Article:
Gerged, A.M. orcid.org/0000-0001-6805-2737 and Almontaser, T. orcid.org/0000-0002-8138-3757 (2021) Corporate adoption of SDG reporting in a non-enabling institutional environment: insights from Libyan oil industries. Resources Policy, 74. 102240. ISSN 0301-4207

https://doi.org/10.1016/j.resourpol.2021.102240

Corporate adoption of SDG reporting in a non-enabling institutional environment: Insights from Libyan oil industries

The authors whose names are listed immediately below certify that they have NO affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Ali M. Gerged
Corresponding author
Leicester Castle Business School, De Montfort University, The Gateway, Leicester, LE 9BH, UK, and Faculty of Economics, Misurata University, Misurata City, PO Box 2478,
ali.gerged@dmu.ac.uk

Tariq Almontaser

College of Applied Administrative and Financial Sciences, Tripoli-Libya**,** and Faculty of Business and Law, School of Economics, Finance and Accounting University of Coventry, Coventry, Priory St, Coventry CV1 5FB, UK
tariq@almontaser.com

Note: *The data that support the findings of this study are available from the corresponding author upon reasonable request*

This paper is cited as:

Gerged A M. & Almontaser, T. (2021). Corporate adoption of SDG reporting in a non-enabling institutional environment: Insights from Libyan oil industries. *Resources Policy*, Forthcoming: https://doi.org/10.1016/j.resourpol.2021.102240

Corporate adoption of SDG reporting in a non-enabling institutional environment: Insights from Libyan oil industries

Abstract:

Drawing on institutional voids, we examine how corporate engagement in sustainable development goals reporting (SDGR) is influenced by Libya's non-enabling institutional environment post the political change in 2011. Specifically, we examine the impact of national-level SDG performance (NLSP) of 2015 to 2010, as a proxy for the non-enabling institutional environment, on SDGR observed in 2015/2016. This study also explores whether the NLSP-SDGR nexus is contingent on the environmental sensitivity of oil industries in Libya. We employ a quantitative content analysis based on word counts to determine the level of SDGR among a cross-sectional sample of 524 observations of the major Libyan oil companies in the 2015/2016 fiscal year. Using measures derived from the World Development Indicators (WDI), a cross-sectional regression analysis has been employed to investigate how NLSP explains variations in SDGR noted in 2015/2016. Descriptive evidence indicates that Libyan oil companies tend to report SDG information on their websites about Good Health and Well-being (SDG3), Quality Education (SDG4), Affordable and Clean Energy (SDG7), Decent Work and Economic Growth (SDG8), Industry, Innovation and Infrastructure (SDG9), Sustainable Cities and Communities (SDG11), and Responsible Consumption and Production (SDG12). Our regression results suggest that the NLSP positively and significantly influences corporate commitment to the SDGR agenda among a sample of the major oil companies in Libya. Additionally, the environmental sensitivity of oil industries appeared to be moderating the NLSP-SDGR nexus. As SDGR tends to be a self-regulation mechanism, our empirical evidence emphasises the importance of establishing effective regulatory agencies to ensure companies' achievements of their social, environmental, and economic responsibilities efficiently and effectively.

Keywords:

Environmental Sensitivity, Institutional Voids, Libya, National-level SDG Performance, Non-enabling Institutional Environment, Oil Sector, Political Change, SDG Reporting.

1. Introduction

In the wake of political crises, firms may encounter a growing stakeholder pressure to enhance corporate efficiency and increase resource allocation to CSR in an attempt to legitimise their actions within the institutionalised environment (El-Bassiouny and Letmathe, 2019). The political context of a corporation is highly expected to affect its sustainability activities, including the degree to which companies react to political

pressures and changes (Roe, 2003). In emerging economies, institutions seem to be less predictable and stable than their developed counterparts (Gerged et al., 2021). In times of institutional voids, the external uncertainty escalates in a way, reduces corporations' capability to manage challenges and risks associated with their environment (Mortensen, 2015). According to Arnold and Valentin (2013), sustainable development goals (SDG) related to human rights may seem irrelevant to multinational corporations when working in emerging economies where human rights might not be of the governments' concerns due to corruption and institutional voids. In volatile political and institutional settings, such attempts to establish and preserve legitimacy in the eyes of many stakeholders becomes very challenging, particularly when institutions' credibility is questionable and when the voice of informal actors, including the media and non-governmental organisations (NGOs), has been silenced, leaving it undecided to whom the company should deal with in any effort to rebuild or maintain legitimacy (Darendeli and Hill, 2016). In such cases of political uncertainty, companies may adopt the UN SDG reporting framework to signalling their merit in upholding sustainability practices to influential stakeholders in order to legitimise their activities during an era of instability (El-Bassiouny and Letmathe, 2019; Su et al., 2014).

The United Nations adopted a worldwide action plan for sustainable development, named "*Transforming Our World: The 2030 Agenda for Sustainable Development*", in September 2015 (United Nations General Assembly, 2015). This action plan represents an international governance arrangement in response to the recent environmental challenges and social inequalities, comprising 17 SDGs with 167 targets. Crucially, the SDGs framework pairs a purpose to protect human rights, end hunger and poverty, combat social inequalities, protect the planet and its natural

resources, and create conditions for inclusive and sustainable economic growth (United Nations General Assembly, 2015, p. 3).

Although the SDG framework can innovatively extend the concept of non-financial reporting quality (PWC, 2018), a study undertaken by KPMG (2017) suggests that only 39% of the sampled corporations[1] explicitly published information on their implementations of the SDGs. Specifically, in CSR reporting, firms might overestimate or underestimate firms' SDG implementations (Tashman et al., 2019). Therefore, the United Nations has established the first attempt to document companies' contributions to SDGs through non-financial indicators cooperatively with the Global Reporting Initiative (GRI) and the World Bank Council for Sustainable Development (WBCSD) in 2017. This initiative presented the SDG Compass to help corporations bring their CSR strategies and report into line with the SDG framework (Pizzi et al., 2020). The SDG Compass offers a set of business indicators related to SDGs 1–16, mainly derived from the GRI guideline (Gunawan et al., 2020). The non-existence of provisions about SDG 17[2] can be associated with its broader approach to sustainable development, along with the lack of specific connections to current GRI indicators (Van der Waal & Thijssens, 2020).

The corruption of formal institutions and political regimes' instability appeared to deter corporations from investing in SDG projects (El-Bassiouny and Letmathe, 2019). This, as such, creates a non-enabling SDG reporting setting that discourages and occasionally even hinders the application of SDG reporting practices in emerging economies (Tashman et al., 2019). Our study capitalizes on institutional theory,

[1] The top 100 firms on the basis of sales revenue operating across 49 countries worldwide.
[2] Strengthen the means of implementation and revitalize the global partnership for sustainable development.

specifically institutional voids, to capture the complicated interactions between companies' SDG implementations and changes in their external (political) institutional environment. Specifically, we examine the impact of national-level SDG performance (NLSP) on corporate SDG reporting (SDGR) practices in a non-enabling institutional environment of an emerging country, namely Libya. Consequently, our study combines two research threads. First, we investigate the impact of the institutional environment (proxied by NLSP) on the corporate adoption of SDGR. Second, we focus on how the environmental sensitivity of oil industries can moderate the effect of challenging institutional conditions on SDGR implementations in Libya.

Although prior studies have recently become more attentive to exploring SDGR in both developed and developing economies (e.g., Gunawan et al., 2020; Izzo et al., 2020; Kaur & Lodhia, 2019; Pizzi et al., 2020; Tashman et al., 2019; Rosati & Faria, 2019; Van der Waal & Thijssens, 2020), studies addressing SDGR in a context of unstable institutions are still scarce (Chitonge et al., 2020). Most importantly, little is known about the impact of a non-enabling institutional environment on corporate SDGR during a political crisis (El-Bassiouny and Letmathe, 2019).

In light of these empirical gaps, our study innovatively explores the expected influence of Libya's non-enabling institutional environment after the political turmoil as measured by NLSP[3] on corporate adoption of SDGR amongst a cross-sectional sample of 524 online data records of the major Libyan oil companies. Therefore, we raise the following research questions: *what is the possible effect of the non-enabling institutional environment on corporate SDG reporting practices of oil firms in Libya?*

[3] We use the World Bank Data on the national-level SDG performance of Libya. Specifically, we use the ratio of NLSPs of 2015 (during the on-going political crisis) to 2010 (before the political crisis) as a proxy for the non-enabling institutional environment to SDGs implementations in Libya. (See Table 1 for more details).

And how does the environmental sensitivity of oil activities (i.e., upstream and downstream oil activities) moderate the relationship between NLSP and SDGR of a sample of Libyan oil companies?

