, focusing on obscuring negative news by manipulating the presentation of information (Merkl-Davies and Brennan 2007). Research into the reading ease or readability of accounting narratives can be classified into several phases, according to the evolution of the research topics and the approaches adopted.

In the initial stages, the focus was essentially on financial reports (Pashalian and Crissy 1952, 1950; Soper and Dolphin 1964). In the second phase, the study of the readability of accounting narratives began to diversify, as researchers recognized the importance of footnotes in financial reports (Barnett and Leoffler 1979; Smith and Smith 1971; Worthington 1977, 1978).

The third phase was marked by a diversification of the readability indexes applied and a substantial focus on the readability level of CEO letters (Baker and Kare 1992; Courtis 1986, 1998; Dorrell and Darsey 1991; Jones 1988; Schroeder and Gibson 1990; Smith and Taffler 1992a, 1992b; Still 1972; Subramanian et al. 1993). The fourth phase of analyzing the readability of accounting narratives began in the 21st century, with a focus on annual reports and integrated reports (Balsells 2007; Ben-Amar and Belgacem 2018; Clatworthy and Jones 2001; Courtis and Hassan 2002; Ertugrul et al. 2017; Gerwanski et al. 2019; Li 2008; Madasu 2020; Melloni et al. 2017; Mnif and Kchaou 2021; Rahman 2014; Smith et al. 2006; Stone and Lodhia 2019; Zurel 2014).

In recent years, companies have come under increasing pressure to produce documents on CSR and disclose economic, social, and environmental information (Nazari et al. 2017; Uddin and Chakraborty 2022; Wang, Hsieh, et al. 2018). This marks the fifth phase of the analysis of the readability of accounting narratives and the emergence of a new research topic: analysis of the readability of CSR reporting (Adhariani and du Toit 2020). The first studies analyzing the readability of CSR reporting date back to the second decade of the 21st century (Adhariani and du Toit 2020; Ahn et al. 2023; Dsouza et al. 2024; Du and Yu 2021; Harjoto et al. 2020; Hoozée et al. 2019; Lin et al. 2024; Lin et al. 2023; Mnif and Kchaou 2021; Nazari et al. 2017; Nilipour et al. 2020; Phang et al. 2023; Smeuninx et al. 2020; Uddin and Chakraborty 2022; Wang, Hsieh, et al. 2018; Xu, Wang, et al. 2022; Zhang et al. 2021).

However, the increase in the volume of CSR disclosure is an unreliable and misleading indicator (Nazari et al. 2017). Previous literature shows that CSR information is difficult to read (Adhariani and du Toit 2020; Smeuninx et al. 2020). Furthermore, those who prepare the accounting narratives can adopt opportunistic behaviors (Adhariani and du Toit 2020; Nazari et al. 2017). This research trend focuses on the hypothesis that information transparency is obscured by reducing the readability of accounting narratives, to disclose less about their underlying circumstances (Diouf and Boiral 2017; Merkl-Davies and Brennan 2007, 2011; Rutherford 2003; Wang, Hsieh, et al. 2018).

Reading ease manipulation is associated with management's tendency to manipulate or arrange prose to enhance good news

with easier-to-read writing and obfuscate bad news with more difficult writing (Courtis 1998). This concealment technique is a tool for companies to manage organizational legitimacy, obfuscate inferior information, and conceal environmental and social damage caused (Adhariani and du Toit 2020; Mnif and Kchaou 2021; Nazari et al. 2017; Nilipour et al. 2020; Smeuninx et al. 2020; Wang, Hsieh, et al. 2018). This obfuscation makes CSR reporting less transparent and reliable (Nilipour et al. 2020), and ultimately weakens users' perceptions of negative information (Rutherford 2003; Wang, Hsieh, et al. 2018). Thus, it is essential to examine this recent research topic in greater depth, considering the specific characteristics of CSR reporting and the determinants of IM.

2.3 | Research Hypothesis

The determinants of IM behavior may lie in the internal and external context. Therefore, it is crucial to understand the influence of these determinants on the preparer's motivations, due to their impacts on IM techniques used to shape stakeholders' perceptions of companies' CSR performance (Merkl-Davies and Brennan 2007). First, in this section, the impact is analyzed of different macroeconomic conditions (Khanna and Irvine 2018; Moreno and Jones 2022; Patelli and Pedrini 2014), the process of adapting to different CSR reporting frameworks (Depoers et al. 2016; Jones et al. 2015; Lock and Seele 2016; Sun et al. 2024; Wagner and Seele 2017) and cultural differences between countries (Adnan et al. 2018; Gray 1988; Kumar 2014; Mnif and Kchaou 2021; Noh 2021; Rutherford 2005) in the CEOs' motivations to obscure CSR disclosure.

Recent years have been marked by several global financial crises. The most relevant crises to date have been the global financial crisis (GFC) of 2008–2009, the sovereign debt crisis (SDC) of 2010–2012, and the COVID-19 pandemic of 2020–2021. The GFC resulted in one of the biggest economic contractions many countries have experienced (Barth and Landsman 2010; Tienhaara 2010), inflicting severe losses of economic activity in many countries (Dijkstra et al. 2014). Years later, the GFC turned into an SDC (Reinhart and Rogoff 2013), as several countries reported larger-than-expected increases in deficit/GDP ratios (Lane 2012). More recently, the COVID-19 pandemic has triggered the need for in-depth coordination between the environment, health, and economy (Sarkodie and Owusu 2021).

A financial crisis can change the motivations for using concealment techniques (Khanna and Irvine 2018; Moreno and Jones 2022; Patelli and Pedrini 2014). According to the economic approach, during financial crises, companies are more likely to show poor financial performance (Moreno and Jones 2022). Thus, organizational behavior becomes more conservative and defensive (Gallego-Álvarez et al. 2014). Companies are subjected to a reporting bias and engage in greater use of IM so that reports become less readable (Abu Bakar and Ameer 2011; Ajina et al. 2016; Bacha and Ajina 2020; Ben-Amar and Belgacem 2018; Jones 1988; Merkl-Davies and Brennan 2007; Rutherford 2003; Smith et al. 2006). According to agency theory, periods of financial crisis also contribute to conflicts of interest arising between managers and shareholders. Consequently, CEOs are led to manipulate the perceptions of external stakeholders and engage in reading ease manipulation (Merkl-Davies and Brennan 2011).

However, during these ruptures, the market can also tolerate poor performance (Habib et al. 2013). When comparing the explanations for company performance in a crisis context with those in a non-crisis situation, it seems reasonable to expect that CEOs will use the opportunity created by an external crisis to blame negative results on adverse situational factors (Keusch et al. 2012). Therefore, according to cognitive and social psychology theories, such as attribution theory, a severe crisis can be a convenient excuse for poor performance, changing managers' disclosure behaviors (Chintrakarn et al. 2018). As a result, companies do not decrease the level of readability, since poor performance is associated with the macroeconomic condition (Moreno and Jones 2022). Therefore, the following hypothesis was defined.

H1. *There are significant differences in the level of readability between CEO letters published in different financial contexts.*

The relationship between CSR and the creation of its reporting frameworks started with the creation of the Global Reporting Initiative (GRI) (Kücükgül et al. 2022; Thijssens et al. 2016). Other important voluntary CSR reporting standards include the SASB's conceptual framework and the TCFD's framework. Finally, at a sectoral level, one of the main guidelines for CSR reporting is the Guidelines for Voluntary Sustainability Reporting, published by the IPIECA (Aljanadi and Alazzani 2023). The IPIECA is one of the main global guidelines for both the upstream, downstream and integrated companies (Aljanadi and Alazzani 2023; IPIECA 2020, 2024).

