

A Work Project, presented as part of the requirements for the Award of a Master's degree in
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EXPLORING MATERIALITY DISCLOSURE TRANSPARENCY IN
SUSTAINABILITY REPORTING
EVIDENCE FROM COMPANIES WITH DIFFERENT LEVELS OF SUSTAINABILITY
AND OTHER COMPANY CHARACTERISTICS

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Abstract

The EU regulatory environment on sustainability reporting is in need to eliminate its deficiencies to enable the EU's envisaged green transition. This research explores Materiality Disclosure Transparency (MDT), in companies across different Levels of Sustainability, Sustainability Reporting Standards, Industries and Regulatory Environments. Analyses of CSRD-mandated companies' non-CSRD-governed reports reveals heterogeneous and on average relatively low MDT, with no differences across Regulatory Environments or Industries. Increased transparency was observed in reports using exclusively the GRI and in High Emission companies. The study recommends unified and tightened regulations, along with a standardized Sustainability Reporting Standard, to enhance MDT and improve report usability.

Keywords:

Sustainability Reporting, Materiality, Transparency, Sustainability, CSRD

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1. Introduction

A positive trend towards a more sustainable future seems to be evident when looking at the signing of the Paris Agreement in 2015, movements like Fridays for Future winning over society or journalists reporting on the increase of sustainability-focused communication by companies (Davies 2023; Braun 2019; *THE PARIS AGREEMENT* 2016). Moreover, investors' and credit rating agencies' awareness that sustainability significantly influences a company's financial risk and performance, as well as its refinancing capabilities, is steadily growing (Directive (EU) 2022/2464; Chodnicka-Jaworska 2021). Yet annual CO₂-eq have risen by about 5 % since 2015 (Friedlingstein et al. 2022, sec. 7). Looking at data on CO₂-eq by industry, only three out of 19 industries contribute over 80 % of CO₂-eq¹, giving them significant leverage in reducing emissions (OECD 2022). Consequently, numerous stakeholders demand significant changes from these industries (Ambrose 2021).

In 2014, the European Commission (EC) introduced Directive 2014/95/EU also called the *Non-Financial Reporting Directive* (NFRD) with the aim of enhancing transparency and accountability in businesses regarding social and environmental matters (Hahnkamper-Vandenbulcke 2021). Due to the high flexibility as well as many deficiencies in the NFRD are sustainability reports prone to be misused for reputation management and greenwashing (Directive (EU) 2022/2464). Therefore, the EC has introduced the *Corporate Sustainability Reporting Directive* (CSRD) as a revision of the NFRD in 2021 but under which no reports have been disclosed yet (Hahnkamper-Vandenbulcke 2021). Even though the U.S. SEC (Securities and Exchange Commission) proposed regulations, the USA and Asia still lack rules of a mandatory nature, positioning the EU as the current forefront leader in sustainability reporting regulations (Schumacher et al. 2022; U.S. Security and Exchange Commision 2022).

¹ The metric measure carbon dioxide equivalents (CO₂-eq) standardizes emissions from diverse greenhouse gases by converting them into the equivalent amount of carbon dioxide (CO₂) that holds the same global warming potential (Eurostat 2023).

Beske, Haustein and Lorson (2019) indicate that materiality disclosure, which is a specific and essential element of sustainability reporting to decide on what is being disclosed, is rather a means for purpose. The findings demonstrate a deficiency in detailed disclosure of the processes to determine material topics and, thus, in transparency. The study suggests that companies strategically select topics to tailor report content to their preferences.

Given the existing shortcomings within the currently active NFRD and the lack of regulations outside the EU, along with the evolving societal values and investors' and rating agencies' increased awareness of ESG factors, this Work Project's main research question explores *Materiality Disclosure Transparency (MDT)* in sustainability reports from companies across different *Levels of Sustainability (LoS)*. Considering the deficiencies in regulation, MDT is further investigated in the context of other company characteristics, including the variables Sustainability Reporting Standard, Industry and Regulatory Environment. By studying the most recent reports from companies mandated to disclose information under the CSRD in the coming years, a baseline is established for future research on the effectiveness of such tightened directives as the CSRD. This, in turn, guides future policy-making and overall informs report users as well as preparers. Furthermore, this study contributes novelty to research with the main research question and follows the call for more research on non-financial materiality disclosure through its research on other company characteristics (Unerman and Zappettini 2014).

This Work Project proceeds as follows: Section 2 delves into the theoretical background, elaborating on the NFRD, the CSRD, and the concept of materiality. Section 3 provides an overview of empirical research on materiality and introduces the term Materiality Disclosure Transparency. Section 4 outlines the methodology, and Section 5 presents and discusses the results from data analysis, sets them in the context of limitations and gives recommendations. Finally, Section 6 concludes, highlighting key findings and implications.

2. Sustainability Reporting and Materiality in the European Union

The Non-financial Reporting Directive was geared towards augmenting the transparency of social and environmental information disclosed by companies operating in all sectors across Member States (Hahnkamper-Vandenbulcke 2021, 3). It is important to note that EU directives such as the NFRD need to be transposed into national laws by Member States. However, the national laws and their requirements are similar, although not fully harmonized, as shown in Appendix 1 (Accountancy Europe, CSR Europe, and GRI 2017, 16–31).

The directive requires banks, insurance companies and large listed entities with more than 500 employees (Directive 2013/34/EU, art. 2; Directive 2014/95/EU, art. 19a) to provide next to its financial disclosures “a non-financial statement containing information to the extent necessary for an understanding of the undertaking's development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters” (Directive 2014/95/EU, art. 19a). While the NFRD does not particularly use the terms “materiality” or “material” and neither defines the previous (Directive 2014/95/EU), it does pick up the concept standing behind it in the prior extract, to be more precise the concept of *double materiality*. Materiality is a concept to define which information is relevant for decision-making (Cambridge Dictionary, n.d.). Thus, it specifies what information needs to be disclosed, even though different perspectives can be adopted. Within the excerpt of the prior citation “information to the extent necessary for an understanding of the undertaking's development, performance, position“ (Directive 2014/95/EU, art. 19a) the NFRD picks up the long-established perspective of *financial materiality* which is defined by the International Accounting Standards Board as follows: “Information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of a specific reporting entity’s general purpose financial statements make on the basis of those financial statements.” (International Accounting

Standards Board 2017, 15). In response to new reporting requirements, particularly in the realm of sustainability reporting, the need for a revised definition arose. While financial materiality is also known as the outside-in perspective, as it considers external impacts on the financial performance, *impact materiality* is referred to as the inside-out perspective (Bossut et al. 2021,1; EFRAG 2021, 8). The latter describes the impact of a company's business activities on non-financial matters (Bossut et al. 2021, 1) and is referred to in the excerpt "impact of its activity " (Directive 2014/95/EU, art. 19a). As both concepts appear, the NFRD refers to the so-called double materiality (Bossut et al. 2021, 1). The excerpts are linked by "and" which has led the audience to different interpretations. When evaluating which information has to be disclosed, some believed that both types of materiality had to be met while others interpreted it as requiring meeting at least one (Baumüller and Schaffhauser-Linzatti 2018). These divergent interpretations can significantly influence reports' scope, resulting in inconsistencies among statements (Müller, Scheid, and Baumüller 2021).