Libya is a developing economy located in North Africa. The Libyan economy is mostly reliant on the oil and gas sector, representing about 96% of the governmental revenue. Libya has the largest oil reserves in Africa and about 3.4% of global oil reserves, which places it as the ninth-largest oil reserve (Almontaser, 2019). We believe examining SDGR in the Libyan oil sector is vital for various reasons. First, Libya recently opened up the economy to foreign investment and privatisation (Abdo and Al-Drugi 2012). In an attempt to support these initiatives, the Libyan Stock Market (LSM) established the Libyan Corporate Governance (CG) code in 2007 (Masoud, 2014). The Libyan CG code emphasises the importance of corporate disclosure and transparency practices, including sustainability reporting, voluntarily. However, unlike other African economies, SDG implementations in Libya are still at an infant stage (Almontaser, 2019). Second, in line with Darendeli and Hill (2016), we believe that Libya post-2011 political change provided an interesting context for studying the influence of unexpected regime change in a non-enabling institutional setting. Crucially, under Qadhafi ruling, Libya's institutions, involving the tribal ties, were progressively eroded, leading to massive institutional voids only filled by Qadhafi and his allies (Hweio, 2012). Qadhafi undermined the legal authority of Libyan tribes, though also depended on tribal allies and other informal arrangements to strengthen his power, regularly replacing a specific tribe's members for another in a long-term application of the political game of divide and conquer (Lacher, 2011).

Similarly, Qadhafi frequently reformed the rules and organizational arrangements, hence dodging any solidity in governmental institutions (El-Kikhia, 1997). The

outcomes of this governance system were astonishingly weak institutions and state intervention in all aspects of society and the economy (Darendeli and Hill, 2016; Hweio, 2012). Abdou (2015) supports this argument and concludes that Libya's institutional environment remains exceptionally inadequate compared to other African countries. Thus, Libya provides a unique context to examine the impact of a non-enabling institutional environment on corporate engagement in SDG reporting.

Second, the oil sector is the most critical sector of the Libyan economy and plays a crucial role in financing public projects and services (Abdo and Aldrugi 2012). Thus, research needs to understand the role of political and institutional instability in determining the SDGR level among a sample of major Libyan oil companies.

Using a deductive content analysis approach to analyse web-based SDG information related to the 17 SDG indicators published on 524 web posts of eleven major oil companies in Libya in 2015/2016, we found a relatively low level of SDGR in the Libyan oil sector compared to other developed counterparts focusing on 7 SDGs, only. Moreover, employing the World Bank Data on NLSP of Libya during an ongoing political crisis, our regression findings revealed that, in line with our expectations, the unstable political and institutional environment is positively and significantly associated with the volume of SDGR of oil companies in Libya at different types of oil activities. This means that the environmental sensitivity of oil activities (i.e., upstream and downstream oil companies) moderates the NLSP-SDGR nexus. To sum up, our empirical evidence suggests that institutional instability primarily influences the SDGR of oil companies during the ongoing political crisis in Libya, which is moderately affected by the type of oil activity. Our results are robust to robustness tests.

Our study contributes to the extant SDG literature as follows. First, our paper evaluates the SDGR of oil companies based on the SDG framework. We purport that examining the quantity of SDGR in line with the SDG Index is likely to enhance the validity and reliability of our research (Gunawan et al., 2020) because of its international acceptance as an established sustainability reporting framework (Izzo et al., 2020), thus allowing us to take part in comparative studies of our results with those of a similar nature, which have also been consistent with the SDG index. Second, it provides a picture of SDG reporting quantity in Libya during a political crisis and institutional failure. Third, it adds to the understanding of the macro-level determinants of SDGR quantity in emerging economies. Fourth, we exclusively explore the possible moderating impact of environmental sensitivity of oil activities on the association between NLSP and SDGR. Fifth, we employ a neo-institutional framework to theorise the relationship between NLSP and SDGR of oil companies in Libya. Finally, our research approach proposes methodological opportunities for future researchers on SDGR antecedents in and around institutional voids.

The remainder of the article is designed as follows. Section 2 presents an overview of the literature on SDG reporting in different institutional settings around the world. Section 3 shows the theoretical framework and develops the research hypotheses. Section 4 discusses the research design, while Section 5 describes and discusses the findings and additional tests. Finally, Section 6 discusses and summarises the key results, offers policymakers and practitioners recommendations, identifies the fundamental limitations, and eventually makes suggestions for future research.

2. **Previous studies, theoretical underpinning, and hypotheses development**

2.1. Previous SDG studies

Previous research sought to respond to the SDGs in various ways, such as potential meaning and ramifications of corporate sustainable development (Unerman & Chapman, 2014; Karaman et al., 2018); and considering specific aspects of the agenda of corporate adoption of the SDGs framework in concurrence with accounting scholarship (e.g. accounting for biodiversity, carbon accounting, human rights and accounting, and water accounting) (Bebbington & Larrinaga, 2014). Similarly, there is a number of existing research relating clearly to SDG 6, “clean water and sanitation” (Bebbington & Larrinaga, 2014; Jenkins et al., 2014; Schneider and Andreaus, 2018); a grouping of SDGs 5, 10 and 16 – concentrating on equalities and human rights (McPhail et al., 2016; Tweedie and Hazelton, 2015); SDG 13 – climate action (Brander, 2017; de Sousa Fragoso and de Almeida Noéme, 2018); and both SDGs 14 and 15 – life on land/life below the water (Cuckston, 2013). Although prior research offered some insights into SDGs implementations, this work was not informed by the SDG framing as it was conducted before the formulation of the UN SDG agenda. The SDGs, therefore, might arrange for openings to extend existing research and provide ongoing insights that might help advance the sustainable development of firms around the globe.

More relatedly, recent scholarship has paid attention to SDGR in the various settings of developed and developing economies worldwide (e.g., Gunawan et al., 2020; Izzo et al., 2020; Kaur & Lodhia, 2019; Pizzi et al., 2020; Tashman et al., 2019; Rosati & Faria, 2019; Van der Waal & Thijssens, 2020). For example, Pizzi et al. (2020) introduced an SDGR Score (SRS), which represents a qualitative proxy of a firm’s orientation towards implementing SDGR amongst a sample of Italian public firms. This study suggests a positive association between a firm's SDGR and various firm-level

determinants, where the highest SDGR levels are noted in environmentally sensitive industries, including the oil industry.

Similarly, in their early empirical evidence, Gunawan et al. (2020) examined whether CSR reporting in Indonesia is aligned with the SDG framework from 2014 to 2016. In brief, using a content analysis technique, this study indicates that Indonesian firms tend to support five SDGs are the achievement of (i) good health and well-being, (ii) sustainable cities and communities, (iii) responsible consumption and production, (iv) decent work and economic growth, and (v) quality education.

Extant sustainability/CSR disclosure in Libya is broadly limited to examining corporate dissemination of CSR information, including community, employee, customer, consumer and mainly environmental disclosures (e.g., Ahmad, 2004; Ishwerf, 2012; Al-Drugi & Abdo, 2012; Elmogla et al., 2015; Maatugh and Bindra, 2016; Alshbili & Elamer, 2019; Alshbili et al., 2020). The vast majority of sustainability/CSR reporting studies in Libya are confined to using the GRI index to measure CSR reporting practices. Additionally, to the best of our knowledge, there is no single study examining the macro-level determinants of SDGR, explicitly, in Libya in the time of political instability and institutional voids. Therefore, our study contributes to the existing body of SDGR literature in emerging economies, specifically in the African context. First, our paper evaluates the SDGR volume of oil companies based on the SDG framework using a quantitative content analysis technique. Second, we examine how national-level SDG performance (NLSP), as a proxy for the non-enabling institutional environment, influences the SDGR of a sample of the major Libyan oil companies from a neo-institutional perspective. Additionally, we evaluate the possible moderating effect of environmental sensitivity on the association between NLSP and SDGR in Libya in the 2015/2016 fiscal year.

In the next section, we employ the neo-institutional theory perspective to develop the main research hypotheses.

2.2. National-level SDG performance, corporate SDG reporting and institutional voids

As it has been defined by Short (2013), the institutional void is a type of regulatory void that suggests the existence of incompetent institutions for enforcing norms and regulations. Campbell (2007) states that national regulations are not only essential to corporate adoption of sustainability activities, though the existence of active governmental institutions also determines them. Previous empirical evidence indicates that when social and institutional concerns are embedded within corporate strategy and operations, self-regulation attempts are primarily expected to be unsuccessful under weak regulatory environment conditions (El-Bassiouny and Letmathe, 2019; Short, 2013; Tashman et al., 2019). In such a scenario, firms might not adhere to national regulations to their benefit, and self-regulation would simply pave the road for corporate '*opportunism*' rather than sustainability engagement (Campbell, 2007).

In political change times, normative expectations widely spread and determine the types of denied or accepted corporate behaviours. Nevertheless, compelling compliance with regulatory and normative obligations needs a robust institutional environment (El-Bassiouny and Letmathe, 2019). In emerging economies, given the non-existence of efficient compliance regimes, especially in political crises, in spite of the growing social power of corporations, the status of institutional voids can result in only artificial compliance with normative requirements to gain self-interests instead of achieving public objectives (Gugler and Shi, 2009). Therefore, we apply a neo-institutional theory framework to gain the richest possible understanding of how and why SDGR changes within a politically unstable country (Brammer et al., 2012).

Arguably, firms in environments with high levels of information asymmetry have a tendency to adopt the SDG framework to mitigate the asymmetric gap of information and enhance their performance (El-Bassiouny and Letmathe, 2019). In times of political change, companies may similarly expand their sustainability reporting practices as a tactic of signalling unobserved capabilities in addressing the existence of institutional voids (Miller et al., 2009; Su et al., 2014).