The transition between CSR reporting guidelines increases the heterogeneity of disclosure practices (Christensen et al. 2021; Wagner and Seele 2017). These frameworks encompass indicators, principles, certifications, processes, and reports with varying design characteristics and accountability mechanisms (Schönherr et al. 2021; Wagner and Seele 2017). Thus, according to signaling theory, these differences between frameworks allow organizations to camouflage signals during CSR guideline transitions, concealing information or emphasizing their achievements (López-Santamaría et al. 2021). Within the framework of agency theory, managers can change the guidelines for CSR reporting to mitigate information asymmetry and agency conflicts with shareholders, which often results in biased reporting of true social and environmental performance (Hamad et al. 2020; Merkl-Davies and Brennan 2011).

The application of different CSR disclosure standards has different impacts on the quality of the information disclosed and leads to considerable variation in how companies define and identify the boundaries and scope of their material issues (P. Jones et al. 2015; Sun et al. 2024; Wagner and Seele 2017). Recent CSR reporting frameworks may also include specific guidelines on best communication practices (García-Sánchez et al. 2020). Therefore, following a cognitive and social psychology approach, stakeholders evaluate CSR disclosure as part of a company's CSR commitment based on their attributions (Hetze 2016). As a result, CEOs are guided by a lower-serving bias (Merkl-Davies and Brennan 2011) since the actualization

of CSR frameworks already demonstrates their commitment to sustainability (Jones et al. 2015). In this context, the following hypothesis was established.

H2. *There are significant differences in the level of readability between CEO letters of companies that follow different CSR reporting frameworks.*

Culture can be defined as the collective programming of the mind that distinguishes the members of one group or category of people from those of another (Hofstede 1980, 1983, 1984). The national cultural values where the corporations operate have been identified as one of the most important differentiators that influence business ethics (Ho et al. 2012; Kang et al. 2016; Kim and Kim 2010; Said et al. 2017; Thanetsunthorn 2015; Vitell et al. 2003) and drive business behavior (Halkos and Skouloudis 2017).

Cultural models can also be applied to predict how IM will be used (Manzur and Jogaratnam 2006) and how the motivations of accounting narratives preparers' change in different cultural contexts (Merkl-Davies and Brennan 2011). There is no expected positive or negative relationship with "culture," only that accounting narratives reflect the wide variety of motivations and characteristics of preparers, influenced by the cultural contexts in which companies operate (Amernic et al. 2010). Previous research has analyzed the effect of culture on reading ease manipulation (Gray 1988; Kumar 2014; Mnif and Kchaou 2021; Noh 2021; Rutherford 2005).

Regarding the economic approach, signaling theory suggests that the strength of a signal may change for different environments (Su et al. 2016). Thus, cultural differences have a great influence on transparency signaling and shape how companies signal and report their CSR activities (Rim et al. 2019). Agency theory provides an IM perspective that focuses on the reporting bias that arises from the relationship between managers and investors (Merkl-Davies and Brennan 2011). Therefore, CEOs' behaviors that support the main benefits for companies vary in different cultures (Calvo and Calvo 2018). Concerning the cognitive and social psychology approach, cultural differences lead individuals to adopt different attribution styles or ways of explaining behaviors (Lim et al. 2018). Thus, the effectiveness and form of the CEO's self-attribution bias (Merkl-Davies and Brennan 2011) are modified by cultural values (Lim et al. 2018).

The literature provides evidence that cultural values often play an important role in determining the effectiveness of IM in CEO letters. However, there is a scientific gap regarding the cross-cultural use of IM that has left many questions unanswered (Bolino et al. 2016). Therefore, the following hypothesis was defined.

H3. *There are significant differences in the level of readability between CEO letters of companies from different cultural contexts.*

Finally, the literature shows the importance of analyzing the impact of corporate characteristics on the effectiveness and use of reading ease manipulation. The most significant internal determinants that are analyzed are the internal and structural characteristics of the company, board characteristics, market-related characteristics, economic, financial and performance indicators, capital market-related characteristics, environmental and CSR indicators, external social exposure indicators, and reporting characteristics (Gosselin et al. 2021). This study considers the internal determinants as control variables. Therefore, the following hypothesis was established.

H4. *There are corporate characteristics that influence the level of readability of CEO letters.*

3 | Method

3.1 | Sample Selection and Data Collection

The oil and gas sector has grown significantly over the last decade and is one of the largest in the world (Elhuni and Ahmad 2017). This industry has been pioneering and leading the defense and promotion of CSR (Frynas 2009a, 2009b). However, it is an environmentally sensitive (Hackston and Milne 1996; Reverte 2009) and controversial sector (Du and Vieira 2012), with important impacts on sustainable development (Doni et al. 2022). Furthermore, it continues to display biased behaviors related to irregularities and fraud in the practice of CSR, increasing the problems related to transparency and the quality of the information disclosed (Kwarto et al. 2024). Therefore, there is a growing need for transparency (Doni et al. 2022) due to ongoing economic, social, and environmental issues (Du and Vieira 2012; Kwarto et al. 2024).

To test our hypotheses, the initial sample for this study consists of 100 companies classified in the WBA's Oil and Gas Benchmark 2023. This benchmark ranks companies in the oil and gas sector according to their climate and social strategy and performance in the same reference index and classification (World Benchmarking Alliance 2023). The WBA's Oil and Gas Benchmark 2023 is composed of 64 fully integrated companies, covering all three segments of the oil value chain, 19 semi-integrated companies, covering two segments of the oil value chain, 12 companies with pure upstream activities, and four companies with only midstream activities (World Benchmarking Alliance 2023).

Second, given the importance of corporate reporting in assessing the quality, credibility, and transparency of CSR information (Cho et al. 2015; Dando and Swift 2003; Du and Yu 2021; Lock and Seele 2016; Milne and Gray 2013; Nilipour et al. 2020) the main source of data for this research were the accounting narratives containing information on CSR, more specifically, sustainability reports and integrated reports. To test the moderate effect of the financial dimensions since the GFC and the normative dimensions since the application of the third version of the GRI frameworks, the year 2008 was considered the starting point. Thus, to ensure the consistency and homogeneity of the data, the first exclusion criterion presupposes that the companies have sustainability reports and/or integrated reports published in English and without interruption between 2008 and 2021, reducing our sample to 31 companies.

Third, CEO letters are the most widely read part of corporate reports and one of the most important (Abrahamson and

Park 1994; Alshorman and Shanahan 2022; Amernic et al. 2010; Baker and Kare 1992). CEO letters (i) represent the company's top management's direct, personal, and public responsibility (Amernic et al. 2010), (ii) provide additional information not captured by accounting numbers (Amernic et al. 2010; Liu and Nguyen 2020), (iii) reveal CEO personality traits, mental models, values, and behaviors (Amernic et al. 2010; Ataullah et al. 2018), and attitude toward CSR (Alshorman and Shanahan 2022; Cong et al. 2014; Sethi et al. 2016), (iv) have orientation toward past, present, and future performance, priorities, goals, and activities (Alshorman and Shanahan 2022; Liu and Nguyen 2020; Subramanian et al. 1993; Zurel 2014), and (v) their flexibility provides an excellent opportunity to manage impressions, project a positive image, deflect attention, or convey credibility and responsiveness (Alshorman and Shanahan 2022; Liu and Nguyen 2020; Patelli and Pedrini 2014).