Sustainability reporting standards provide guidance on the process of sustainability reporting and materiality disclosure, but neither the utilization of a sustainability reporting standard nor detailed disclosure requirements such as sector-specific indicators are enforced by the NFRD. Nevertheless, companies may, if desired, consult either European, international or national standards or frameworks for which examples can be found in Appendix 2. The most commonly used is the Global Reporting Initiative (GRI) Standard, whose structure is available in more detail in Appendix 3 (The Alliance for Corporate Transparency 2019). Materiality Disclosure consists of multiple steps and within the "GRI 3: Material Topics 2021" the GRI requires three disclosures: firstly, disclosures on the Process to determine material topics on which, secondly, establishes the List of material topics on which, thirdly, builds the Management of material topics (Global Reporting Initiative 2021, 16–19). The GRI aims to enable companies to increase "transparency on their contribution to sustainable development"

(Global Reporting Initiative, n.d., para. 2). Thus, fulfilling the previous disclosures should result in Materiality Disclosure Transparency.

Along with others, were these rather malleable requirements meant to factor in the complex nature of corporate social responsibility (CSR) in businesses and, with that, the diverse ways of implementing CSR and related policies in organizations (Directive 2014/95/EU). However, this adaptability led to several shortcomings, which hindered the attainment of other objectives. In 2020, the EC consulted stakeholders on their views on a review of the NFRD. Respondents have criticized the comparability (71 %), reliability (60 %) and relevance (57 %) of non-financial information disclosed. Furthermore, 82 % believed that a requirement to use one common sustainability reporting standard would mitigate the identified problems. Finally, there is robust backing for mandating companies to reveal their materiality disclosure process while numerous stakeholders, encompassing preparers, financial authorities, and national standard setters, endorse the concept of double materiality (Hahnkamper-Vandenbulcke 2021, 4–7).

The Non-financial Reporting Directive has set the EU on the right path, but due to its many deficiencies, there is a clear necessity for an improved directive to increase reliability, comparability, relevance and, with that, Materiality Disclosure Transparency while mitigating greenwashing (Directive (EU) 2022/2464).

The European Green Deal, communicated in December 2019, aims to promote sustainable growth, facilitate the green transition, and mobilize investments for the EU's 2050 climate neutrality goal. Achieving this requires directing financial support to activities aligned with environmental, social, and governance objectives. This necessitates enhancing data accessibility and encouraging disclosure of non-financial information by companies and financial institutions to facilitate assessing, monitoring, and managing performance and societal impact. As a consequence of the public consultation referred to earlier in this section and to fortify the fundament of sustainable investment in the EU, the EC proposed the Corporate

Sustainability Reporting Directive in April 2021 (Publications Office of the European Union, n.d.). The CSRD has been in force since January 5, 2023, and thus the first reports under the revised directive are still to be published (Directive (EU) 2022/2464, art. 7). It will gradually apply to all EU companies listed on an EU-regulated market, except micro-enterprises. Moreover, the CSRD includes large EU entities that are not listed, with 'large' defined as satisfying at least two of the following three criteria: total assets exceeding 20 million euros, net turnover surpassing 40 million euros, and employing more than 250 individuals. Also, non-EU companies or groups are mandated by the CSRD when they have a significant presence² in the EU (Directive (EU) 2022/2464, art. 1; Directive 2013/34/EU, art. 2; art. 3). Consequently, the CSRD extended the scope of sustainability reporting from around 6,000 companies (European Commission 2021a) to 49,000 entities (PwC, n.d.).

Implementing double materiality has proven challenging due to stakeholders' concerns about the omitted definition of materiality and the confusion arising from the connecting word "and" in the NFRD (Hahnkamper-Vandenbulcke 2021, 3). Consequently, the CSRD clarifies that “[...] undertakings should consider each materiality perspective in its own right and should disclose information that is material from both perspectives as well as information that is material from only one perspective” (Directive (EU) 2022/2464, recital 29).

To create new and universally obligatory sustainability reporting standards in the context of the CSRD, the EC has tasked the European Financial Reporting Advisory Group (EFRAG) with formulating the now-published European Sustainability Reporting Standard (ESRS) (Hahnkamper-Vandenbulcke 2021; EFRAG, n.d.-b). Claudius Baumann is a manager and authorized signatory at KPMG who was very close to the development of the ESRS. In a

² Significant presence is determined by a company engaging in substantial activity within the EU, indicated by a net turnover in Europe exceeding 150,000,000 € annually for two consecutive financial years and a company possesses either: an EU branch with a net turnover of at least 40,000,000 €, or an EU subsidiary meeting at least two of the large company requirements.

webinar, he summarizes further adaptations and points out a paradigm shift as he observes an alignment of non-financial and financial reporting (*#10 WeShyft Webinar 2022*, 19:32). While the revision is also intended to ease the reporting load, researchers evaluate the new requirements, including the implementation of double materiality, as cumbersome as they potentially lead to new cost burdens for companies and disclosure overload for report users (Müller, Scheid, and Baumüller 2021).

3. Materiality Disclosure in Literature

The first literature on sustainability reports dates back to 1981. Initially, the rate of publication in this field was rather modest; however, a significant upswing has been evident since 2009 (Pasko et al. 2021). Looking at specific literature on materiality analysis, a shortage of empirical studies has lately been criticized (Machado, Dias, and Fonseca 2021).

Machado, Dias and Fonseca (2021) found from 140 reports that even though the undertakings decided to report under the GRI, approximately 22 % of the evaluated GRI-based indicators remained undisclosed (Machado, Dias, and Fonseca 2021, 570). Many organizations did not provide comprehensive information about their methods for identifying material topics (Machado, Dias, and Fonseca, 2021). Unerman and Zappettini (2014) highlight the importance of research focusing on the process to determine material topics as businesses can misuse the concept of materiality by excluding negative topics from the report and consequently present a picture of sustainability which does not match the underlying business activities. Beske, Haustein and Lorson (2019) investigate, among other research questions, to what extent companies disclose materiality analysis and the potential impact of the, at the time, updated GRI G4 on enhancing the disclosure of materiality assessment. Analyzing 132 reports from 33 companies in the German HDAX index (2014-2017), they find, similarly to Machado, Dias and Fonseca (2021), a lack of disclosures on the methods for stakeholder and topic identification and thus criticize that the underlying process to determine the material topics stays often

undisclosed. The researchers, hence, align with Unermann and Zappettini (2014) by indicating that non-disclosure holds the potential for being misused by report preparers to adapt report content to their preferences (Beske, Haustein, and Lorson 2019).

In a study of 53 apparel companies from 15 countries, Ferrero-Ferrero, León, and Muñoz-Torres (2020) indicate that non-financial reports may be utilized for reputation management. Comparing companies' materiality analysis with expert knowledge, they find that environmentally better-performing companies may be exploiting materiality analysis to highlight better-performing topics or for greenwashing. The research has shown that the materiality analysis and its results heavily rely on the individual decisions made by each company, which reduces comparability. Additionally, the researchers emphasize the importance of defining a threshold at which topics become material as companies exhibit heterogeneity in defining materiality (Ferrero-Ferrero, León Soriano, and Muñoz-Torres 2020).