The implementations of SDG/sustainability initiatives by companies in developing economies are highly dependent on the institutional environment. For instance, in a study conducted in South Africa, Hamann (2004) shows that corporate adoption of sustainability reporting is attributed to institutional changes in the country's federal states that motivated companies to revise their competitive strategies and implement more "*enlightened self-interest*" strategies, including sustainability reporting. Similarly, Amaeshi et al. (2016) suggest that in the Nigerian weak institutional environment, corporations tend to adopt sustainability reporting initiatives that act as an institutional shield, which, in turn, enables them to improve their survival prospects in the future. El-Bassiouny and Letmathe (2019) recently examined the influence of political instability that followed the 2011 Egyptian revolution on Egyptian firms' CSR/sustainability reporting. This study suggests that political unrest appeared to have been positively associated with sustainability reporting in the Egyptian non-enabling institutional environment. Companies' attempts to increase resource acquisition certainty and ensure their survival prospects have inspired such an association. Accordingly, drawing on the notion of institutional voids, we argue that the institutional uncertainty as proxied by NLSP during the political turmoil is likely to be positively associated with corporate SDGR in Libya in 2015/2016. Thus, the first hypothesis to examine in this study is:

H1: *Ceteris paribus, there is a statistically significant positive relationship between national-level SDG performance and corporate SDG reporting across a sample of major oil companies in Libya.*

2.3. The moderating role of the environmental sensitivity of oil industries (upstream and downstream oil activities):

Based on SCR/sustainability literature, SDGR can be considered a legitimation tactic, allowing firms' legitimization procedure (Tilt, 2009). In this regard, sustainability reporting empowers companies to provide evidence on their accountability (Sumiani et al., 2007), in that way enabling them to obtain normative legitimacy from most essential stakeholders within their institutional environment (Deegan et al., 2002; Burgwal and Vieira, 2014).

Nevertheless, as various industries' activities consist of diverse characteristics, such as government interference and the potential risk to society, SDGR's levels and patterns similarly differ among these industries (Gao et al., 2005). The existing body of literature provides empirical support for this debate (e.g., Gray et al., 1995; Clarkson et al., 2010; Gerged et al., 2018), with many studies suggesting that the industry type affects the extent to which sustainability reporting is event-specific of particular dimensions of sustainability information and performance simultaneously. From a legitimation perspective, corporate involvement in sustainability reporting would be essential for those corporations operating in upstream oil activities, owing to their need to uphold their accountability within non-enabling institutional settings (El-Bassiouny and Letmathe, 2019; Pizzi et al., 2020) to legitimize their activities and fill the existing institutional voids.

Thus, the arguments of present empirical evidence contribute to developing the second main hypothesis in this study as follows.

H2: *Ceteris paribus, the more (less) the environmental sensitivity of the oil industry, the more (less) positive is the relationship between national-level SDG*

performance and corporate SDG reporting across a sample of major oil companies in Libya.

3. Research Design

3.1. Data and sample considerations:

The study's sample was drawn from eleven major oil corporations in Libya in 2015/2016. Specifically, we collect our data regarding the 17 SDGs from more than 7000 webpages on the oil companies' official websites in Libya, which resulted in 524 web posts (data records) published online regarding seven SDGs in 2015/2016. We measure SDGR practices of Libyan oil companies in the 2015/2016 fiscal year, precisely due to the continuous interruption of oil production and blockage of oil ports by the Libyan rivals from 2016 to 2020 (Faucon & El-Fekki, 2020), which affected various aspects of oil companies' operations, including the implementation of their SDG agenda (Alshbili, 2020). Hence, we wanted to exclude the direct impact of the coercive closure of oil facilities (e.g., oil fields and ports) on corporate SDG activities from 2016 to 2020 and redirect our efforts to exploring the early empirical evidence of SDG implementations in Libya in line with the starting point of the UN SDG agenda in 2015/2016.

Furthermore, according to Al-Drugi & Abdo (2012), Libyan oil corporations mainly disclose their sustainability information in websites and annual reports, though the mainstream of sustainability reporting literature in Libya focuses on the annual reports, only (e.g., Ahmad, 2004; Ishwerf, 2012; Al-Drugi & Abdo, 2012; Elmogla et al., 2015; Maatugh and Bindra, 2016; Alshbili & Elamer, 2019). Given this, and aligned with Joseph et al. (2019), we shift the focus to firms' websites to address an existing gap in CSR/sustainability reporting literature in Libya by bringing new insights regarding sustainability reporting on oil companies' websites. Following Al-Drugi & Abdo (2012)

and Alshbili & Elamer (2019), we seek to investigate SDGR activities amongst the largest 11 oil companies in Libya.

3.2. Measures:

The definitions of our research variables are presented in Table 1. In examining our hypotheses, we split the measurement of the variables of this study into four stages. First, to measure SDGR, a quantitative content analysis based on word counts is used to collect SDG information from corporations' websites in the 2015/2016 fiscal year. Second, to measure national-level SDG performance (NLSP) in the time of political change, we employ the World Bank scores for the NLSP of Libya. The World Bank's NLSP scores are based on the SDG indicators for each country worldwide. We innovatively divide the NLSP indices for Libya in 2015 by those of 2010 to measure the NLSP during the ongoing political and institutional voids as a proxy for the Libyan non-enabling institutional environment. Third, the environmental sensitivity of the oil industries is measured based on a dummy variable, which scores one if the company operates in the upstream oil industries (e.g., the extraction of the crude oil) and zero if the company relates to the downstream of oil activities, such as petrochemistry industries. Fourth, a set of national-level and firm-level control variables are employed to control for the link between NLSP and SDGR in the unstable institutional environment of Libya (See Table 1).

INSERT TABLE 1 HERE

This study applied a content analysis technique to quantify SDGR. In line with Krippendorff (2013), we use that quantitative content analysis as a technique to code a set of web pages into various categories relying on selected criteria (SDG indicators). Crucially, we use the content analysis method to collect data under

predetermined criteria by codifying SDG information quantitatively to track the presentation patterns and reporting of this information online (Guthrie and Abeysekera, 2006). In this regard, we discussed three technical requirements for the quantitative content analysis criteria. First, we have defined the analysis unit clearly and operationally (SDG posts online); second, we can accurately indicate whether a web post belonged to a specific category (SDG) or not, enhancing data capture. Third, consistent with the findings of prior studies of a similar nature, we can claim the reliability and validity of our data. For instance, Milne and Adler (1999) stated that the content analysis reliability is highly dependent on two main issues are (1) whether the instruments of coding were reliable and (2) whether the database has been drawn from a reliable analysis. The mainstream of scholarship on sustainability reporting in both developed and developing settings employed the word counts technique of quantitative content analysis (e.g., Deegan and Gordon, 1996; Campbell, 2004; Wilmshurst and Frost, 2000; Elmogla et al., 2015; Maatugh and Bindra, 2016; Alshbili & Elamer, 2019); thus, in line with prior literature, we use a content analysis technique based on word counts to provide early empirical evidence on the level of SDGR in Libya in 2015/2016. Specifically, we explore the level of disclosure of 7 SDGs on the 11 Libyan oil companies' websites across 524 web posts. In each web post (data record), we use word counts to measure the quantity of information regarding one SDG or more. This process resulted in 524 data records related to only 7 SDGs across 11 oil firms in Libya during an ongoing political crisis in 2015/2016.

3.3. Model specification:

Drawing on prior CSR/sustainability reporting in Libya, and given the cross-sectional nature of our data, we use multivariate regression analysis to test our study's central hypotheses. The regression model can be specified in equation (1) as follows.

$$SDGR_i = \beta_0 + \beta_1 NLSP_i + \beta_2 WSIZE_i + \beta_3 TRANS_i + \beta_4 SOCIAL_i + \beta_5 EC\_EN_i + \beta_6 INS_i + \beta_7 INEC\_EN_i + \varepsilon_i \quad (1)$$

SDGR is SDG reporting, NLSP is the national-level SDG performance score for each SDG provided by the World Bank. WSIZE is website size, TRANS is national-level transparency score, SOCIAL is the social performance score, EC_EN is the macro-level economic performance to environmental performance, INS is the inclusiveness of social performance, and ICEC_EN is the inclusiveness of economic to environmental performance. See Table 1 for more details regarding the operational definitions of research variables.

4. Empirical Analysis and Discussion

4.1. Univariate Analysis

Table 2 links the sampled firms to their reported SDG and data records (online posts) for each SDG. Specifically, it shows that the sampled companies have published information related to 7 SDGs only on their websites. These SDGs are SDG3 (Good Health and Well-being), SDG4 (Quality Education), SDG7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 11 (Sustainable Cities and Communities), and SDG 12 (Responsible Consumption and Production). This is consistent with SDG reporting of other developing economies. For example, Gunawan et al. (2020) indicate that Indonesian industrial corporations tend to report information on five SDGs, namely the achievement of (1) sustainable cities and communities (SDG 11), (2) good health and well-being (SDG 3), (3) decent work and economic growth (SDG 8), (4) responsible consumption and production (SDG12), and (5) quality education (SDG4). This result gives credibility to our evidence that environmentally sensitive industries seem to disclose information about specific SDG engagements to address the status of institutional voids in the context of emerging economies. There is noted variations in

the number of disclosed SDGs amongst our sampled companies, which varies between 7 SDGs reported by firm 9 and 3 SDGs, only published online by firms 2, 5, & 6. Table 2 also shows that the number of data records (online posts) related to a single SDG ranges between 63 posts published online regarding SDG9 by firm 9 and 1 online post published by firm 1 regarding SDG12.