Through the last exclusion criterion, only companies that published CSR and/or integrated reports that contained CEO letters were considered. After applying the third exclusion criterion defined, the final sample consists of a panel of 336 company-year observations for 24 companies. Table 1 shows the composition of the final sample and the main characteristics disclosed on the WBA's Oil and Gas Benchmark 2023.

3.2 | Pre-Processing Procedure

Before the data processing process, all the CEO letters underwent a pre-processing procedure. This process was applied because the ReadablePro software is unable to select just one section of the sustainability and integrated reports. A further aim of this process was to correctly apply all the readability indexes.

First, the individual PDF reports were extracted manually from the websites of each of the 24 companies selected or other publicly available databases such as the United Nations Global Compact (UNGC). Then, the CEO letters of each report under analysis were identified. They were manually selected, copied, and pasted into individual Microsoft Word documents. Second,

TABLE 1 | Sample composition.

Company	Country of headquarters	Rank in WBA (2023)	Segment
Bharat Petroleum Corporation Ltd.	India	#49	Integrated
BP Plc.	United Kingdom	#12	Integrated
Chevron Corporation	USA	#29	Integrated
China National Offshore Oil Corporation	China	#73	Integrated
China National Petroleum Corporation	China	#74	Integrated
China Petroleum & Chemical Corporation Ltd.	China	#51	Integrated
Cosmo Energy Holdings Co Ltd.	Japan	#15	Integrated
ENEOS Corporation	Japan	#25	Integrated
Galp Energia, SGPS, S.A.	Portugal	#7	Semi-integrated
Helleniq Energy Holdings S.A.	Greece	#44	Semi-integrated
Hess Corporation	USA	#41	Integrated
Indian Oil Corporation Ltd.	India	#75	Upstream
INPEX Corporation	Japan	#22	Integrated
MOL Hungarian Oil & Gas Company Plc.	Hungary	#27	Semi-integrated
Naturgy Energy Group S.A.	Spain	#4	Integrated
OMV Group	Austria	#10	Integrated
Origin Energy Ltd.	Australia	#6	Integrated
PAO Novatek	Russia	#58	Integrated
Petróleo Brasileiro S.A.	Brazil	#17	Integrated
Public PJSC Gazprom	Russia	#78	Integrated
Public PJSC Rosneft	Russia	#24	Integrated
Repsol S.A.	Spain	#8	Integrated
Shell Plc.	United Kingdom	#11	Integrated
SK Innovation Co Ltd.	Rep. of Korea	#9	Integrated

Source: World Benchmarking Alliance's (WBA) Oil and Gas Benchmark 2023.

all abbreviations and punctuation were checked. Knowing that punctuation is a crucial element in defining the quantity and length of a word or sentence, hyphens were avoided, and all punctuation was analyzed, with special emphasis on abbreviations, colons, and periods. Finally, to ensure equality and homogeneity, all documents were checked for the language used. Therefore, only words without a direct translation into English were kept in the original language. As some letters did not end with the CEO's name, all names were eliminated to make a representative comparison.

3.3 | Reading Ease Manipulation Indexes

Reading ease, also referred to as readability, is a measure of textual complexity, which assesses a reader's ability and ease in deciphering the content of words (Adhariani and du Toit 2020; Clatworthy and Jones 2001; Jones and Shoemaker 1994; Rutherford 2005; Smith and Smith 1971; Smith and Taffler 1992b; Still 1972; Uddin and Chakraborty 2022). Readability indexes are textual analysis techniques based on word length, sentence length, number of complex words, and average syllables per word (Adhariani and du Toit 2020; Courtis 1998; Jones 1988; Klare 1974; Smeuninx et al. 2020; Smith and Taffler 1992a; Still 1972).

These measurements are used to assess the complexity of a text by assigning it a numerical score. This score can then be compared with established standards to assess the level of difficulty for the target audience. By analyzing this score, it is possible to determine how easily the target audience can understand the content of the text (Baker and Kare 1992; Courtis 1986; Courtis and Hassan 2002).

To increase efficiency, accuracy, and rapidity in the use of readability formulas, the ReadablePro software was used. This software enables Microsoft Word files to be imported to analyze and score their reading difficulty individually (ReadablePro 2024). Thus, all the CEOs' letters were imported and processed by the ReadablePro software.

The following five readability indexes were selected for analysis: Flesch–Kincaid Grade Level (FKGL), Gunning–Fog (GFI), Coleman–Liau (CLI), Simple Measure of Gobbledygook (SMOG), and Automated Readability (ARI) (Coleman and Liau 1975; Flesch and Ferry 1948; Kincaid et al. 1975; Klare 1974; McLaughlin 1969; Smith and Senter 1967). The readability indexes for the CEO letter for each company i and year t are calculated as in Equations (1–5).

$$\mathrm{FKGL}_{it} = \left(11.8 \times \frac{\text{Total Syllables}_{it}}{\text{Total Words}_{it}}\right) + \left(0.39 \times \frac{\text{Total Words}_{it}}{\text{Total Sentences}_{it}}\right) - 15.59 \quad (1)$$

$$\mathrm{GFI}_{it} = 0.4 \times \left[\left(\frac{\text{Total Words}_{it}}{\text{Total Sentences}_{it}}\right) + 100 \times \left(\frac{\text{Complex Words}_{it}}{\text{Total Words}_{it}}\right)\right] \quad (2)$$

$$\mathrm{CLI}_{it} = \left(0.0588 \times L_{it}\right) - \left(0.296 \times S_{it}\right) - 15.8 \quad (3)$$

$$\mathrm{ARI}_{it} = 4.71 \times \left(\frac{\text{Characters}_{it}}{\text{Words}_{it}}\right) + 0.5 \times \left(\frac{\text{Words}_{it}}{\text{Sentences}_{it}}\right) - 21.43 \quad (4)$$

$$\mathrm{SMOG}_{it}\ (\text{for the selected 30 sentences}) = 3 + \sqrt{\text{Polysyllabic Count}_{it}} \quad (5)$$

Finally, as per Nazari et al. (2017) and Nilipour et al. (2020), the average grade level (AGL) variable for each company i and year j was also calculated, which corresponds to the average of all the results obtained through Equations (1–5). This variable provides an overall average of reading ease of the selected CEO letters.

3.4 | Independent and Control Variables

Regarding the financial dimension (FINANCIALD), recent years have been marked by several global financial crises. The most relevant crises to date have been the global financial crisis (GFC) of 2008–2009, the sovereign debt crisis (SDC) of 2010–2012, and the COVID-19 pandemic of 2020–2021. Therefore, the categorical variable FINANCIALD was defined to analyze the impact of the different financial contexts on the readability level of the CEO letters analyzed.

Regarding the normative dimension, the main guidelines for drawing up CSR information are considered. Thus, the GRI guidelines, since the application of the G3 version, the IPIECA guidelines for the oil and gas sector, and the SASB-TCFD recommendations occupy the leading position in the context of the corporate reports analyzed, due to their widespread adoption. Additionally, companies are usually signatories to the UNGC to reinforce sustainable development. As the several CSR reporting standards can be applied together, it was not possible to define a single variable for the normative dimension. Consequently, the categorical GRI variable and the IPIECA, UNGC, and SASB-TCFD dichotomic variables were defined.