Fasan and Mio (2017) find that in a voluntary reporting environment industry, board size and diversity are determinants of materiality disclosure, while the legal environment is not. Notably, they observed the tendency of companies in the consumer goods and oil and gas industries to report less than the rest of their sample while companies in telecommunications provide rather detailed reports (Fasan and Mio 2017). The results hint that companies from industries that are high in emissions tend to disclose less than those in industries with low emissions, highlighting a disparity in materiality disclosure based on the level of sustainability.

Gerwanski, Kordsachia and Velte (2019) and Velte (2022) also investigate determinants of materiality disclosure and both analyze integrated reports from EU and South African companies. The former study has found a positive association between materiality disclosure and the determinants of learning effects, gender diversity, and non-financial information assurance, while the latter has discovered a noteworthy positive correlation between materiality disclosure and board gender diversity as well as executive compensation.

Materiality disclosure appears heterogeneous. Consequently, numerous studies, including those discussed in this section, investigate determinants of materiality disclosure. Despite varying terminology for the proxies, there are notable similarities. Appendix 4 offers a detailed comparison of methodologies from the four studies: Machado, Dias and Fonseca (2021); Gerwanski, Kordsachia and Velte (2019); Velte (2022) and Beske, Haustein and Lorson (2019) supporting this observation. A summary is provided below.

The studies describe the concept they are aiming to measure similarly while using different terminologies. Two studies utilize the term *quality* of materiality disclosure (MDQ), one *transparency* of materiality analysis and one does not use a specific terminology at all. Notably, those using MDQ also incorporate the term *transparency* when describing the to-be-measured underlying concept. Also, the scoring elements used for their proxies overlap. While the concepts are intertwined Beske, Haustein and Lorson (2019) distance their study visibly from the term *quality*: “the aim of this paper is to address whether companies report on their materiality processes, not to assess the quality of such information” (Beske, Haustein, and Lorson 2019, 173). The term *quality* can be ambiguous, as it might relate to data quality aspects. Since the Work Project’s focus does not align with this aspect, it will adopt the terminology of transparency and embrace the term *Materiality Disclosure Transparency*.

The literature reveals deficiencies in materiality disclosure and suggests potential misuse by report preparers. Is there a tendency for either companies with the highest leverage to reduce CO₂ emissions or for companies that differentiate themselves through their increased environmental performance to exhibit low Materiality Disclosure Transparency? This research explores *Materiality Disclosure Transparency* in companies with different *Levels of Sustainability* and aims to establish a basis for future research evaluating whether the proposed CSRD can effectively curtail deceptive practices. Considering the current deficiencies in regulation further company characteristics, namely, Sustainability Reporting Standard, Industry

and Regulatory Environment are investigated to obtain an overview of MDT in the most recent reports from companies mandated to disclose information under the CSRD in the coming years.

4. Methodology

4.1. Research Questions

This Work Project explores Materiality Disclosure Transparency in sustainability reports from companies with different Levels of Sustainability and other company characteristics. Derived from literature insights the following five research questions (RQ) are addressed while considering a sample of non-CSRD-governed reports from CSRD-mandated companies:

RQ1: To what extent do companies demonstrate *Materiality Disclosure Transparency* in sustainability reports?

RQ2: How does *Materiality Disclosure Transparency* vary across industries?

RQ3: Is a difference in *Materiality Disclosure Transparency* identifiable when companies utilize different *Sustainability Reporting Standards*?

RQ4: Does *Materiality Disclosure Transparency* vary across the *Regulatory Environments*, in which companies disclose non-financial information?

RQ5: How is the *Level of Sustainability* of companies' industries associated with *Materiality Disclosure Transparency* in sustainability reports?

As indicated by the literature, an association between the Level of Sustainability and Materiality Disclosure Transparency is expected (RQ5) (Fasan and Mio 2017; Ferrero-Ferrero, León Soriano, and Muñoz-Torres 2020). Overall, high and homogeneous MDT is anticipated due to learning effects (Gerwanski, Kordsachia, and Velte 2019) and the imminent CSRD reporting (RQ1). Based on Fasan and Mio (2017), differences in MDT across Industries (RQ2) are anticipated. Across Sustainability Reporting Standards, the converse is expected as all reports will all at least be GRI-based (RQ3). Across Regulatory Environments, no significant differences are expected, as neither NFRD reports nor reports from a voluntary reporting

environment are obligated to disclose materiality in a predefined and obligatory way (RQ4). A visualization of the research design can be found in Appendix 5.

Where the assumptions for parametric tests, respectively, ANOVA (RQ4, RQ5), are met, these tests are conducted; otherwise, to ensure robustness, non-parametric tests, including the Kruskal-Wallis-Test (RQ2) or Mann-Whitney-U-Test (RQ3, RQ5) are executed.

4.2. Variables

4.2.1. Materiality Disclosure Transparency

As Marston and Shrives (1991) state, such abstract concepts like Materiality Disclosure Transparency cannot be measured directly. Considering validity and reliability, the following variables are introduced to measure the underlying concept of MDT and its behavior in the context of the other variables.

4.2.1.1. Materiality Disclosure Transparency Score

Many dependent variables from the literature are based on sustainability reporting standards and just like in Machado, Dias and Fonseca (2021) is the Materiality Disclosure Transparency Score (MDTS) grounded on the GRI. As the GRI Standards aim for transparency, compliance should result in Materiality Disclosure Transparency (Global Reporting Initiative 2022, 25). Also, many companies perceive the GRI as aligned with the CSRD (Eklund and Vaaler 2023) and the EC communicated that GRI reporters will be well-equipped for the ESRS (Global Reporting Initiative 2023). As aimed, this alignment enables future CSRD-related research to build upon the findings of this Work Project and facilitates, along with the selection criteria for the final sample, the data collection process and the application of the score.

The MDTS is based on the three introduced GRI disclosures: *Process to determine Material Topics (PMT)*, the *List of Material Topics (LMT)* and the *Management of Material Topics (MMT)*. The three disclosures are evaluated through the following ten scoring components, respectively, GRI requirements:

- *PMT*: Process to determine material topics (PMT1) and Specifications on stakeholders and experts (PMT2);
- *LMT*: List of material topics (LMT1) and Changes in material topics (LMT2);
- *MMT*: Description of impacts (MMT1), Involvement through own activities or business relationships (MMT2), Policies or commitments (MMT3), Actions (MMT4), Effectiveness (MMT5) and Stakeholder engagement in actions and evaluation (MMT6).

The components are evaluated with a three-point scale 0 (Not disclosed), 0.5 (Mentioned) or 1 (Disclosed in detail). The MDTs and the disclosures are calculated for each company (m) in the final sample according to formula [1].

$$MDTS_m = \frac{PMT_m + LMT_m + MMT_m}{3} \quad [1]$$

$$PMT_m = \frac{PMT1_m + PMT2_m}{2} \quad [2] \quad LMT_m = \frac{LMT1_m + LMT2_m}{2} \quad [3]$$

$$MMT_m = \frac{MMT1_m + MMT2_m + MMT3_m + MMT4_m + MMT5_m + MMT6_m}{6} \quad [4]$$

Where $m \in \{1, 2, \dots, 42\}$

Integrating MMT into MDTs is vital for assessing subsequent reporting on the previously defined material topics. However, it should not be weighted due to the additional scoring components. Therefore, are the disclosures PMT, LMT and MMT estimated as a non-weighted average of the respective components, as set by equations [2], [3] and [4], respectively. More details on the MDTs can be found in Appendix 6.