INSERT TABLE 2 HERE

Table 3 analyses the data based on the SDGs rather than firms. It shows that SDGs 3, 8 & 9 have been reported by 91% of the sampled firms (10 out of 11 firms), although SDG7 has been only reported by 18% of our sample (2 out of 11 firms). Table 3 also shows that the largest number of online posts (data records) are related to SDG8 and SDG9 with 149 and 139, respectively. Each data record is measured by the word counts method. In contrast, the lowest number of online posts (i.e., one post) is related to SDG7. This means that the Libyan oil companies tend to disclose more information about decent work and economic growth (SDG8) and innovation and infrastructure (SDG9).

In contrast, they are less keen on reporting information on clean energy (SDG7). This result is consistent, to an extent, with Gunawan et al. (2020) that indicates that SDG8 is one of the top reported SDGs by the Indonesian environmentally sensitive industries in 2016. Likewise, Izzo et al. (2020) further support our empirical evidence and suggest that SDG8 and SDG9 recorded the highest scores (number of words) among a sample of Italian companies in 2016.

INSERT TABLE 3 HERE

Table 4 shows the national level scores of the SDGs in Libya based on the World Bank Data regarding the independent variable. It suggests that the World Bank provides

national-level data regarding the SDG performance (NLSP) of Libya for all SDGs except SDGs 1, 10, 13 and 16. Also, we labelled the disclosed SDGs by the sampled firms in bold to be the focus of our analysis. Table 4 indicates that NLSP scores are far better in 2010 before the political change than its scores in 2015 during an ongoing political and institutional crisis in the country. Specifically, by dividing the NLSP of 2015 by that of 2010, the last column implies that NLSP scores have deteriorated during the Libyan political crisis for all the NLSPs, except for SDG 12 (responsible consumption and production), which increased from 4.55 in 2010 to 8.05 in 2015. This reflects a non-enabling institutional environment in Libya due to the ongoing political crisis. Therefore, we have been motivated to examine the possible impact of the non-enabling institutional environment in Libya (i.e., proxied by the NLSPs of 2015 to 2010) on corporate engagement in SDGR in the 2015/2016 fiscal year.

INSERT TABLE 4 HERE

Table 5 illustrates the descriptive statistics of the research variables. The mean value of SDGR is 3.67 with Std. Dev. of 1.05, which varies between a maximum value of 8.02 and a minimum value of 1.09. This means that the average word counts regarding the reported SDGs (7 SDGs) across the published online posts (524) is 3.67. This score is far beyond SDGR in other developing countries. For example, Nechita et al. (2020) reported that the mean value of SDGR in Eastern Europe scored 17.45% in the Check Republic, 22.81% in Hungary, 19.30% in Poland, 20.47% in Romania, and 19.88% in Slovakia. Concerning the independent variable (NLSP), the mean value is 2.86 and the Std. Dev. is 2.85 with a minimum value of -1.86 and a maximum value of 5.18. When these figures are compared with those of other developed and developing economies, the argument that Libya is a non-enabling institutional environment to corporate SDGs engagement is supported. For instance, Schmidt-Traub et al. (2017)

reported the country-level SDG scores for the G20 country. It states that the mean value of the national-level SDG3 score is 68.47 in the United Kingdom and 21.23 in Nigeria, which is much higher than the average value of SDGs in Libya.

INSERT TABLE 5 HERE

4.2. Bivariate Analysis

Table 6 reports the correlations matrix for the main variables to examine the multicollinearity assumption. It illustrates the correlation coefficients. These coefficients' nature indicates that any residual non-normality in the study variables' distribution may be mild. Also, the correlation coefficients between every two variables in our data are not close to 0.8, which means that our main findings are unlikely to be affected by the issue of multicollinearity (see Cowls et al., 2015). Likewise, variance inflation factors (VIF) have been separately tested, and the finding reveals that auto-collinearity does not seem to be problematic in explaining the results of regression analysis. In brief, the bivariate analysis results indicate that our data statistically meet the five assumptions of conducting a multivariate regression analysis, namely the normality, linearity, auto-collinearity, heteroscedasticity, and multicollinearity.

INSERT TABLE 6 HERE

4.3. Multivariate Regression Analysis

4.3.1. SDG Reporting and National-Level SDG Performance

To test the primary study hypothesis, we employ a multivariate regression model to examine the impact of Libya's non-enabling institutional environment as proxied by NLSP in 2015 to 2010 on corporate adoption of SDGR during an ongoing political crisis. Table 7 presents this study's main findings—model 1 of Table 7 tests H1, which examines the NLSP-SDGR nexus. The empirical results indicate that Libya's national-

level SDG performance during an ongoing political change positively and significantly influences corporate engagement in SDG reporting at a 5% level of significance across a sample of 524 web posts of the major Libyan oil industries in the 2015/2016 fiscal year. Stating differently, in line with our expectations, the Libyan non-enabling institutional environment is attributed to corporate engagement in SDGR in Libya's oil sector. This means that H1 has been empirically supported. This result is consistent with El-Bassiouny and Letmathe (2019) that state that Egypt's political instability post the revolution in 2011 has a significant positive association with sustainability activities of a sample of Egyptian listed firms.

Theoretically speaking, companies may boost their investments in sustainability reporting practices during times of ongoing political change to diminish the asymmetric gap of information and signal their capability to address institutional voids (Miller et al., 2009; Su et al., 2014). In this regard, Ducassy (2013) argue that sustainability reporting potentially plays a "*buffering role*" when negative political incidents occur.

INSERT TABLE 7 HERE

Even though not the main focus of our study, Model 1 of Table 7 illustrates the impact of the chosen control variables on SDGR practices of Libyan oil companies. For example, the corporate website (WSIZE) size is positively associated with the volume of the online SDG reporting at a 5% statistical significance level. Similarly, transparency score (TRANS) and the inclusiveness of macro-level economic to environmental performance (INEC_EN) are positively and significantly associated with the level of SDGR at a 1% level of significance. With a smaller degree of association, the inclusiveness of country-level social performance (INS) has a significant positive association with SDGR at a 10% level of significance. In contrast, the national-level

social performance and economic to environmental performance variables have insignificant relationships with the volume of SDGR in the Libyan oil sector. These results are consistent with those of prior CSR/sustainability reporting literature. For example, Abdo and Al-Drugi (2012) document that firms' size is positively associated with Libyan oil companies' environmental reporting. Similarly, Nazari et al. (2017) suggest that social, economic, and environmental performances are attributed to increasing sustainability reporting trends.

4.3.2. The moderating role of environmental sensitivity of oil industries in the NLSP-SDGR nexus

Mode 2 of Table 7 shows the moderating analysis of the role of environmental sensitivity of oil industries on the NLSP-SDGR nexus in Libya. The moderating effect Model can be specified in equation (2) as follows:

$$SDGR_i = \beta_0 + \beta_1 NLSP_i + \beta_2 NLSP * ES_i + \beta_3 WSIZE_i + \beta_4 TRANS_i + \beta_5 SOCIAL_i + \beta_6 EC\_EN_i + \beta_7 INS_i + \beta_8 INEC\_EN_i + \varepsilon_i \quad (2)$$

SDGR is SDG reporting, NLSP is the national-level sustainability performance score for each SDG provided by the World Bank. NLSP*ES is the interaction term between NLSP and the environmental sensitivity of oil industries (ES). WSIZE is website size, TRANS is national level transparency score, SOCIAL is the social performance score, EC_EN is the economic score to the environmental score, INS is the inclusiveness of social performance, and ICEC_EN is the inclusiveness of economic to environmental performance. See Table 1 for more details regarding the operational definition of research variables.

Comparing with model 1 of Table 7, the relationship between NLSP and SDGR tends to be statistically stronger when the interaction term (NLSP*SE) is included in the regression analysis. Specifically, Model 2 indicates that NLSP has a significant positive association with SDGR at a 1% level of significance compared with 5% in Model 1 only. Also, the adjusted R^2 of Model 2 (0.30) is greater than the one of Model 1 (0.21), which means that Model 2 is more robust than Model 1 and including environmental sensitivity (ES) as a moderator enhances the impact of NLSP on SDGR

of Libyan oil companies. This implies that the environmental sensitivity of oil industries (ES) moderates the NLSP-SDGR nexus in the Libyan non-enabling environment, giving statistical credibility to H2.

This result is also in line with that of Pizzi et al. (2020) that concludes that the highest levels of SDG reporting are achieved by environmentally sensitive industries, which means that ES is an enabling factor of SDGR. In this context, Raufflet et al. (2014) argue that corporations operating in environmentally sensitive industries, including the oil companies, have a tendency to prepare sustainability reports associated with a high level of compliance with the requirements of key standard-setters. Nevertheless, Talbot and Boiral (2018), on the other hand, argue that a high level of SDGR engagement is not inevitably a signal of a true contribution to the SDGs due to a possibility of engagement in impression management and greenwashing activities while preparing the SDG report.