Regarding the cultural dimension, Hofstede's cultural dimensions constitute the main approach used to explain cultural differences between countries (Hofstede 1980, 1983, 1984, 2001; Hur and Kim 2017). Hofstede's six cultural dimensions include power distance (PDI), individualism (IDV), motivation toward achievement and success (MTA), uncertainty avoidance (UAI), long-term orientation (LTO), and indulgence (IND) (Hofstede 1980, 1983, 1984, 2001; Hofstede et al. 2010).

Principal component analysis (PCA) has been widely applied in studies exploring culture's moderating effect (Ge et al. 2023). However, PCA can only reveal linear relationships and may not be suitable (Ge et al. 2023; Linting and Van Der Kooij 2012). Categorical principal components analysis (CATPCA) is suitable when using only categorical data (Saukani and Ismail 2019). CATPCA is an alternative to PCA when the data sets contain variables with different levels of measurement (nominal, ordinal, or numerical) and which may have a non-linear relation to each other (Linting and Van Der Kooij 2012). Therefore, a CATPCA was used to reduce the information given by Hofstede's six cultural dimensions. Table 2 presents the main results for CATPCA.

By applying CATPCA, the cultural autonomy component (CAUTONOMY) was obtained, whose component loadings indicate a greater positive correlation between the PDI dimension and a negative correlation between the IDV and IND dimensions. We also obtained the ambition horizon component

TABLE 2 | Hofstede's cultural dimensions CATPCA.

Hofstede's dimensions	Component 1 CAUTONOMY	Component 2 AHORIZON
PDI	0.969	0.108
IDV	−0.843	−0.048
MTA	−0.568	0.712
UAI	0.138	−0.022
LTO	−0.026	0.938
IND	−0.872	−0.327
Eigenvalue (4.260)	2.752	1.509
Variance (%) (71.008)	45.859	25.149
Cronbach's alpha (0.918)		

Source: IBM SPSS Statistics 27.

(AHORIZON), whose component loadings indicate a strong positive relationship between the dimensions LTO and MTA.

Regarding internal determinants, the set of control variables described in Table 3 was defined. Company size, measured through LOG_ASSETS, LOG_REVENUE, or LOG_EMPLOYEES, is the main variable used to analyze the impact of company characteristics. The CEOs' age (CEO_AGE) and the percentage of women on the board of directors (GENDER_DIV) are tested to analyze the impact of governance and CEO characteristics. Regarding reporting characteristics, the length of the CEO letters (LETTER_LENGHT) was also tested. Finally, the control variables ROA and CSR are used to analyze the impact of financial and CSR performance on CEOs' motivations to conceal inferior CSR information.

3.5 | Models

Regression analysis using panel data estimations was conducted to test research hypotheses. Panel data are suitable for explaining why individual units behave differently and why a given unit behaves differently in different periods. AGL was regressed using basic linear models of unobserved effects, with fixed effects (FE) and random effects (RE) models being the main approaches. Hausman tests determined that the RE models were more suitable, and the Breusch and Pagan Lagrange multiplier test showed that company random effects were significant. Wald tests were also used to analyze whether year random effects should be considered. Overall, these tests demonstrated the explanatory capacity of the company's random effects in panel data models. For more detail about the methods, see for example Verbeek (2017) and Wooldridge (2010).

To analyze the individual explanatory power of each independent and control variable, a linear regression was run to estimate the parameters using the ordinary least squares method. Next, to test the overall and individual explanatory power of the independent and control variables on AGL, several FE, RE, and mixed effects models were developed, combining the measures selected to quantify company size. Nevertheless, the following model was assumed to be the base model:

$$\begin{aligned} AGL_{it} = {} & \alpha + \beta_0 + \beta_1 FINANCIALD_{it} + \beta_2 SASB - TCFD_{it} \\ & + \beta_3 CAUTONOM_{it} + \beta_4 LETTER\_LENGHT_{it} \\ & + \beta_5 LOG\_ASSETS_{it} + \beta_6 CEO\_AGE_{it} \\ & + \beta_7 GENDER\_DIV_{it} + \beta_8 ROA_{it} + \beta_9 CSR_{it} + (\alpha_i + \mu_{it}) \end{aligned} \quad (6)$$

for $i = 1, ..., 24$ and, for each i, $t = 1, ..., 14$, where α represents the population average intercept and $(\alpha_i + \mu_{it})$ represent the composite error term considering an individual specific component, which does not vary over time, and a remainder component, which is assumed to be uncorrelated over time.

Heteroscedasticity and autocorrelation tests in the FE and RE models were performed using modified versions of the Breusch–Pagan and Wooldridge tests (Breusch and Pagan 1979; Wooldridge 2010; Verbeek 2017). Multicollinearity was tested using Pearson's correlation matrix and VIF analysis, which indicated the absence of multicollinearity (Appendix 1). Robust standard deviations were applied in both models to adjust for heteroscedasticity and autocorrelation (Verbeek 2017; Wooldridge 2010). Previous studies have shown no endogeneity issues with the independent and control variables tested in this study. In the context of readability predictive models, only financial and capital market variables were tested for endogeneity.

Mixed-effects models were also tested on panel data in this research. These models are flexible and powerful tools for analyzing grouped data, as they combine fixed effects and random effects. These models allow for the inclusion of random effects in addition to the overall error term (Pinheiro and Bates 2000). Robust inference can also be adopted in mixed effects models, allowing for weighted estimation and robust variance–covariance matrices (Pinheiro and Bates 2000). Therefore, this technique was used to correct for heteroscedasticity and autocorrelation over time for each company.

TABLE 3 | Descriptive statistics of the dependent, independent, and control variables.