4.2.1.2. Additional Variables for Materiality Disclosure Transparency

Four additional variables are considered, two related to material topics - *Threshold for Material Topics* and *Quantity of Material Topics* - and two concerning stakeholders, namely *Methods for Stakeholder Identification* and *Quantity of Stakeholder Groups*.

As Ferrero-Ferrero, Soriano, and Muñoz-Torres (2020) noted, disclosing the threshold at which topics become material is vital. Thus, the variable Threshold of Material Topics (TMT)

is introduced to evaluate whether a threshold at which topics become material is disclosed (1), or merely the prioritization of topics (0.5) or neither is being disclosed (0). Furthermore, the variable *Quantity of Material Topics* (QMT) is assessed. The GRI requires to disclose MMT per material topic identified. This leads to the assumption that GRI compliance in MMT and an increasing Quantity of Material Topics should consequently result in a heightened extent of disclosure. QMT, thus, serves as a proxy, indicating a potential lack or overload of information. Insights from early adopters of integrated reporting suggest a tendency to obscure content by significantly lengthening reports, making them foggier (Melloni, Caglio, and Perego 2017).

The GRI, the MDTS, and relevant literature recognize stakeholder identification and its methods as crucial for transparent materiality disclosure. Beske, Haustein and Lorson (2019) identify high non-disclosure for the stakeholder and topic identification. As the methods for topic identification are already considered in the MDTS, the variable *Methods for Stakeholder Identification* (MSI) is included separately, a dichotomic variable that assumes the value 1 when there is a disclosure, otherwise 0 for non-disclosure. The variable *Quantity of Stakeholder Groups* (QS) measures not only the number of groups stated in the materiality disclosure but also the detail provided. For instance, if a company reports only two groups, this indicates limited transparency. This limitation might arise either from a generalizing description of groups (for instance using broad terms like “internal” and “external” stakeholders) or from actually considering only two groups (such as employees and management), which is likely to not fully represent diverse stakeholder perspectives.

4.2.2. *Company Characteristics as Variables*

4.2.2.1. *Level of Sustainability*

The variable *Level of Sustainability* pertains specifically to environmental sustainability, reflecting its current significance and the ESRS’ emphasis on disclosures on environmental sustainability with five out of 12 sector-agnostic standards focusing on environmental topics

(EFRAG, n.d.-b). The variable is based on data, see Appendix 7, on CO₂-eq emitted in 2021 in 29 countries categorized by NACE Codes and thus by industries (OECD 2022). The study intentionally focuses on industry sustainability levels over individual company emissions to eliminate dependence on the company-reported sustainability data, as it is questioned in this research. It is vital to highlight that this Work Project is not assuming that these categorizations necessarily align with the individual CO₂-eq but rather depict a general tendency.

The variable can take two values: “High Emissions” (HE) or “Low Emissions” (LE). To mitigate biases resulting from unknown industry specificities and to emphasize the focus of this variable on sustainability levels, each category comprises three industries that align with the respective sustainability levels. The value *High Emissions* signifies that companies operate in the top three emitting industries, responsible for 80 % of total CO₂-eq (OECD 2022). The industries entailed are Transportation and storage; Electricity, gas, steam and air conditioning supply and Manufacturing. The contrasting category *Low Emissions* identifies companies from the industries Information and communication; Accommodation and food service activities and, lastly, Professional, scientific and technical services. These three industries emit in total 1.6 % of total CO₂-eq (OECD 2022).³ An overview can be found in Appendix 8.

4.2.2.2. *Other Company Characteristics*

The three additional variables on company characteristics - *Regulatory Environment*, *Industry* and *Sustainability Reporting Standard* - are introduced in the following. The variable *Industry* is based on the previously named NACE Codes, examining variations across industries, which can contribute to the discourse on the need for industry-specific regulations as in the ESRS and adds to Fasan and Mio’s (2017) findings on Industry in a new regulatory context. The variable *Regulatory Environment* assesses whether reports are “NFRD” or “non-

³ The considered industries are the fourth, seventh, and eighth least emitting (1.6 % of total CO₂-eq) due to limited data in the three least emitting industries (0.8 % of total CO₂-eq). Financial and insurance activities are excluded due to industry specificities.

NFRD” governed to explore whether differences in MDT exist. The sample considers companies that exclusively use the GRI Standard in their reporting as well as entities that consider at least one other standard. Consequently, will the dichotomous variable Sustainability Reporting Standard (SRS) assess this characteristic with either “GRI only” or “GRI and others”.

4.3. Population & Sample

The population consists of CSRD-mandated companies and their latest non-CSRD-governed reports from 2022, representing the status quo of sustainability reporting before the first CSRD-governed reports are published.

The sample is limited to companies whose reports are based on or aligned to the GRI or provide a GRI Index⁴ to enable data collection. Furthermore, all reports and thus companies need to fall into the in Section 4.2.2.1. defined industries to fit into one of the LoS. A dataset holding 2,825 companies traded on the Euronext⁵ on the 13th of September 2023, serves as the sampling frame, given the absence of a comprehensive list of companies mandated to report under the CSRD. Thus, this initial sampling approach embodies a non-probability judgment-based sampling design (Davis and Cosenza 1988, 218–19). From this primary sample, the final sample was constructed using a two-step process. Initially, companies were randomly selected⁶ from the dataset. Subsequent detailed research into the characteristics of these companies determined their suitability, ensuring alignment with the defined population, sample and subsample (LoS) characteristics. This methodology employed a combination of simple random selection and quota sampling to refine the final sample (Davis and Cosenza 1988, 216–19). Due to the limited availability of companies in the dataset from the industry Accommodation and food service activities, the Compass group has been researched separately. Considering that

⁴ A document cross-referencing the GRI Disclosures in the companies’ publications.

⁵ Europe’s largest stock exchange (Euronext 2022).

⁶ To create a random order, the RAND() function in Microsoft Excel was utilized, resulting in the Euronext dataset being arranged in a random sequence; subsequently, each company was researched, starting at the top of this list.

many companies operate in various industries, the condition for assigning an entity to a specific industry is contingent upon it generating a significant portion of its revenue in that industry.

Appendix 9 presents the final sample, comprising 42 companies from 11 countries. Eight of these companies, constituting 19 %, have a presence in the USA and are thus non-NFRD reports. All companies are considered CSRD-mandated as they are listed EU companies or have an EU presence likely to be evaluated as “significant”.⁷ Each Industry and Level of Sustainability is evenly represented, as shown in Appendix 10. The company size, proxied by total assets, in thousand euros, ranges from 299,820 (Fine Foods & Pharm) to 261,626,000 (Poste Italiane). The average company size is 50,322,449, with a median of 14,498,570 and a standard deviation of 72,659,395. Net income, in thousand euros, ranges from -10,290,000 (Fortum) to 16,799,000 (Stellantis), averaging at 1,408,461 with a standard deviation of 3,692,259 and a median of 408,000. Thus, the final sample consists of large companies yet demonstrating large data variability in company size and net income.