4.3.3. Robustness Checks

To check the robustness of this study's primary results, we involve additional control variables that might influence both dependent (SDGR) and independent (NLSP) variables. Model 3 of Table 7 presents the results of our additional check. We can specify the robustness check model in the following equation (3):

$$SDGR_i = \beta_0 + \beta_1 NLSP_i + \beta_2 WSIZE_i + \beta_3 TRANS_i + \beta_4 SOCIAL_i + \beta_5 EC\_EN_i + \beta_6 INS_i + \beta_7 INEC\_EN_i + \beta_8 ES_i + \beta_9 DISOR_i + \beta_{10} OWN_i + \varepsilon_i \quad (3)$$

SDGR is SDG reporting, NLSP is the national-level SDG performance score for each SDG provided by the World Bank. WSIZE is website size, TRANS is national level transparency score, SOCIAL is the social performance score, EC_EN is the economic score to the environmental score, INS is the inclusiveness of social performance, and ICEC_EN is the inclusiveness of economic to environmental performance, environmental sensitivity of oil industries (ES), DISLOR is disclosure orientation, and OWN is ownership structure. See Table 1 for more details regarding the operational definition of research variables.

The findings of estimating the additional variable test are principally comparable with those shown in Model 1 of Table 7. Crucially, the relationship between NLSP and SDGR is still positive and significant at a 1% level. In relation to the additional variables, Model 3 shows that the environmental sensitivity of oil industries (i.e., upstream and downstream of oil activities) is positively associated with SDGR at a 5% level of statistical significance. In contrast, both disclosure orientation and ownership structure are non-significantly associated with SDGR in the Libyan oil context. In other words, publishing SDG information, whether in English (shareholder-oriented SDGR) or Arabic (public-oriented SDGR), does not impact the level of SDGR across 524 online posts published on the websites of 11 major Libyan oil companies in the 2015/2016 fiscal year. Likewise, being a local or foreign oil company in Libya does not affect the volume of SDGR. These findings are inconsistent with those of prior studies that argue that foreign ownership is positively attributed to a greater degree of sustainability reporting, indicating that foreign investors ask for high-quality sustainability information to avoid the risk of expropriating corporate resources (e.g., Young et al., 2008; Ezhilarasi & Kabra, 2017; Gerged, 2021).

To the degree that the robustness check findings of examining the NLSP-SDGR nexus are statistically similar to these of the central Model 1, we are reasonably confident that our findings are robust and reliable.

5. Discussion and Conclusion

Our descriptive analysis shows that only seven SDGs have been reported by the major Libyan oil companies across 524 web posts in the 2015/2016 fiscal year. These SDGs are SDG3 (Good Health and Well-being), SDG4 (Quality Education), SDG7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 11 (Sustainable Cities and

Communities), and SDG 12 (Responsible Consumption and Production). The number of reported SDGs varies between 7 SDGs disclosed by firm 9 and 3 SDGs, only published online by firms 2, 5, & 6. Further, the number of data records (online posts) related to a single SDG ranges between 63 posts regarding SDG9 published by firm 9 and 1 web post published by firm 1 regarding SDG12. Our descriptive evidence also reveals that SDGs 3, 8 & 9 have been reported by 91% of the sampled firms (10 out of 11 firms), although SDG7 has been only reported by 18% of our sample (2 out of 11 firms). Besides, Libyan oil companies tend to disclose more information about decent work and economic growth (SDG8) and innovation and infrastructure (SDG9). In contrast, they are less keen on reporting information on clean energy (SDG7).

In relation to regression analysis, our empirical evidence indicates that Libya's national-level SDG performance of 2015 to 2010, as a proxy for the non-enabling institutional environment during an ongoing political change, positively and significantly influences corporate engagement in SDG reporting across a sample of 524 web posts of the major Libyan oil industries in 2015/2016 fiscal year. Also, the environmental sensitivity of oil industries appeared to be moderating the NLSP-SDGR nexus. The non-enabling institutional environment of Libya influences, to a large extent, the promotion of SDG practice (Alshbili et al., 2020). From a GDP growth rate of 5.02% in 2010 before the political change to -8.86% in 2015 (World Bank, 2021), the Libyan institutional environment post-2011 established less favourable and stable economic conditions to business, where Libyan firms underwent financial shortages that would arguably shift their focus to survival economic and financial factors, including productivity and profitability, rather than luxurious SDG initiatives (El-Bassiouny & Letmathe, 2019). Despite these economic and institutional constraints,

our sampled corporations maintained their commitment to reporting SDG information on their websites.

Given the Libyan non-enabling institutional environment, oil companies tend to strengthen their relational resources to enhance firm-government relationships in an effort to legitimatise their activities and ensure the stability of their resources (Marquis and Raynard, 2015). This also motivates them to engage in expansive SDG activities to address the shortages in social services provided by the Libyan government as a tactic to decrease the status of uncertainty (Su et al., 2014). In such a non-enabling institutional environment, this buffering role of SDGR potentially ensures Libyan companies' survival (Alshbili et al., 2020; Ducassy, 2013).

Consistent with prior studies, Libyan oil firms also seemed to use their SDGR practices as a strategy to signal their capabilities of addressing institutional voids and reduce the asymmetric gap of information in the context of political instability (e.g., El-Bassiouny & Letmathe, 2019; Marquis and Raynard, 2015; Miller et al., 2009; Su et al., 2014). Specifically, Libyan oil firms possibly adopted a socio-cultural bridging strategy by using SDGR practices to assist them in dealing with their non-enabling institutional environment.

As SDG reporting tends to be a type of self-regulation attempt undertaken by Libyan oil companies to enhance their survivability prospects, our empirical evidence implies the importance of developing effective regulatory enforcement mechanisms regarding corporate implementations of SDGR by the Libyan regulators and standards setters for companies to comply with. We believe that government policies and regulations may positively contribute to companies' adoption of SDGR and maintaining their social, environmental, and economic responsibilities efficiently and effectively.

In brief, our evidence shows that political change and a non-enabling institutional environment significantly influence a large scale of business aspects. SDG reporting is repeatedly perceived as a luxurious activity that is not only adopted when corporations work in stable institutional environments and realise economic growth opportunities via engaging with influential stakeholders. Nonetheless, we argue that SDG reporting is critical even in politically unstable and institutionally non-enabling business environments. Libyan oil companies still uphold their online SDG reporting for various reasons, such as ensuring their legitimacy and pursuing their commitment to developing well-functioning societies.

Although our results are robust, there remain some limitations that should be acknowledged. First, our study is limited to examining the NLSP-SDGR nexus in the 2015/2016 fiscal year due to the ongoing political crisis in Libya and the continuous interruption of oil production in the period from 2016 to 2020. Thus, further research is needed to employ panel data techniques in examining the determinants of SDGR from 2016 to 2020 to bring up more insights into SDGR practices during a civil war and blockage of oil companies' operations in Libya. Second, our evidence was confined to the oil sector. Future researchers are recommended to analyse SDGR determinants amongst other institutions, such as manufacturing, services, and banking institutions.

References:

Abdo, H. and Al-Drugi, A., 2012. Do Companies' Characteristics Play Key Roles in The Level of Their Environmental Disclosures? *Energy Research Journal,* 3 (1), 1-11.

Abdou, M. A., 2015. *Towards a New Solution of Minority Shareholder Protection in Libya: Letting the Minority Shareholders have a Voice.* PhD. Thesis, University of Glasgow.

Ahmad, N., 2004. *Corporate Environmental Disclosure in Libya: Evidence and Environmental Determinism Theory.* Napier University. Retrieved from http://researchrepository.napier.ac.uk/2784/

Al-Drugi, A., & Abdo, H., 2012. Investigating the development of environmental

disclosures by oil and gas companies operating in Libya: a comparative study. *International Journal of Economics and Finance Studies*, *4*(1), 1-10.

Al-Drugi, A., 2013. *Environmental Disclosure in the Libyan Oil and Gas Sector*. Nottingham Trent University.

Almontaser, T., 201). *The Impact of Management Reconstruction on Corporate Social Responsibility Online Reporting by Libyan Oil Companies in the Wake of the Arab Spring.* The University of Reading (Accessible from September 2022).

Alshbili, I. and Elamer, A., 2020. The Vocational Skills Gap in Accounting Education Curricula: Empirical Evidence from the UK'. *International Journal of Management in Education, 14*(3), 271-292

Alshbili, I., Elamer, A. A., & Moustafa, M. W., 2020. Social and environmental reporting, sustainable development and institutional voids: Evidence from a developing country. *Corporate Social Responsibility and Environmental Management*. Forthcoming.

Amaeshi, K., Adegbite, E., & Rajwani, T., 2016. Corporate social responsibility in challenging and non-enabling institutional contexts: Do institutional voids matter?. *Journal of Business Ethics*, *134*(1), 135-153.

Arnold, D.G. and Valentin, A., 2013. Corporate social responsibility at the base of the pyramid. *Journal of Business Research*, 66(10), 1904-1914.