Panel A: Descriptive statistics of the readability indexes					
Dependent variables	**Summary**	**Mean**	**SD**	**Max**	**Min**
$FKGL_{it}$	Readability index using syllables, words, and phrases as variables for the CEO letter of company *i* in year *t*.	15.21	2.04	23.00	10.00
GFI_{it}	Readability index using words, sentences, and words with more than three syllables for the CEO letter of company *i* in year *t*.	18.28	2.23	26.30	13.10
CLI_{it}	Readability index using the average number of letters and sentences per 100 words for the CEO letter of company *i* in year *t*.	15.36	2.46	26.20	9.70
ARI_{it}	Readability index using characters, words, and sentences for the CEO letter of company *i* in year *t*.	15.11	1.79	20.90	10.00
$SMOG_{it}$	Readability index using words with more than two syllables for the CEO letter of company *i* in year *t*.	17.14	1.69	23.20	12.80
AGL_{it}	Arithmetic mean of the $FKGL_{it}$, GFI_{it}, CLI_{it}, ARI_{it} and $SMOG_{it}$.	16.22	1.89	23.00	11.12
Panel B: Descriptive statistics of the external dimensions					
Independent variables	**Summary**	**Mean**	**SD**	**Max**	**Min**
$FINANCIALD_{it}$	1—GFG (CEO letters for the company *i* for the period 2008–2009). 2—SDC (CEO letters for the company *i* for the period 2010–2012). 3—POST-CRISIS (CEO letters for the company *i* for the period 2013–2019). 4—COVID-19 (CEO letters for the company *i* for the period 2020–2021).	—	—	4.00	1.00
GRI_{it}	1—The company *i* in the year *t* adopted the GRI G3 guidelines. 2—The company *i* in the year *t* adopted the GRI G4 guidelines. 3—The company *i* in the year *t* adopted the GRI standards.	—	—	3.00	1.00
$IPIECA_{it}$	0 – The company *i* in the year *t* did not adopt the IPIECA guidelines. 1—The company *i* in the year *t* adopted the IPIECA guidelines.	—	—	1.00	0.00
$UNGC_{it}$	0—The company *i* in the year *t* is not a signatory to the UNGC. 1—The company *i* in the year *t* is a signatory to the UNGC.	—	—	1.00	0.00
$SASB\text{-}TCFD_{it}$	0—The company *i* in the year *t* did not adopt SASB-TCFD recommendations. 1—The company *i* in the year *t* adopted SASB-TCFD recommendations.	—	—	1.00	0.00
PDI_{it}	Hofstede's dimension of power distance for the company *i* in year *t*.	60.25	20.84	93.00	11.00
IDV_{it}	Hofstede's dimension of individualism for the company *i* in year *t*.	55.83	15.04	77.00	24.00
MTA_{it}	Hofstede's dimension of motivation toward achievement and success for the company *i* in year *t*.	60.29	19.21	95.00	31.00
UAI_{it}	Hofstede's dimension of uncertainty avoidance for the company *i* in year *t*.	67.83	26.21	100.00	30.00
LTO_{it}	Hofstede's dimension long-term orientation for the company *i* in year *t*.	61.50	19.22	100.00	28.00
IND_{it}	Hofstede's dimension of indulgence for the company *i* in year *t*.	42.00	18.01	71.00	20.00
$CAUTONOMY_{it}$	Hofstede's dimension CATPCA component–cultural autonomy.	0.00	1.00	1.46	−1.83
$AHORIZON_{it}$	Hofstede's dimension CATPCA component–autonomy horizon.	0.00	1.00	2.00	−1.50

(Continues)

TABLE 3 | (Continued)

Panel C: Descriptive statistics of the control variables					
Independent variables	**Summary**	**Mean**	**SD**	**Max**	**Min**
LOG_ASSETS_{it}	Natural logarithm of total assets for company *i* in the year *t*.	12.92	2.16	15.43	4.28
$LOG\_REVENUE_{it}$	Natural logarithm of total revenue for company *i* in the year *t*.	12.77	2.16	15.65	4.25
$LOG\_EMPLOYEES_{it}$	Natural logarithm of number of employees for company *i* in the year *t*.	10.21	1.57	13.22	7.34
$LETTER\_LENGHT_{it}$	Total number of words in the CEO letter from of company *i* in the year *t*.	967.80	448.61	2894.00	163.00
CEO_AGE_{it}	Age of the CEO of company *i* in the year *t*.	58.73	5.73	75.00	43.00
$GENDER\_DIV_{it}$	Percentage of female directors on the board of company *i* in the year *t*.	0.09	0.11	0.50	0.00
ROA_{it}	Return on assets of company *i* in the year *t*.	0.04	0.07	0.48	−0.21
CSR_{it}	WBA's Oil and Gas Benchmark 2023 ranking of company *i* in achieving the SDGs.	18.09	13.73	44.80	2.60

Source: Own elaboration.

4 | Analysis and Discussion of Results

4.1 | Descriptive Statistics

This section presents the main descriptive statistics for reading ease manipulation, including mean values, standard deviations, kurtosis, number of observations, and maximum and minimum values for the CEO letters of the 24 companies selected from the WBA's Oil and Gas Benchmark 2023, for the period 2008–2021.

Firstly, from a company perspective, the easiest CEO letters to read were released by UK companies BP Plc and Shell Plc. On the other hand, China National Petroleum Corporation obtained the worst average grade level (AGL) score, around 18.47, suggesting that the reader finds it quite difficult to read CEO letters. The other companies based in China (China Petroleum & Chemical Corporation Ltd. and China National Offshore Oil Corporation) also released CEO letters that were very difficult to read. In conclusion, 20 of the 24 companies analyzed had an average AGL of more than 15.00. These results suggest that the CEO letters published in the sustainability and integrated reports of oil and gas companies are difficult to read.

Second, from a longitudinal perspective, the period marked by CGC and SDC (2008–2012), as well as the years immediately following, shows great variability in the average readability level. From 2015 onwards, the AGL scores seem to have stabilized, undergoing less significant changes (Appendix 2). Additionally, Table 4 summarizes the main results obtained using the readability indexes presented in Equations (1–5) and the AGL.

According to Table 4, CEO letters were generally classified as very difficult to read, requiring an advanced level of education. The years 2008 and 2011 were associated with CEO letters that were easier to read. On the contrary, the high difficulty of reading the CEO letters in 2010 and 2013 is directly associated with the obfuscation hypothesis (Courtis 1998; Li 2008; Merkl-Davies and Brennan 2007; Rutherford 2003; Smith et al. 2006) and a greater motivation to create the illusion of a positive non-financial view of companies (Gosselin et al. 2021).

The results suggest that during 2010 and 2013, CEOs were motivated to obfuscate their narratives for several strategic reasons that could include concealing negative information (Courtis 1998; Li 2008; Rutherford 2003; Smith et al. 2006), maintaining a positive image and stakeholder trust (Abu Bakar and Ameer 2011; Bacha and Ajina 2020; Nazari et al. 2017) or delaying negative reactions (Dempsey et al. 2012; Li 2008; Nazari et al. 2017). In the oil and gas sector, CEOs' obfuscation behaviors are expected due to successive and ongoing adverse social, environmental, and ethical negative impacts, unscrupulous practices, biased behavior and irregularities, and fraud in the practice of CSR (Doni et al. 2022; Du and Vieira 2012; Kwarto et al. 2024).

Thus, the high percentage of CEO letters classified as very difficult to read according to various indexes reinforces that obfuscation behavior not only compromises transparency but also undermines stakeholders' ability to make informed decisions. Therefore, there is a need to simplify language to

TABLE 4 | Descriptive statistics of readability indexes.

Readability index	Mean	Min mean	Max mean	% CEO letters very difficult to read
Flesch–Kincaid Grade Level (FKGL)	15.21	14.80 (2008)	15.62 (2013)	45.83% (≥15.00)
Gunning–Fog (GFI)	18.29	17.85 (2011)	18.72 (2010)	72.32% (≥17.00)
Coleman–Liau (CLI)	15.36	14.92 (2008)	15.87 (2010)	90.02% (≥11.00)
Simple Measure of Gobbledygook (SMOG)	17.12	16.81 (2011)	17.57 (2010)	31.84% (≥18.00)
Automated readability (ARI)	15.10	14.52 (2011)	15.66 (2013)	74.70% (≥14.00)
Average grade level (AGL)	16.22	15.84 (2008)	16.64 (2010/13)	77.98% (≥15.00)

Source: Own elaboration.

reach a wider audience, fostering greater trust and accountability in the oil and gas industry. The results obtained confirm the evidence reported by most of the current scientific output: accounting narratives for CSR disclosure are a rather difficult genre to read (Abu Bakar and Ameer 2011; Adhariani and du Toit 2020; Mnif and Kchaou 2021; Nilipour et al. 2020; Smeuninx et al. 2020).