4.4. Data Collection

Data for this research was retrieved from the financial and sustainability reports⁸ of the selected companies. These reports were sourced directly from the websites of the respective companies. A detailed summary of the sample and the exact sources are available in Appendix 9. To derive the data from the reports a time-consuming content analysis was executed. The hand-collected records were sourced from 74 files and organized using Microsoft Excel. Following Machado, Dias, and Fonseca (2021), the content analysis focused on the report sections specified by the GRI Index, with the addition of using the provided content index and Apple Preview's search function for further examination. Financial data, utilized for sample

⁷ Precise financial information on all EU activities is not available, though.

⁸ Integrated reports as well as additional materials have been used, such as separate GRI indices and reports that have been referenced in the priorly mentioned documents.

descriptions were recorded in Euros.⁹ Appendix 11 contains the final database of this research - a table consisting of 43 rows, 33 columns, and thus 1,419 cells, holding all values and excerpts of or comments on special instances in the data collection process.

5. Data Analysis and Results Discussion

In the following, the most insightful findings are summarized. For this study, a level of significance of 0.05 was employed in every statistical analysis unless stated otherwise. IBM SPSS Statistics Version: 29.0.0.0 (241) has been facilitated for the Data Analysis. Further details on the conducted tests and results can be found in Appendix 12.

5.1. Materiality Disclosure Transparency (RQ1)

Out of the 42 companies, no sustainability report has reached an MDTS of one and thus has disclosed all indicators in a detailed manner. The maximum is reached by Fine Foods & Pharm¹⁰ with an MDTS of 0.97. IBM¹¹ scored the lowest MDTS of 0 by stating "However, we do not share our impact assessment publicly." (International Business Machines Corporation 2022, 5), listing no material topics and subsequently not disclosing their management. Even though all companies use the same reporting standard (GRI), the MDTS shows high variability (SD = 0.24) with a notably low average score of 0.58 and a median of 0.57.

This result aligns with Machado, Dias, and Fonseca's (2021) findings in which GRI-based indicators revealed a quite high 22 % non-disclosure considering that all reports were GRI-based. A detailed comparison of findings from individual indicators is presented in Appendix 13. Machado, Dias, and Fonseca (2021) reported that 54 % of their sample provided explicit content on the disclosure PMT, compared to 52 % in this study. The results from the indicator

⁹ When values were disclosed in U.S. dollars or British pounds, the current exchange rate on the day of data collection was applied for conversion: Conversion rate USD/EUR = 0.93 - 0.96 (finanzen.net, n.d.-b), conversion rate GBP/EUR = 1.15 (finanzen.net, n.d.-a).

¹⁰ LoS: High Emissions, Industry: Manufacturing.

¹¹ LoS: Low Emissions, Industry: Information and communication.

related to listing material topics show more variation but nevertheless suggest a broadly similar pattern, with 95 % disclosure in Machado, Dias and Fonseca's (2021) study versus 76 % in this research.

The list of material topics (LMT1) is with 76 % the most frequently in detail disclosed component and demonstrates the highest mean of 0.82. The changes in material topics (LMT2) and the stakeholder engagement in actions taken and the effectiveness of measures (MMT6) show the highest non-disclosure of 60 % and the lowest means of 0.4 and 0.32 for the latter. Also, the effectiveness of actions taken (MMT5) has a quite low mean evaluation of 0.41.

Half of the sample has neither disclosed the prioritization of material topics nor a threshold. Fine Foods & Pharm is the only report disclosing a threshold, and only three reports disclose a Method for Stakeholder Identification in the scope of materiality disclosure (Getlink¹², CTT¹³, and Fine Foods & Pharm). Thirteen out of 42 reports have not specified the engaged stakeholders in PMT. Among those disclosing, the most report eight stakeholder groups (Mode=8, Mean=7). Atos¹⁴ and Sodexo¹⁵ have disclosed the lowest Quantity of Stakeholder Groups of two, which have been identified as internal and external stakeholders. A maximum of 14 has been disclosed by the two companies CTT and Ibersol¹⁶.

The assumption linking higher QMT to increased disclosure, as per GRI compliance requirements, was not validated. For MMT only 61.8 % of reports have a mean evaluation larger than 0.5. Thus, an elevated QMT does not necessarily indicate increased disclosure.¹⁷ QMT will not be considered in the Data Analysis, yet the variable's data is available in Appendix 11.

¹² LoS: High Emissions, Industry: Transportation and storage.

¹³ LoS: High Emissions, Industry: Transportation and storage.

¹⁴ LoS: Low Emissions, Industry: Professional, scientific and technical activities.

¹⁵ LoS: Low Emissions, Industry: Accommodation and food service activities.

¹⁶ LoS: Low Emissions, Industry: Accommodation and food service activities.

¹⁷ Since the evaluation of disclosures on MMT is based on a single, randomly selected material topic, future research with expanded scope is recommended to assess multiple or all named material topics.

Despite GRI-aligned reports, potential CSRD preparations and the findings on learning effects (Gerwanski, Kordsachia, and Velte 2019) which should apply to nearly 80 % of the sample (NFRD mandated), high non-disclosure of components (33%) and a heterogeneous landscape are evident. Yet, this observation aligns with the findings from the literature on high non-disclosure (Machado, Dias, and Fonseca 2021; Beske, Haustein, and Lorson 2019).

5.2. Materiality Disclosure Transparency across Industries (RQ2)

Compared to all industry averages in MDTs, Transportation and storage as well as Electricity, gas, steam, and air conditioning supply show increased means of 0.66 (Median = 0.67) and 0.69 (Median = 0.75), respectively. Electricity, gas, steam and air conditioning supply depicts a higher interval range in the 1st and 2nd quartile which explains the deviations between median and mean. Professional, scientific and technical activities show a lower average MDTs of 0.41 but a median of 0.47 due to high variability in the 2nd quartile. While Information and communication shows the highest variability (SD = 0.31, Range = 0.94), Transportation and storage displays the lowest (SD = 0.15, Range = 0.48). Transportation and storage discloses on average the highest Quantity of Stakeholder Groups with a mean of 10 (Median = 9) and Professional, scientific and technical activities the lowest (Mean = 5, Median = 4).

Despite the differences in descriptive statistics, this research contrasts with Fasan and Mio's (2017) findings, as the results from a Kruskal-Wallis-Test do not reflect significant differences in ranks of the MDTs between industries ($p = 0.341$). Fasan and Mio (2017) observed that industry significantly influences materiality disclosure. However, their study focused on a voluntary reporting environment with data from before 2014. Weitzel (2021) examined a sample more akin to this research, comprising EU companies and their GRI-based reports from 2020, and neither found significant industry differences in materiality disclosure. The findings suggest a consistent lack of transparency in materiality disclosure across all industries and thus support the implementation of tightened requirements as provided by the ESRS, yet they do not

substantiate the introduction of sector-specific standards (EFRAG, n.d.-a). On the other hand, do the variations in data variability across industries, visualized in Figure 1 on page 119, rather support the implementation of sector-specific standards. Future research should replicate investigations with samples diverse in standards, as compliance may mask effects.