Bebbington, Jan, and Larrinaga, C., 2014. Accounting and sustainable development: An exploration. *Accounting, Organizations and Society*, *39*(6), 395–413.

Brammer, S., Jackson, G., & Matten, D., 2012. Corporate social responsibility and institutional theory: New perspectives on private governance. *Socio-Economic Rit eview*, *10*(1), 3-28.

Brander, M., 2017. Comparative analysis of attributional corporate greenhouse gas accounting, consequential life cycle assessment, and project/policy level accounting: A bioenergy case study. *Journal of Cleaner Production*, *167*, 1401–1414.

Burgwal, D.V.D. and Vieira, R.J.O., 2014, Environmental disclosure determinants in Dutch listed companies, *Revista Contabilidade & Finanças*, *25*(64), 60-78.

Campbell, D. J., 2004. A longitudinal and Cross-sectional Analysis of Environmental Disclosure in U.K. Companies- a Research Note. *The British Accounting Review, 36*(1), 107-117.

Campbell, J. L., 2007. Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of Management Review*, *32*(3), 946-967.

Chitonge, H., Mokoena, A., & Kongo, M., 2020. Water and Sanitation Inequality in Africa: Challenges for SDG 6. In *Africa and the Sustainable Development Goals* (pp. 207-218). Springer, Cham.

Clarkson, P.M., Overell, M.B. and Chapple, L., 2011, Environmental reporting and its relation to corporate environmental performance. *Abacus*, 47(1), 27-60.

Cowls, J., & Schroeder, R., 2015. Causation, correlation, and big data in social science research. *Policy & Internet*, *7*(4), 447-472.

Cuckston, T., 2013. Bringing tropical forest biodiversity conservation into financial accounting calculation. *Accounting, Auditing and Accountability Journal*, *26*(5), 688–714.

Darendeli, I. S., & Hill, T. L., 2016. Uncovering the complex relationships between political risk and MNE firm legitimacy: Insights from Libya. *Journal of International Business Studies*, *47*(1), 68-92.

De Sousa Fragoso, R.M. and de Almeida Noéme, C.J., 2018. Economic effects of

climate change on the Mediterranean's irrigated agriculture", *Sustainability Accounting, Management and Policy Journal*, 9(2), 118-138.

Deegan, C., & Gordon, B., 1996. A study of the Environmental Disclosure Practices of Australian Corporations", *Accounting and Business Research,* 26(30), 187-199.

Deegan, C., Rankin, M., & Tobin, J., 2002. An Examination of the Corporate Social and Environmental Disclosures of BHP from 1983-1997: A test of Legitimacy Theory", *Accounting, Auditing & Accountability Journal,* 15(3), 312-343.

Ducassy, I., 2013. Does corporate social responsibility pay off in times of crisis? An alternate perspective on the relationship between financial and corporate social performance. *Corporate Social Responsibility and Environmental Management*, *20*(3), 157-167.

El-Bassiouny, D. and Letmathe, P., 2019. Political instability and corporate social responsibility: the case of Egypt", *Social Responsibility Journal*, 16(5), 745-767.

El-Kikhia, M. O., 1997. Libya's Qaddafi: The politics of contradiction. Gainesville, FL: University Press of Florida.

Elmogla, M., Cowton, C.J. and Downs, Y., 2015). Corporate social reporting in Libya: a research note", *Social Responsibility Journal*, 11(4), 923-932.

Ezhilarasi, G., & Kabra, K. C., 2017. The impact of corporate governance attributes on environmental disclosures: Evidence from India. *Indian Journal of Corporate Governance*, *10*(2), 24-43.

Faucon, B. and El-Fekki, A., 2020. Libya's Oil Output Halved by Port Blockade. *The Wall Street Journal*, Available at https://www.wsj.com/articles/libyas-oil-output-halved-by-port-blockade-11579353234

Gao, S., Heravi, S., & Xiao, J. Z., 2005. Determinants of Corporate Social and Environmental Reporting in Hong Kong: A Research Note", *Accounting Forum,* 29(2), 233-242.

Gerged, A. M., 2021. Factors affecting corporate environmental disclosure in emerging markets – the role of corporate governance structures. *Business Strategy and the Environment, 30*(1), 609-629.

Gerged, A. M., Cowton, C. J., & Beddewela, E. S., 2018. Towards sustainable development in the Arab Middle East and North Africa region: a longitudinal analysis of environmental disclosure in corporate annual reports. *Business Strategy and the Environment*, *27*(4), 572-587.

Gray, R., Kouhy, R., & Lavers, S., 1995. Constructing a Research Database of Social and Environmental Reporting by U.K. Companies", *Accounting, Auditing & Accountability Journal,* 8(2), 78-101.

Gugler, P., & Shi, J. Y., 2009. Corporate social responsibility for developing country multinational corporations: the lost war in pertaining to global competitiveness?. *Journal of Business Ethics*, *87*(1), 3-24.

Gunawan, J., Permatasari, P., & Tilt, C., 2020. Sustainable development goal disclosures: do they support responsible consumption and production?. *Journal of Cleaner Production*, *246*, 118989.

Guthrie, J., & Abeysekera, I., 2006. Content Analysis of Social, Environmental Reporting: What is New?", *Journal of Human Resource Costing & Accounting,* 10(2), 114-126.

Hamann, R., 2004. Corporate social responsibility, partnerships, and institutional change: the case of mining companies in South Africa", *Natural Resources Forum,* 28(4), 278-290.

Hweio, H., 2012. Tribes in Libya: Fromsocial organization to political power. African Conflict & Peacebuilding Review, 2(1): 111–121.

Ishwerf, A. I., 2012. *Stakeholders' requirements and perceptions of corporate environmental disclosure in Libya* (Doctoral dissertation, Salford: University of Salford).

Izzo, M. F., Ciaburri, M., & Tiscini, R., 2020. The Challenge of Sustainable Development Goal Reporting: The First Evidence from Italian Listed Companies. *Sustainability*, *12*(8), 3494.

Jenkins, B. R., Russell, S., Sadler, B., & Ward, M., 2014. Application of sustainability appraisal to the Canterbury Water Management Strategy. *Australasian Journal of Environmental Management*, *21*(1), 83-101.

Joseph, C., Gunawan, J., Madi, N., Janggu, T., Rahmat, M., & Mohamed, N., 2019. Realising sustainable development goals via online integrity framework disclosure: Evidence from Malaysian and Indonesian local authorities. *Journal of Cleaner Production*, *215*, 112-122.

Karaman, A.S., Kilic, M. and Uyar, A., 2018. Sustainability reporting in the aviation industry: worldwide evidence, *Sustainability Accounting, Management and Policy Journal*, 9(4), 362-391.

Kaur, A., & Lodhia, S. K., 2019. Sustainability accounting, accountability and reporting in the public sector. *Meditari Accountancy Research*. 27(4), 498-504

KPMG., 2017. The road ahead. *The KPMG Survey of Corporate Responsibility Reporting*, *2017*.

Krippendorff, K., 2013. *Content Analysis: An Introduction to its Methodology (3rd ed.)*, SAGE Publications, United States.

Lacher, W., 2011. Families, tribes and cities in the Libyan revolution. Middle East Policy, 18(4): 140–154.

Maatugh, M. M. A., & Bindra, S. P. (2016). Civil Aviation & Metrology Education & Research for Sustainable Development in Libya. *Journal of Economic Development, Management, IT, Finance & Marketing*, *8*(1), 1-14.

Marquis, C., & Raynard, M., 2015. Institutional strategies in emerging markets. *Academy of Management Annals*, *9*(1), 291-335.

Masoud, N., 2014. What the Libyan Economy Can Learn from Emerging Countries. *In: The 2010 University of Huddersfield Annual Learning and Teaching Conference, University of Huddersfield,* Huddersfield, UK: Available at SSRN: https://ssrn.com/abstract=2429827

McPhail, K., Macdonald, K., and Ferguson, J., 2016. Should the international accounting standards board have responsibility for human rights? *Accounting, Auditing and Accountability Journal*, *29*(4), 594–616.

Milne, M. J., & Adler, R. W., 1999. Exploring the Reliability of Social and Environmental Disclosures Content Analysis, *Accounting, Auditing & Accountability Journal,* 12(2), 237-256.

Mortensen, P., 2015. Navigating Institutional Voids", Master's Thesis, Copenhagen Business School, Copenhagen.

Nazari, J. A., Hrazdil, K., & Mahmoudian, F., 2017. Assessing social and environmental performance through narrative complexity in CSR reports. *Journal of Contemporary Accounting & Economics*, *13*(2), 166-178.

Nechita, E., Manea, C. L., Nichita, E. M., Irimescu, A. M., & Manea, D., 2020. Is Financial Information Influencing the Reporting on SDGs? Empirical Evidence from Central and Eastern European Chemical Companies. *Sustainability*, *12*(21), 9251.