4.2 | Inferential and Regression Analysis

In this section, the results obtained from the statistical inference (Table 5) and econometric models adopted (Table 6) are presented. We recognize that the limited sample size of this study imposes limitations on extrapolating the results to the general population. To assess the robustness of the results, multiple inferential and regression analysis techniques were applied.

ANOVA, the Kruskal–Wallis's test, and hypothesis tests for differences between means were used for the inferential analysis. Fixed-effects (FE) and random-effects (RE) models were used for the regression analysis, which proved the suitability of the RE model. Mixed-effects models were also tested. The regression results show a high degree of qualitative similarity, with minor changes due to the different ways of estimating the models and the different combinations of control variables. The robustness of the results is validated by the consistency of conclusions across different analytical methods.

The variable FINANCIALD did not show significance in distinguishing the readability level of CEO letters; however, the results of econometric models 1 and 4 in Table 6 show that during the COVID-19 period, CEO letters were more difficult to read and that during the GFC and SDC periods they were easier to read, with significance levels of 5% and 10%. The macroeconomic conditions caused by the COVID-19 pandemic seem to have led CEOs to adopt more conservative, defensive (Gallego-Álvarez et al. 2014; Im et al. 2021) and obfuscating behaviors (Courtis 1998; Li 2008; Merkl-Davies and Brennan 2007; Rutherford 2003; Smith et al. 2006), through a decrease in the readability level of their letters.

On the contrary, during the GFC and SDC financial crises, CEOs tried to clarify the true impact of the crisis on performance, adopting communication actions marked by a transparent, sincere, and truthful discourse, so that it is easier to attribute causes to the external environment or blame negative results on adverse situational factors (Chintrakarn et al. 2018; Keusch et al. 2012; Moreno and Jones 2022; Patelli and Pedrini 2014). Therefore, H1 is verified with mixed evidence from the economic as well as cognitive and social psychology approaches.

Regarding the normative dimension, for a significance level of 5%, the tests presented in Table 5 suggest that the average readability level of the CEO letters of the sustainability and integrated reports prepared according to different CSR reporting frameworks is different. Specifically, CEO letters became more difficult to read with the transition from GRI G3 to G4. On the other hand, companies that adopted the IPIECA standard published letters that were easier to read. Furthermore, most of the models in Table 6 show that the CEO letters of companies that adopted the SASB-TCFD recommendations were easier to read at a significance level of 10%.

The results obtained for the GRI standard suggest that CEOs followed the motivations proposed by economic theories, since updating this standard was an attempt to camouflage signals and obfuscate information (Hamad et al. 2020; López-Santamaría et al. 2021; Merkl-Davies and Brennan 2011; Wagner and Seele 2017). However, the results obtained for the IPIECA standards and SASB-TCFD recommendations comply with the assumptions of the cognitive and social psychology approach (García-Sánchez et al. 2020). Therefore, CSR disclosure has been a mostly substantive strategy (Hahn and Lülfs 2014; Lodhia et al. 2020), resulting in more sincere behavior and easier-to-read information (Merkl-Davies and Brennan 2011) for greater attribution to the clear commitment to CSR activities (Jones et al. 2015; Wagner and Seele 2017). H2 is validated with mixed evidence from both theoretical approaches being studied.

Concerning the cultural dimension, the ANOVA and Kruskal–Wallis's tests show differences with a significance level of 1% between the average degree of readability of the letters from the CEOs of companies based in countries with high and low values for PDI, IDV, MTA, and IND (Table 5). For all the econometric models, the CAUTONOMY component has a positive and statistically significant impact on the reading ease of the letters from CEOs of oil and gas companies (Table 6).

These results prove the assumption that the tendency to obfuscate information is strongly influenced by the cultural contexts in which companies operate (Gray 1988; Kumar 2014;

TABLE 5 | ANOVA and Kruskal–Wallis's tests.

Independent variables		*F* test	K-W H
Financial dimension (FINANCIALD)		0.490	1.491
Normative dimension (GRI, IPIECA, UNGC, SASB-TCFD)		2.764**	14.162**
Cultural dimension	Power distance (PDI)	103.061***	70.089***
	Individualism (IDV)	28.118***	25.035***
	Motivation towards achievement (MTA)	9.194***	9.32***
	Uncertainty avoidance (UAI)	3.544	1.152
	Long term orientation (LTO)	0.001	0.000
	Indulgence (IND)	96.051***	65.282***

Note: The financial dimension is divided into four periods (GFC, SDC, POST-CRISIS, and COVID-19). The normative dimension is divided into three versions of the GRI standards, the IPIECA framework, adherence to the UNGC, and the SASB-TCFD recommendations. According to Adnan et al. (2018), the PDI, IDV, MTA, UAI, LTO, and IND were divided into high and low values for the dimension (below 0.50 and equal to or above 0.50). Statistics are presented for the full sample of 336 year-observations. *, **, and *** represent significant *p* values at 0.10, 0.05, and 0.01, in which the null hypothesis of equality of the means for AGL is rejected.
Source: IBM SPSS Statistics 27.

Mnif and Kchaou 2021; Noh 2021; Rutherford 2005), supporting H3. Thus, in societies with lower power distance (lower PDI), more oriented toward individualism (higher IDV), with greater motivation for achievement, heroism, and material rewards (higher MTA) and more concerned with valuing the satisfaction of human needs and desires (higher IND), the CEO letters were easier to read. The results for the IDV dimension are similar to the conclusions obtained by Mnif and Kchaou (2021).

Concerning the control variables, the results obtained from the linear regression indicate that there are internal characteristics of oil and gas companies, which impact the level of readability of the CEO letters (Table 6), supporting H4. First, the length of CEO letters (LETTER_LENGTH) had a significant negative impact on their level of readability. Longer letters are harder to read, and it is by this means that CEOs conceal more information. The results obtained are in accordance with Uddin and Chakraborty (2022), who found that longer and more complex CSR narratives are more difficult to read.

Additionally, larger companies (LOG_ASSETS and LOG_REVENUE) released CEO letters that were easier to read. The results corroborate the assumption that as larger companies are subject to greater pressure from stakeholders and have more resources to participate in CSR activities, their CEOs produce easier-to-read information to enhance the management of their companies' reputation and image (Abu Bakar and Ameer 2011; Rutherford 2003; Uddin and Chakraborty 2022). The results obtained corroborate the findings of Beuselinck et al. (2018), Mnif and Kchaou (2021), Uddin and Chakraborty (2022), Wang, Cao, et al. (2018), and Zhang et al. (2021). In contrast, smaller companies, which may be subject to less external pressure and have fewer resources, may be more likely to use complex language, either unintentionally or symbolically.

According to model 1 (Table 6), at a significance level of 10%, older CEOs prepared CSR information that is easier to read. As Fabrizi et al. (2014) pointed out, older CEOs tend to be more involved in sustainable activities due to less pressure from career goals, less sensitivity to market pressure, and a greater willingness to adopt ethical and sustainable attitudes, resulting in narratives that are easier to read (Mnif and Kchaou 2021). Wang, Hsieh, et al. (2018) also reported a negative relationship between the CEOs' age and the level of readability of CSR information.

Furthermore, the variable GENDER_DIV has a significant impact on the reading ease manipulation of CEO letters. Therefore, boards with a higher representation of female members had a positive effect on CEO letters, making them easier to read. Thus, female executives are less likely to obfuscate inferior CSR information. Harjoto et al. (2020) and Velte (2018) also suggest evidence that female leaders are associated with greater solidarity with the public, a propensity to engage in CSR activities, and greater readability of accounting narratives.