5.3. Materiality Disclosure Transparency & Sustainability Reporting Standards (RQ3)

Out of the 42 reports analyzed, only eight exclusively use the GRI Standard. The mean MDTs for these GRI only reports is 0.64, in contrast to reports that feature both GRI and other standards, which have a mean of 0.56. Notably, the MDTs range in the latter group (Range = 0.94, SD = 0.25) is wider than in GRI only (Range = 0.55, SD = 0.195). Although a Mann-Whitney-U-Test for MDTs differences across SRSs yielded non-significant results ($U = 110.00$, $Z = -0.834$, $p = 0.404$), a Mann-Whitney-U-Test considering Process to determine Material Topics and Quantity of Stakeholder Groups reveals a significant difference in medians between GRI only (Median_{PMT} = 0.75, Median_{QS} = 9) and GRI and others (Median_{PMT} = 0.50, Median_{QS} = 6) at a significance level of 0.1 ($U_{PMT} = 86.00$, $Z_{PMT} = -1.661$, $p_{PMT} = 0.097$, $r_{PMT} = 0.26$; $U_{QS} = 41.50$, $Z_{QS} = -1.882$, $p_{QS} = 0.068$, $r_{QS} = 0.34$). These findings indicate a small to moderate effect size for the former and a moderate effect size for the latter (Cohen 1988), suggesting enhanced transparency in disclosing PMT and QS when reports exclusively focus on the GRI. While no significant differences are found for LMT and MMT, a higher mean of 0.69 for LMT-GRI only, compared to GRI and others (Mean = 0.596), is observed.

The belief of 82 % of respondents in the EC's NFRD revision survey, that a common SRS would mitigate the issues of comparability, reliability and relevance is substantiated by these findings. Reports using only the GRI, demonstrate greater transparency in PMT and QS. Given the foundational role of these disclosures, the results suggest an increased risk of irrelevant or unreliable reporting due to potential misjudgments on topics. Group disparities in PMT and QS and heightened MDTs variability in GRI and others' reports signal diminished comparability,

possibly due to increased complexity and the emergence of particularities for each report when considering multiple SRSs. A recommendation for policymakers and report preparers is to adopt a unified standard, improving reliability, relevance, comparability, and transparency.

5.4. Materiality Disclosure Transparency & Regulatory Environments (RQ4)

A one-way ANOVA was conducted to assess the differences in MDTS across Regulatory Environments. The Materiality Disclosure Transparency Score decreased from NFRD reports (Mean = 0.61, SD = 0.22) to non-NFRD reports (Mean = 0.47, SD = 0.29). Yet, MDTS does not differ statistically significantly for the different Regulatory Environments, $F(1, 40) = 236$, $p = 0.133$. Equally, no notable outcomes have been observed for the remaining MDT variables as found through utilizing the Mann-Whitney-U-Test. These results indicate that the NFRD did not significantly alter the Materiality Disclosure Transparency in EU sustainability reporting among companies that disclose a sustainability report. Hence, is the need for a tightened directive substantiated.

5.5. Materiality Disclosure Transparency & Level of Sustainability (RQ5)

The average MDTS of companies in Low Emissions is 0.52 (SD = 0.26) and in High Emissions 0.64 (SD = 0.199). When considering a significance level of 0.1, a one-way ANOVA showed that the Materiality Disclosure Transparency Score differs statistically significantly for the different Levels of Sustainability, yet with a quite small effect size according to Cohen (1988), $F(1, 40) = 3.179$, $p = 0.082$, $\varepsilon^2 = 0.050$. A Mann-Whitney-U-Test has been performed to assess whether Quantity of Stakeholder Groups varied among LoS. Due to non-disclosure about stakeholders considered in the determination process, the sample is reduced to 29 data points. The data was categorized into two groups: Low Emissions (n=16) and High Emissions (n=13). No statistically significant difference in QS across Levels of Sustainability is found, $U = 69.00$, $Z = -1.546$, $p = 0.147$. Looking at TMT, 13 reports in High Emissions disclose their prioritization and one a threshold while in Low Emissions seven entities disclose the

prioritization and the remaining reported neither. Finally, as stated in Section 5.1, the three entities that have disclosed Methods for Stakeholder Identification are all in High Emissions.

Fasan and Mio (2017) observed the tendency of companies in the consumer goods and oil and gas industries to report materiality less than the rest of their sample, while companies in telecommunications provide rather detailed reports. These findings have indicated when categorizing these industries in LoS, that there is a tendency for companies in High Emissions to report less on materiality, yet this Work Project's findings suggest the contrary. This might be due to differences in sampling characteristics related to SRS and timeframes. While this research's sample comprises GRI-based reports from 2022, Fasan and Mio (2017) analyzed IIRC and non-IIRC Pilot Program companies and their reports from over a decade ago. These divergent timeframes contribute to variations in sustainability awareness among stakeholders.

Furthermore, in the early 2020s the methodology used by credit rating agencies has evolved, incorporating ESG factors as one fundamental element of verifying changes in credit ratings (Chodnicka-Jaworska 2021). For instance, S&P Global names reporting and transparency as influential for their credit ratings (S&P Global 2021). Overall more ESG topics are becoming financially material (Brown and Eltobgy 2020) and consequently, are HE companies even more dependent on presenting a narrative of sustainability to improve their credit ratings and please stakeholders, including shareholders. In this context, it's essential to highlight that MDTS might be higher for the group High Emissions when compared to others, yet it is not particularly high overall, as suggested by descriptive statistics. In light of continuously rising CO₂-eq, the findings from literature and even the EC stating that non-financial reporting can be exploited for reputation management purposes (Directive (EU) 2022/2464), it is likely that companies from HE are not actually turning the tide but are increasing MDT to a certain degree while leaving still enough room to utilize materiality disclosure for obscuring non-financial and

financial risks and impacts. This supports the ESRS approach of providing sector-specific standards, which predominantly encompass High Emission industries (EFRAG, n.d.-a).

6. Conclusion

To realize the green transition, the availability of transparent data in companies' sustainability reports is highly important. Considering the notably substantial leverage of high-emitting industries and companies' tendency to misuse prevailing deficiencies of sustainability reporting, this Work Project examined Materiality Disclosure Transparency in sustainability reports from companies across different Levels of Sustainability. MDT was further investigated in the context of other company characteristics, including the variables Sustainability Reporting Standard, Industry and Regulatory Environment.