Pizzi, S., Rosati, F., & Venturelli, A., 2020. The determinants of business contribution to the 2030 Agenda: Introducing the SDG Reporting Score. *Business Strategy*

and the Environment. Forthcoming.
PWC., 2018. SDG Reporting Challenge. From promise to reality: Does business really care about the SDGs? And what needs to happen to turn words into action.
Raufflet, E., Cruz, L. B., & Bres, L., 2014. An assessment of corporate social responsibility practices in the mining and oil and gas industries. *Journal of Cleaner Production*, *84*, 256–270.
Roe, M., 2003. Political determinants of corporate governance: political context, corporate impact. Harvard law school john M. Olin centre for law, economics and business discussion paper series. Paper 451, available at http://lsr.nellco.org/harvard_olin/451
Rosati, F., & Faria, L. G. D., 2019. Business contribution to the Sustainable Development Agenda: Organizational factors related to early adoption of SDG reporting. *Corporate Social Responsibility and Environmental Management*, *26*(3), 588-597.
Schmidt-Traub, G., Kroll, C., Teksoz, K., Durand-Delacre, D., & Sachs, J. D., 2017. National baselines for the Sustainable Development Goals assessed in the SDG Index and Dashboards. *Nature Geoscience*, *10*(8), 547-555.
Schneider, T., & Andreaus, M., 2018. A dam tale: Using institutional logics in a case-study on water rights in the Canadian coastal mountains. *Sustainability Accounting Management and Policy Journal*, *9*(5), 685-712.
Short, J. L., 2013. Self-Regulation in the Regulatory Void: "Blue Moon" or "Bad Moon"?. *The Annals of the American Academy of Political and Social Science*, *649*(1), 22-34.
Su, W., Peng, M., Tan, W. and Cheung, Y., 2014. The signalling effect of corporate social responsibility in emerging economies, *Journal of Business Ethics*, Vol. 143 No. 3, pp. 479-491.
Sumiani, Y., Haslinda, Y., & Lehman, G., 2007. Environmental Reporting in a Developing Country: A Case Study on Status and Implementation in Malaysia, *Journal of Cleaner Production,* 15(10), 895-901.
Talbot, D., & Boiral, O., 2018. GHG reporting and impression management: An assessment of sustainability reports from the energy sector. *Journal of Business Ethics*, *147*(2), 367–383.
Tashman, P., Marano, V., & Kostova, T., 2019. Walking the walk or talking the talk? Corporate social responsibility decoupling in emerging market multinationals. *Journal of International Business Studies,* 50(2), 153–171.
Tilt, C. A., 2009. Corporate Responsibility, Accounting and Accountants, *Professional Perspectives of Corporate Social Responsibilities*, pp. 11-32.
Tweedie, D., and Hazelton, J., 2015. Social Accounting for Inequality: Applying Piketty's Capital in the Twenty-First Century. *Social and Environmental Accountability Journal*, *35*(2), 113–122.
Unerman, J., and Chapman, C., 2014. Academic contributions to enhancing accounting for sustainable development. *Accounting, Organizations and Society*, *39*, 385–394.
United Nations, 2014. The United Nations Environment Programme Annual Report. Available at https://www.unenvironment.org/resources/annual-report/unep-2014-annual-report
United Nations General Assembly, 2015. Transforming our world: the 2030 Agenda for sustainable development. Resolution 15e16301. United Nations.
Van der Waal, J. W., & Thijssens, T., 2020. Corporate involvement in Sustainable Development Goals: Exploring the territory. *Journal of Cleaner Production*, *252*,

119625.
Wilmshurst, T. D., & Frost, G. R., 2000. Corporate Environmental Reporting", *Accounting, Auditing & Accountability Journal,* 13(1), 10-26.
World Bank, 2021. Libya GDP Growth Rate 2000-2021, available at: http:// https://datatopics.worldbank.org/world-development-indicators/
Young, M. N., Peng, M. W., Ahlstrom, D., Bruton, G. D., & Jiang, Y., 2008. Corporate governance in emerging economies: A review of the principal–principal perspective. *Journal of Management Studies*, *45*(1), 196-22.

Table 1:
Operational Definition of Research Variables

Variable	Description
	Dependent Variable
SDGR	A quantitative content analysis technique has been employed to measure SDG reporting of Libya's oil companies across 524 data records (web posts) based on the word counts technique.
	Independent Variable
NLSP	We employ the World Bank scores for national-level SDG performance (NLSP). See the following link https://datatopics.worldbank.org/sdgs/SDG-selected-indicators.html The World Bank's NLSP scores are based on the SDG indicators for each country worldwide. We innovatively divide the NLSP scores for Libya in 2015 (during the ongoing political change) by 2010 (before the political change in 2011) to represent the non-enabling institutional environment to SDGs' performance in Libya.
	Control Variables
WSIZE	The sampled companies' website size was measured as the number of web pages provided by Archive.org in the 'Summary' tab.
TRANS	Transparency score is uniquely calculated as the ratio of SDG scores in Libya at the national level to the average SDGs scores internationally of 2015 based on the world bank data (SDG_{Libya} / SDG_{UN}). This measurement is developed by the authors based on
SOCIAL	SOCIAL is the social performance score defined as the weight of the social domain in each national-level SDG. This wight is uniquely identified based on universal measurements introduced by the UN in the UNEP Annual Report (2014, p 28). Specifically, we transform these universal (international) measurements to represent the Libyan context as follows. i. We divide each national SDG score of Libya on the international average of the same SDG based on the World Bank Data to obtain the Libyan performance ratio to the global average concerning each SDG score, called the $SDG_{Libya\text{-}UN}$. ii. Then, we multiply the universal social dimension weight in each SDG (WSD_{UN}) (from the UNEP Annual Report (2014)) with the $SDG_{Libya\text{-}UN}$ to get the Libyan weight of social dimension in each SDG, namely WSD_{Libya} ($WSD_{UN} \times SDG_{Libya\text{-}UN} \approx WSD_{Libya}$ or SOCIAL).
EC_EN	The economic to environmental dimensions score is again the weight of economic dimension to environmental dimensions in each SDG score of Libya at the national level. We decided not to measure the economic and environmental performances individually for collinearity reasons. Specifically, we use a similar measurement to the social performance score. In brief, we calculate the EC_EN as follows: $WEC\_END_{UN} \times SDG_{Libya\text{-}UN} \approx WEC\_END_{Libya}$ or EC_EN
INS	In the initial stages of data collection, we realized that each post (data record) had been published online about the SDGs amongst the sampled firms either contained information (words) about two SDGs or one SDG, only. We innovatively utilized the WSD Libya calculated earlier for each SDG to measure the three domains' inclusiveness. Crucially, we take the absolute difference between the WSD_{Libya} of the two SDGs in the same post. For those posts associated with one SDG, only, we give it the value 0 in an indication of no inclusiveness in SDG reporting.
INEC_EN	INEC_EN is the inclusiveness of the economic dimension ratio to the environmental dimension of an SDG in each post. We follow the same process applied to calculate the INS.
ES	Environmental sensitivity of oil activities measured as a dummy variable equal to 1 if the company operates in the upstream type of oil activities (e.g., the crude oil extraction) and 0 if the company related to the downstream of oil activities such as petrochemistry activities.
DISOR	Disclosure orientation is a dummy variable equal to 1 if the SDGR is published in English, representing a shareholder-oriented disclosure. It is equal to 0 if it is in Arabic, which means a public-oriented SDG disclosure.
OWN	Ownership is a dummy variable equal to 1 if it is a Joint Venture, including foreign ownership, and 0 if it is a locally owned company.

Table 2:
Data records of SDGR across the sampled companies

Company	Reported SDG	No. SDGs by a firm	No. of Data Records
1	SDG 3: Good Health and Well-being	4	3
1	SDG 8: Decent Work and Economic Growth		8
1	SDG 9: Industry, Innovation and Infrastructure		7
1	SDG 12: Responsible Consumption and Production		1
2	SDG 3: Good Health and Well-being	3	3
2	SDG 8: Decent Work and Economic Growth		3
2	SDG 11: Sustainable Cities and Communities		3
3	SDG 3: Good Health and Well-being	4	2
3	SDG 8: Decent Work and Economic Growth		4
3	SDG 9: Industry, Innovation and Infrastructure		1
3	SDG 11: Sustainable Cities and Communities		1
4	SDG 3: Good Health and Well-being	4	8
4	SDG 8: Decent Work and Economic Growth		14
4	SDG 9: Industry, Innovation and Infrastructure		6
4	SDG 11: Sustainable Cities and Communities		2
5	SDG 8: Decent Work and Economic Growth	3	2
5	SDG 9: Industry, Innovation and Infrastructure		2
5	SDG11: Sustainable Cities and Communities		1
6	SDG 3: Good Health and Well-being	3	1
6	SDG 8: Decent Work and Economic Growth		4
6	SDG 9: Industry, Innovation and Infrastructure		8
7	SDG 3: Good Health and Well-being	6	5
7	SDG 7: Affordable and Clean Energy		1
7	SDG 8: Decent Work and Economic Growth		6
7	SDG 9: Industry, Innovation and Infrastructure		3
7	SDG 11: Sustainable Cities and Communities		6
7	SDG12: Responsible Consumption and Production		2
8	SDG 3: Good Health and Well-being	4	1
8	SDG 9: Industry, Innovation and Infrastructure		13
8	SDG 11: Sustainable Cities and Communities		1
8	SDG12: Responsible Consumption and Production		11
9	SDG 3: Good Health and Well-being	7	19
9	SDG 4: Quality Education		21
9	SDG 7: Affordable and Clean Energy		3
9	SDG 8: Decent Work and Economic Growth		44
9	SDG 9: Industry, Innovation and Infrastructure		63
9	SDG 11: Sustainable Cities and Communities		27
9	SDG12: Responsible Consumption and Production		29
10	SDG 3: Good Health and Well-being	6	51
10	SDG 4: Quality Education		4
10	SDG 8: Decent Work and Economic Growth		61
10	SDG 9: Industry, Innovation and Infrastructure		32

10	SDG11: Sustainable Cities and Communities		14
10	SDG12: Responsible Consumption and Production		8
11	SDG 3: Good Health and Well-being	6	2
11	SDG 4: Quality Education		1
11	SDG 8: Decent Work and Economic Growth		3
11	SDG 9: Industry, Innovation and Infrastructure		4
11	SDG 11: Sustainable Cities and Communities		2
11	SDG12: Responsible Consumption and Production		3
No. Observations			524

Note: No. of Data Records means the number of posts that have been published on a company's website regarding a particular SDG. Then, we use a content analysis technique to calculate the number of words related to each SDG in each post.