Previous literature demonstrates the statistical negative or positive impact of financial performance (Abu Bakar and Ameer 2011; Ajina et al. 2016; Bacha and Ajina 2020; Dempsey et al. 2012; Mnif and Kchaou 2021; Velte 2018; Xu, Dao, et al. 2022) and CSR performance (Bacha and Ajina 2020; Ben-Amar and Belgacem 2018; Melloni et al. 2017; Mnif and Kchaou 2021; Nazari et al. 2017; Wang, Hsieh, et al. 2018) on the readability level of accounting narratives. Therefore, according to the obfuscation hypothesis (Courtis 1998; Li 2008; Rutherford 2003; Smith et al. 2006), CEOs would aim to hide negative information, making their letters harder to read. However, financial performance (ROA) and CSR performance (CSR) did not have a significant impact on the reading ease manipulation of CEO letters disclosed by oil and gas companies, so it was not possible to verify the obfuscation hypothesis in this context.

4.3 | Theoretical and Practical Implications

This subsection is intended to complement the discussion of the results presented previously. Our research has fundamental theoretical and practical implications for researchers, investors,

TABLE 6 | Linear regression with panel data.

AGL (dependent variable)	Model 1. RE	Model 2. RE/ROB	Model 3. RE/ROB	Model 4. MIX/ROB	Model 5. MIX/ROB	Model 6. MIX/ROB
Hausman test	11.12*	11.13*	7.98			
Breusch–Pagan test	1.25	1.49	1.96**			
Wooldridge test	3.32*	4.63**	3.38*			
Company RE	Yes	Yes	Yes	Yes	Yes	Yes
Year RE	No	No	No	No	No	No
Overall R^2	0.323***	0.352***	0.318***			
Log Pseudol.				−566.469***	−564.555***	−566.807***
FINANCIALD	0.2397**	0.2110	0.2076	0.2407*	0.2125	0.2071
	(0.0991)	(0.1297)	(0.1356)	(0.1391)	(0.1379)	(0.1337)
SASB-TCFD	−0.3923*	−0.4122	−0.4479*	−0.3975	−0.4174*	−0.4457*
	(0.2300)	(0.2569)	(0.2704)	(0.2523)	(0.2537)	(0.2666)
CAUTONOMY	0.5968**	0.6262**	0.6947**	0.5968**	0.6258**	0.6952***
	(0.2484)	(0.2668)	(0.2717)	(0.2859)	(0.2641)	(0.2676)
LETTER_LENGTH	0.0004**	0.0004**	0.0004**	0.0004**	0.0004**	0.0004**
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
LOG_ASSETS	−0.1928**			−0.1905***		
	(0.0774)			(0.0712)		
LOG_REVENUE		−0.2421***			−0.2401***	
		(0.0762)			(0.0730)	
LOG_EMPLOYEES			−0.2774			−0.2794
			(0.1779)			(0.1741)
CEO_AGE	−0.0282*	−0.0294	−0.0303	−0.0287	−0.0298	−0.0301
	(0.0169)	(0.0228)	(0.0241)	(0.0232)	(0.0228)	(0.0236)
GENDER_DIV	−2.002**	−1.9653	−2.2354	−1.9827	−1.9455	−2.2532
	(1.0187)	(1.3950)	(1.4232)	(1.9827)	(1.3827)	(1.4008)
ROA	−0.1024	−0.0280	0.1279	−0.0770	0.0027	0.1112
	(1.1621)	(1.2712)	(1.2279)	(1.2352)	(1.2571)	(1.2102)
CSR	−0.0201	−0.1779	−0.0238	−0.0201	−0.0178	−0.0238
	(0.0179)	(0.1935)	(0.0197)	(0.0208)	(0.0191)	(0.0193)
CONSTANT	19.923***	20.615***	20.571***	19.919***	20.611***	20.583***
	(1.4845)	(1.9185)	(2.7884)	(1.9427)	(1.9161)	(2.7350)

Note: Each column represents a regression model (panel data estimations), where AGL (the dependent variable) is regressed on the independent variables, with different combinations for the company's complexity (LOG_ASSETS, LOG_REVENUE, and LOG_EMPLOYEES). See Table 3 for the definition of variables. The Hausman test compares the two sets of estimates (fixed-effects and random-effects), the Breusch–Pagan test analyzes the presence of heteroscedasticity and the Wooldridge test analyzes the presence of autocorrelation. The significance of company random-effects is tested by the Breusch–Pagan Lagrange multiplier test. The significance of year random-effects is tested by the Wald test. FE, RE, and MIX represent fixed, random, and mixed-effects models. ROB represents the linear regression with robust standard errors. The results for multicollinearity in Model 1 are presented in Appendix 1. Statistics are presented for the full sample of 336 year-observations. Standard errors in parentheses. *, **, and *** represent significant p values at 0.10, 0.05, and 0.01.
Source: Stata SE 12 (64-bit).

organizations, regulators, and other stakeholders that distinguish it from previous IM research.

Our study provides pioneering results for the literature on the CEOs' motivations regarding the use reading ease manipulation in CEO letters, recognizing their impact on the transparency and quality in CSR reporting (Diouf and Boiral 2017). As Nazari et al. (2017) and Smeuninx et al. (2020) also recognize, researchers can use the results obtained in for reading ease manipulation research to provide recommendations for assessing the effectiveness and best practices of companies' CSR disclosures. Thus, our findings contribute to the literature on IM and CSR disclosures by examining whether variations in textual complexity indicate opportunistic behavior or genuine efforts to disclose CSR activities. Furthermore, it is possible to contribute to the development of theoretical models that explain how CEOs manage the linguistic complexity of their letters in different contexts.

Investors' monitoring of CSR performance is also compromised if the characteristics of IM are not considered (Du and Yu 2021), so they should be cautious when analyzing information to assess companies' actual CSR performance (Fialho et al. 2021; Merkl-Davies and Brennan 2007, 2011). The results of this study offer investors a holistic perspective on how reading ease manipulation influences the transparency and quality of CSR disclosures, allowing them to make more informed, reliable, and objective decisions. IM has also practical implications for organizations (Bolino et al. 2008, 2016). Therefore, it is crucial for companies to gain more insight into the impacts of syntactic features of CSR reporting (Du and Yu 2021). This research offers a unique perspective on the CSR disclosure of CEO letters in the oil and gas sector, for companies to understand how effective and quality CSR disclosure can be achieved and how it is monitored by the scientific community and other stakeholders.

Considering our results, regulators should also consider the syntactic attributes of accounting narratives to understand the motivations of information preparers regarding linguistic choices to manipulate their transparency and quality (Rutherford 2003). Thus, they should draw up more specific regulations or guidelines (Adhariani and du Toit 2020) to prevent or limit the use of IM techniques (Diouf and Boiral 2017). Our research can promote a basis for regulatory initiatives to mitigate CEOs' obfuscation behaviors and promote clear language and improve the quality and transparency of CSR disclosures, fostering true corporate responsibility in the oil and gas sector.