A GRI-based Materiality Disclosure Transparency Score was introduced along with additional variables to measure MDT. Content analysis was conducted, creating a database with hand-collected data from 2022 sustainability reports using the GRI. MDT was found to be low and heterogeneous in a sample of 42 companies mandated for CSRD disclosure in the upcoming years, while spanning six industries and evenly representing Low and High Emission companies. Across industries, MDT is not significantly different and, thus, constantly low. Disparities in the Process to determine Material Topics and Quantity of Stakeholder Groups between GRI only and GRI and others reports have been identified. Heightened MDTS variability in GRI and others reports signals diminished comparability when considering multiple SRSs. Future policymakers are advised to follow the approach of the EU to implement one mandatory SRS as the ESRS, improving transparency, reliability, relevance and comparability. Moreover, show reports from the Regulatory Environment of the NFRD no statistically significant increase in MDT, endorsing the implementation of a more stringent directive such as the CSRD. Investigations on differences in MDTS across LoS have shown statistically significant results with increased MDT for High Emission companies. In light of

overall low MDT, findings from the literature indicating misuse of materiality disclosure and credit ratings considering ESG factors, it is likely that High Emission companies are improving MDT, and thus sustainability reporting, to a certain degree for reputation management purposes and to improve credit ratings while still leaving room to utilize materiality disclosure for obscuring information. These findings support criticism on non-financial reporting while suggesting that the CSRD, alongside the ESRS, will address regulatory deficiencies, increasing MDT. This, in turn, reduces opportunities for companies to misuse materiality disclosure.

Just like most research, this Work Project holds some limitations as well. Firstly, future investigations should broaden the sample scope, holding companies from various Regulatory Environments, which utilize varied SRS and that are diverse in size to foster external validity. It should be considered that occasionally a 0.1 significance level was considered, increasing the probability of a type I error. Additionally, this study utilized hand-collected data by a single researcher. Also, while the use of a three-point scale of 0, 0.5, and 1 adds detail, it may compromise reliability as exact replication by another researcher is not ensured due to subjectivity. To facilitate replication and increase reliability, Appendices 6 and 11 are intended to provide clear instructions on the evaluation process (Marston and Shrives 1991). Future research should incorporate methods that enhance reliability further, such as the six-eye principle used by Beske, Haustein, and Lorson (2019) for data verification.

Overall, this study contributes novelty to research with findings on differences in Materiality Disclosure Transparency across Levels of Sustainability and adds to research on non-financial materiality disclosure through its investigations on additional company characteristics. Through its findings and the provided database, this Work Project establishes a foundation for future research on the effectiveness of such tightened directives as the Corporate Sustainability Reporting Directive.

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8. List of Acronyms and Abbreviations

CSR	Corporate Social Responsibility
CSRD	Corporate Sustainability Reporting Directive
EC	European Commission
EFRAG	European Financial Reporting Advisory Group
ESRS	European Sustainability Reporting Standard
GRI	Global Reporting Initiative/Global Reporting Initiative Standard
HE	High Emissions
LE	Low Emissions
LMT	List of Material Topics
LMT1	List of material topics
LMT2	Changes in material topics
LoS	Levels of Sustainability
MDT	Materiality Disclosure Transparency
MDTS	Materiality Disclosure Transparency Score
MDQ	Quality of Materiality Disclosure
MMT	Management of Material Topics
MMT1	Description of impacts
MMT2	Involvement through own activities or business relationships
MMT3	Policies or commitments
MMT4	Actions
MMT5	Effectiveness
MMT6	Stakeholder engagement in actions and evaluation
MSI	Methods for Stakeholder Identification
NFRD	Non-financial Reporting Directive

PMT	Process to determine Material Topics
PMT1	Process to determine material topics
PMT2	Specifications on stakeholders and experts
QMT	Quantity of Material Topics
QS	Quantity of Stakeholder Groups
RQ	Research Question
SD	Standard Deviation
SRS	Sustainability Reporting Standard
TMT	Threshold of Material Topics
UN	United Nations
U.S. SEC	U.S. Securities and Exchange Commission

9. Appendices

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Appendix 1 – NFRD Country Legislation of Countries represented in the Sample

Table 1) NFRD Country Legislation of Countries represented in the Sample

COUNTRY		AUSTRIA	BELGIUM	FINLAND	FRANCE
REGULATION		Sustainability and Diversity Improvement Act 257/ME	Amendment to Companies Code 2564/ (2016/2017)	Amendment 1376/2016 and Amendment 1441/2016 to the Accounting Act	Amendments to the Law on Accounting PZE No. 51
COMPANY SCOPE		1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. Public Interest Entities: Listed companies, Credit institutions, Insurance undertakings, Capital market oriented enterprises	1. Employees: over 500 2. Net turnover: over EUR 34 million; or Balance sheet total: over EUR 17 million 3. Public Interest Entities: Listed companies, credit institutions, insurance and reinsurance undertakings, settlement organisations	1. Employees: over 500 2. Net turnover over EUR 40 million; or Balance sheet total over EUR 20 million 3. Public Interest Entities: Listed companies, Credit institutions, Insurance undertakings	1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. Public Interest Entities: Listed companies, credit institutions, insurance providers 4. Non-listed sociétés anonymes and non-listed investment funds shall comply if they have a net turnover over EUR 100 million
REPORT FEATURES	MATTERS	- Environmental performance - Social and employee matters - Human rights performance - Corruption and anti-bribery matters	- Environmental matters - Social and employee matters - Human rights matters - Corruption and anti-bribery matters	- Environmental performance - Social and employee matters - Human rights performance - Corruption and anti-bribery matters	- Environmental matters - Social and employee matters - Human rights matters - Corruption and anti-bribery matters
	CONTENT	- A description of the undertaking's business model - Company policies relating to nonfinancial matters, and the outcomes of those policies - Principal risks related to nonfinancial matters and business activities Any non-financial KPIs which are used	- A description of the undertaking's business model - Company policies relating to non-financial matters, and the outcomes of those policies - Principal risks related to nonfinancial matters and business activities - Any non-financial KPIs which are used	- A description of the undertaking's business model - Company policies relating to nonfinancial matters, and the outcomes of those policies - Principal risks related to nonfinancial matters and business activities - Any non-financial KPIs which are used	- A description of the undertaking's business model - Company policies relating to nonfinancial matters, and the outcomes of those policies - Principal risks related to nonfinancial matters and business activities - Any non-financial KPIs which are used
	LOCATION	- The annual report, or - A separate report published with the management report	- The management report, or - The separate report with reference made to management report	- The annual report, or - A separate report published alongside the management report - A separate report within 6 months of the balance sheet date, made available on the undertaking's website and referenced in the annual report	The annual report within 8 months of the end of the financial year and made available on website for 5 years
	STANDARD/ FRAMEWORK	An international, national or EU based reporting framework	An international, national or EU based reporting framework	An international, EU-based, or national reporting framework	An international, EU-based, or national reporting framework
ADDITIONAL ASPECTS		- Comply and explain principle - Safe harbour principle - Diversity statement: applies to all large public interest entities - Auditor's involvement: presence of statement - Fines: specified in the Business Code	- Comply and explain principle - Safe harbour principle - Diversity statement: applies to all large public interest entities and they must specify efforts undertaken to ensure 1/3 of their board is of a different sex than the majority 2/3 - Auditor's involvement: presence of statement - Fines: specified in the Corporate Law	- Comply and explain principle - Safe harbour principle - Diversity statement - Auditor's involvement: presence of statement - Fines: specified in the Accounting Act	- Comply and explain principle - Safe harbour principle - Diversity statement - Auditor's involvement: presence of statement and content is required if company has 500+ employees and has a turnover over EUR 100 million or balance sheet over EUR 100 million - Fines: no fine is imposed unless an interested party asks for the disclosure of the non-financial information, if it is not available, subsequently financial penalties can be imposed by a judge