Table 3:
Data Records of SDGs across firms

SDGs	Reported by No. Firms	No. Data Records
GOAL 1: No Poverty	0	0
GOAL 2: Zero Hunger	0	0
GOAL 3: Good Health and Well-being	10	95
GOAL 4: Quality Education	3	26
GOAL 5: Gender Equality	0	0
GOAL 6: Clean Water and Sanitation	0	0
GOAL 7: Affordable and Clean Energy	2	4
GOAL 8: Decent Work and Economic Growth	10	149
GOAL 9: Industry, Innovation and Infrastructure	10	139
GOAL 10: Reduced Inequality	0	0
GOAL 11: Sustainable Cities and Communities	9	57
GOAL 12: Responsible Consumption and Production	6	54
GOAL 13: Climate Action	0	0
GOAL 14: Life Below Water	0	0
GOAL 15: Life on Land	0	0
GOAL 16: Peace and Justice Strong Institutions	0	0
GOAL 17: Partnerships to Achieve the Goal	0	0
No. Observations		524

Table 4:
NLSP during the ongoing political crisis in Libya based on the World Bank Data.

National level SDG performance	2010 score	2015 score	2015/2010
[1] No Poverty	0.00	0.00	0.00
[2] Zero Hunger	0.43	0.42	0.98
[3] Good health and well-being	**2.51**	**2.01**	**0.80**
[4] Quality education	**1.39**	**1.27**	**0.92**
[5] Gender equality	0.72	0.84	1.16
[6] Clean water and sustainable	1.06	0.98	0.93
[7] Affordable clean energy	**0.46**	**0.46**	**1.00**
[8] Decent work and economic growth	**0.92**	**0.81**	**0.88**
[9] Industry innovation and infrastructure	**0.048**	**7.49**	**0.0016**
[10] Reduced Inequalities	0.00	0.00	0.00
[11] Sustainable and communities	**0.98**	**0.92**	**0.94**
[12] Responsible consumption and production	**4.55**	**8.046**	**1.77**
[13] Climate action	0.00	0.00	0.00
[14] Life below water	16129.91	66451.83	4.12
[15] life on the land	0.000465	0.000467	1.00
[16] peace, justice and strong institutions	0.00	0.00	0.00
[17] Partnerships for the goals	0.02	0.02	0.90

Note: As Table 1 shows, we use the world banks NLSP scores of 2015 to 2010 as a proxy for Libya's non-enabling institutional environment due to the ongoing political change from 2011 to date. The NLSPs in bold are the only ones that can be matched with corporate SDGs reported by the sampled firms; thus, it will explain the variations in SDGR among the sampled firms across 524 observations (web pages).

Table 5:
Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
SDGR	524	3.67	1.05	1.09	8.02
NLSP	524	2.86	2.85	-1.86	5.18
WSIZE	524	5.30	1.17	2.77	7.45
TRANS	524	4.01	0.60	2.39	4.61
SOCIAL	524	-0.34	4.62	-7.89	3.69
EC EN	524	0.94	1.08	-1.09	1.71
INS	524	2.78	0.89	-0.09	3.69
INEC_EN	524	0.48	1.57	0.00	11.13
ES	524	0.61	0.49	0.00	1.00
DISOR	524	0.44	0.49	0.00	1.00
OWN	524	0.61	0.49	0.00	1.00
NLSP*ES	524	4.53	4.86	0.00	13.30

Note: Dependent variable is the sustainable development goals reporting (SDGR) of a selected sample of Libyan oil companies across 524 observations in 2015/2016. The independent variable is the national-level SDG performance (NLSP). The control variables are the size of companies' website (WSIZE), transparency score (TRANS), social performance score (SOCIAL), economic to environmental performance ratio (EC_EN), inclusiveness of social performance score (INS), inclusiveness of economic to environmental performance ratio (INC_EN), the environmental sensitivity of the oil industry (ES), the orientation of disclosure (DIOR), the ownership structure (OWN). The moderating effect of environmental sensitivity of firms' activity (upstream oil activities or downstream oil activities) on the SDGR-NLSP nexus is measured by including the interaction term between NLSP and ES (i.e., PSDG*ES). See Table 1 for more details.

Table 6:
Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) SDGR												
(2) NLSP	0.031**											
(3) WSIZE	0.292**	-0.277**										
(4) TRANS	0.032**	0.079**	-0.308**									
(5) SOCIAL	-0.040**	0.099**	0.273**	0.581**								
(6) EC_EN	0.219**	0.125**	0.295**	0.004**	-0.140**							
(7) INS	0.040**	0.138**	0.151**	-0.111**	-0.131**	0.166**						
(8) INEC_EN	0.130**	0.328**	0.021**	0.384**	0.336**	-0.015**	-0.700**					
(9) ES	0.114**	0.271**	0.015**	0.31**	0.273**	0.203**	0.165**	0.007**				
(10) DISOR	0.102**	0.407**	-0.485**	0.465**	0.411**	0.148**	0.171**	0.057**	0.414**			
(11) OWN	0.122**	0.250**	-0.597**	0.294**	0.251**	0.206**	0.172**	-0.005**	0.080**	0.398**		
(12) NLSP*ES	0.041**	0.006**	0.093**	0.021**	0.011**	0.024**	0.190**	0.070**	0.048**	0.044**	0.032**	

Note: Dependent variable is the sustainable development goals reporting (SDGR) of a selected sample of Libyan oil companies across 524 observations in 2015/2016. The independent variable is the national-level SDG performance (NLSP). The control variables are the size of companies' website (WSIZE), transparency score (TRANS), social performance score (SOCIAL), economic to environmental performance ratio (EC_EN), inclusiveness of social performance score (INS), inclusiveness of economic to environmental performance ratio (INC_EN), the environmental sensitivity of the oil industry (ES), the orientation of disclosure (DIOR), the ownership structure (OWN). The moderating effect of environmental sensitivity of firms' activity (upstream oil activities or downstream oil activities) on the SDGR-NLSP nexus is measured by including the interaction term between NLSP and ES (i.e., PSDG*ES). See Table 1 for more details.** shows significance at the 0.05 level.

Table 7:
Regression analysis

Model	(1)	(2)	(3)
Dependent	**SDGR**	**SDGR**	**SDGR**
Regression	**Main regression**	**Moderating Effect Analysis**	**Additional Control Variables**
NLSP	.739**	.828***	1.125***
	(.326)	(.289)	(.255)
WSIZE	.206**	.192**	.523**
	(.087)	(.077)	(.234)
TRANS	5.381***	6.974***	4.854**
	(1.673)	(1.495)	(1.969)
SOCIAL	-.067	-.137	-.078
	(.099)	(.085)	(.097)
EC_EN	.435	.243	.28
	(.382)	(.323)	(.398)
INS	.444*	.889***	.465*
	(.269)	(.258)	(.271)
INEC_EN	.277***	.39***	.277***
	(.097)	(.089)	(.101)
ES	-	-	-1.905**
			(.823)
DISOR	-	-	.128
			(.243)
OWN	-	-	1.065
			(.712)
NLSP*ES	-	1.849***	-
		(.317)	
_cons	22.534***	27.342***	22.988***
	(5.486)	(4.866)	(5.856)
Observations	524	524	524
R-squared	.206	.303	.254
F-value	18.466	18.925	14.122

Note: Dependent variable is the sustainable development goals reporting (SDGR) of a selected sample of Libyan oil companies across 524 observations in 2015/2016. The independent variable is the national-level SDG performance (NLSP). The control variables are the size of companies' website (WSIZE), transparency score (TRANS), social performance score (SOCIAL), economic to environmental performance ratio (EC_EN), inclusiveness of social performance score (INS), inclusiveness of economic to environmental performance ratio (INC_EN), the environmental sensitivity of the oil industry (ES), the orientation of disclosure (DIOR), the ownership structure (OWN). The moderating effect of environmental sensitivity of firms' activity (upstream oil activities or downstream oil activities) on the SDGR-NLSP nexus is measured by including the interaction term between NLSP and ES (i.e., PSDG*ES). See Table 1 for more details. *Standard errors are in parentheses *** p<.01, ** p<.05, * p<.1*