5 | Conclusion

The oil and gas sector is known for disclosing social and environmental information, yet it is also linked to fraudulent behaviors with significant economic, environmental, and social consequences. Therefore, there is a growing need for greater transparency and quality in CSR disclosure and accountability to protect the environment and society. However, CSR disclosure may lack transparency and quality and may be manipulated through IM techniques to conceal negative information, ultimately misrepresenting companies' true environmental and social impacts. CEOs of oil and gas companies can use obfuscation techniques in their CSR reporting to distort public perception by shaping messages according to their motivations, potentially misleading stakeholders in their decision-making. Furthermore, IM is a complex phenomenon whose determinants are modified by external contextual determinants and corporate characteristics (Gosselin et al. 2021; Merkl-Davies and Brennan 2007, 2011).

Textual characteristics of CSR reporting, such as reading ease, play a vital role in conveying information effectively and ensuring transparency, particularly in the oil and gas sector (Doni et al. 2022; Du and Yu 2021; Kwarto et al. 2024). Thus, this study aimed to investigate the external and internal determinants that lead CEOs of oil and gas companies to obfuscate and manipulate CSR reporting. We analyzed 336 CEO letters from 24 companies classified in the WBA's Oil and Gas Benchmark 2023 and adopted the following methodologies: (i) calculation of readability indexes using ReadablePro software; (ii) definition of the independent and control variables; (iii) descriptive data analysis; (iv) inferential analysis using parametric and non-parametric tests; (v) multiple regression for panel data using random effects and mixed effects models. The approach adopted in this study was pioneering and integrated, due to the multi-method quantitative approach adopted, the analysis of external and internal determinants according to the theories of economics and cognitive and social psychology.

We found that UK companies produced the easiest-to-read letters, while Chinese companies had the most difficult ones. Overall, CEO letters are typically very difficult to read, requiring advanced education. These results align with the obfuscation hypothesis, indicating that CEOs intentionally made their letters complex to obfuscate negative CSR information and maintain a positive image. The use of excessively complex language suggests an intention to manipulate perceptions, minimize risks, and create an illusion of responsibility by avoiding substantive commitments. This biased behavior is particularly problematic given the sector's ongoing social, environmental, and ethical issues. Therefore, there is a great need to simplify language to promote greater trust and responsibility among oil and gas companies. Without these changes, CEO letters risk remaining little more than rhetorical devices.

We also found that the external context in which companies operate influences the CEOs to obfuscate CSR information. External factors, such as the macroeconomic conditions and changes in CSR reporting frameworks, influenced the readability level of CEO letters. Companies from cultures with certain characteristics, such as low power distance and high individualism, tended to produce more readable letters. Additionally, certain control variables, such as letter length, company size, CEO age, and female representation on boards, also impacted the readability level. Overall, this study highlights the importance of considering external and internal determinants when analyzing the readability of CEO letters in the oil and gas sector.

This study has key contributions, which distinguish it from previous IM and accounting research. To the best of the authors' knowledge, this is the first study to analyze the individual and joint impact of external conditions on CSR narratives.

Additionally, this investigation provides crucial information about the CEO's personality traits, values, behaviors, and attitude toward sustainability development. Furthermore, it was possible to investigate a yet unstudied perspective on the oil and gas sector, a controversial industry with a significant influence on the achievement of sustainable development and with transparency and accountability problems. As discussed above, this research has fundamental theoretical and practical implications for researchers, investors, organizations, regulators, and other stakeholders.

This study is subject to some limitations that can be addressed in future research. First, the study only focuses on CEO letters. Organizations have various complementarily tools at their disposal to communicate their CSR activities to stakeholders (Dienes et al. 2016; Du and Yu 2021; Lodhia 2018; Nilipour et al. 2020). Thus, future research should consider their complementarity and adopt an integrative perspective that considers the various communication channels.

Second, this study analyzed the textual complexity only through readability indexes. However, previous IM research has adopted content analysis techniques to make a detailed analysis of the messages contained in company reports (Cho et al. 2015; Hahn and Lülfs 2014; Talbot and Boiral 2018). Additionally, to use readability indexes, adopting an exhaustive content analysis would be necessary to analyze the CEOs' underlying messages in depth, identify patterns and themes in the discourse used, and contextualize the results obtained.

Finally, this study focused exclusively on reading ease manipulation. However, according to the literature, several categories and types of IM strategies and tactics can be distinguished (Hahn and Lülfs 2014; Hooghiemstra 2000; Hooghiemstra et al. 2017; Merkl-Davies and Brennan 2007, 2011, 2017; Talbot and Boiral 2018). Thus, future research should analyze several IM techniques to extend the understanding of the managers' motivations to obfuscate or highlight CSR reporting, for example, through thematic manipulation (Hamza et al. 2023), and how their complementarity influences the effectiveness of accounting narratives.

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Data Availability Statement

The full data supporting the conclusions of this study are available from the corresponding author on request.

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Appendix 1

Multicollinearity Test for Reading Ease Manipulation

	Pairwise correlations (bivariate Pearson correlation coefficients)											
Variable	**AGL**	**FINANCIALD**	**CAUTONOMY**	**SASB-TCFD**	**LETTER_LENGHT**	**LOG_ASSETS**	**CEO_AGE**	**GENDER_DIV**	**ROA**	**CSR**	**VIF**	**1/VIF**
AGL	1.000											
FINANCIALD	0.022	1.000									1.670	0.598
CAUTONOMY	0.449***	0.000	1.000								1.590	0.628
SASB-TCFD	−0.019	0.483***	−0.027	1.000							1.480	0.677
LETTER_LENGHT	0.119**	0.141***	−0.100*	0.039	1.000						1.470	0.682
LOG_ASSETS	−0.301***	0.100*	−0.029	0.092*	−0.153***	1.000					1.340	0.748
CEO_AGE	0.013	0.152***	−0.115**	0.103*	0.118**	−0.149***	1.000				1.210	0.827
GENDER_DIV	−0.356***	0.303***	−0.398***	0.231***	0.089	0.242***	−0.024	1.000			1.130	0.882
ROA	0.044	−0.269***	0.268***	−0.067	−0.065	−0.021	0.059	−0.178***	1.000		1.110	0.898
CSR	−0.335	0.000	−0.538***	−0.023	0.111**	−0.028	0.018	0.315***	−0.200***	1.000	1.070	0.930

Note: The table presents bivariate Pearson correlation coefficients for a two-tailed test of statistical significance for the variables used in the regression analysis and the variance inflation factor (VIF). Statistics are presented for the full sample of 336year-observations. *, **, and *** represent significant *p* values at 0.10, 0.05, and 0.01.
Source: StataSE 12 (64-bit).

Appendix 2

Descriptive Statistics of AGL by Year

AGL	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Mean	15.84	16.24	16.64	15.87	15.99	16.64	16.40	16.63	16.41	16.19	16.07	16.00	16.11	16.00
Median	15.91	16.16	16.86	15.80	15.51	16.79	16.40	16.55	16.74	15.95	16.00	15.77	16.06	16.70
Sd	1.831	1.753	2.145	1.944	1.648	1.588	1.749	1.918	1.587	1.874	2.361	2.100	1.971	2.015
Kurtosis	0.721	−0.174	−0.305	−0.285	−0.122	−0.080	−1.051	0.329	0.207	0.040	2.048	1.122	−0.635	−0.064
Min	11.88	12.26	13.08	12.38	12.22	13.22	12.92	12.62	12.42	11.92	12.10	11.12	12.00	11.82
Max	19.84	19.44	21.28	19.44	19.02	18.86	19.42	20.88	18.22	19.94	23.00	20.84	19.18	19.48
N	24	24	24	24	24	24	24	24	24	24	24	24	24	24

Source: Own elaboration.