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Table 1) NFRD Country Legislation of Countries represented in the Sample (continued)

COUNTRY		GERMANY	ITALY	THE NETHERLANDS	PORTUGAL
REGULATION		CSR Directive Implementation Act	Legislative Decree 30 December 2016, n. 254	Decree Disclosure of Non-financial Information PbEU, 2014, L330 and Decree Disclosure Diversity Policy PbEU, 2014, L330	Law No. 148/2015
COMPANY SCOPE		1. Over 500 employees 2. Net turnover over EUR 40 million; or Balance sheet total over EUR 20 million 3. Public Interest Entity: Credit institutions, Insurance undertakings, Capital market oriented companies in the legal form of a limited liability company or cooperative	1. Over 500 employees 2. Net turnover over EUR 40 million; or Balance sheet total over EUR 20 million 3. Public Interest Entities: Listed companies, Banks, Insurance and reinsurance undertakings	1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. Public Interest Entities: Listed companies, Central credit institutions, Insurance undertakings, Banks	1. Employees: over 500 2. Public Interest Entities: Listed companies; Credit institutions; Investment and collective investment undertakings; Venture capital, venture capital investment and venture capital funds undertakings; Alternative investment funds; Credit securitization undertakings and securitization funds; Insurance undertakings; Reinsurance undertakings; Holding undertakings; Pension funds; Public undertakings, which have a turnover of more than EUR 50 million or net assets of more than EUR 300 million
REPORT FEATURES	MATTERS	- Environmental performance - Social and employee matters - Human rights performance - Corruption and anti-bribery matters	- Environmental matters - Social and employee matters - Human rights matters - Corruption and anti-bribery matters	- Environmental - Social and employee matters - Respect for human rights - Anti-corruption and bribery matters	- Environmental - Social and employee matters - Respect for human rights - Anti-corruption and bribery matters
	CONTENT	- A description of the undertaking's business model - Company policies relating to nonfinancial matters, and the outcomes of those policies - Principal risks related to nonfinancial matters and business activities - Any non-financial KPIs which are used	- A description of the undertaking's business model - Company policies relating to non-financial matters, and the outcomes of those policies - Principal risks related to nonfinancial matters and business activities - Any non-financial KPIs which are used	- A description of the undertaking's business model - Company policies relating to nonfinancial matters, and the outcomes of those policies - Principal risks related to nonfinancial matters and business activities - Any non-financial KPIs which are used	- A description of the undertaking's business model - Company policies relating to nonfinancial matters, and the outcomes of those policies - Principal risks related to nonfinancial matters and business activities - Any non-financial KPIs which are used
	LOCATION	- The management report, or - A separate non-financial report, within 4 months after the balance sheet date	- The management report, or - In a separate report, approved by the administrative body and at disposal of the supervisory body and the auditor, within the deadline for the financial statements, published on the company register and alongside the management report	The annual management report	- The management report, or - A separate report published alongside the management report or within 6 months of the balance sheet date, made available on the undertaking's website and referenced in the management report
	STANDARD/ FRAMEWORK	An international, national or EU based reporting framework	- An international, national or EU based reporting framework, or - A mixed reporting methodology constituted by one or more reporting standards	An international, EU-based, or national reporting framework	An international, EU-based, or national reporting framework
ADDITIONAL ASPECTS		- Comply and explain principle - Safe harbour principle - Auditor's involvement: no mandatory verification, but if the report is verified by an auditor or an independent assurance services provider, the audit report has to be published - Fines: up to the amount which is the highest of the following: EUR 10 million or 5 % of the total annual turnover of the company or twice the amount of the profits gained or losses avoided because of the breach	- Comply and explain principle - Safe harbour principle - Diversity statement - Auditor's involvement: presence and content of statement - Fines: for omission of relevant information, non-compliance, or failure to submit within timeframe, EUR 20.000-150.000 in sanctions will be applied	- Comply and explain principle - Safe harbour principle - Diversity statement: concerns all undertakings (not only listed companies) and only applies to the supervisory board - Auditor's involvement: presence of statement - Fines: not specified	- Comply and explain principle - Safe harbour principle - Diversity statement - Auditor's involvement: presence of statement - Fines: EUR 50 to 1500 imposed on the responsible persons

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Table 1) NFRD Country Legislation of Countries represented in the Sample (continued)

COUNTRY		SPAIN	UK
REGULATION		Anteproyecto de Ley sobre información no financiera y diversidad (Based on draft law Spain has not official transposed the Directive 2014/95/EU)	The Companies, Partnerships and Groups (Accounts and Non-financial Reporting) Regulation No. 1245
COMPANY SCOPE		1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. Public Interest Entities: Listed companies; Credit institutions; Insurance undertakings; Payment and electronic money institutions; Pension funds which, during two consecutive years, at the closing date of each year, have at least 10,000 participants; Investment services and collective investment institutions, which has 5,000+ clients or 5,000+ shareholders 4. Entities who, during two consecutive years, at the closing date of each year, have a net turnover over EUR 2 billion, and over 4,000 employees	1. Employees: over 500 2. Public Interest Entities: Listed entities, Credit institutions, Insurance undertakings
REPORT FEATURES	MATTERS	- Environmental - Social and employee matters - Respect for human rights - Anti-corruption and bribery matters	- Environmental - Social and employee matters - Respect for human rights - Anti-corruption and bribery matters
	CONTENT	- A description of the undertaking's business model - Company policies relating to nonfinancial matters, and the outcomes of those policies - Principal risks related to non-financial matters and business activities - Any non-financial KPIs which are used - An explanation of the sums indicated in the financial statement which are relevant to corporate social responsibility	- A description of the undertaking's business model - Company policies relating to nonfinancial matters, and the outcomes of those policies - Principal risks related to nonfinancial matters and business activities - Any non-financial KPIs which are used
	LOCATION	- The management report, or - A separate report published alongside the management report, or - A consolidated management report (provided the 'company scope' criteria are exceeded 2 years in a row)	- The strategic report
	STANDARD/FRAMEWORK	An international, EU-based or national reporting framework, explicitly mentioned the following: EMAS, UNGC, UNGP, OCDE, ISO 26000, ILO Declaration or GRI	An international, EU-based or national reporting framework
ADDITIONAL ASPECTS		- Comply and explain principle - Safe harbour principle - Diversity statement - Auditor's involvement: presence of statement - Fines: not specified	- Comply and explain principle - Safe harbour principle - Diversity statement - Auditor's involvement: presence and content of statement - Fines: determined on a case-by-case basis and imposed on the responsible persons

The table's content is cited from CSR Europe, GRI, and Accountancy Europe (2017), 16-30.

 Country Legislation Requirements are the same as in the Directive

 Directive Requirements have been adapted in Country Legislation

 Directive Requirements have been omitted in Country Legislation

Appendix 2 – Examples for Sustainability Reporting Standards & Frameworks

Table 1) Examples for Sustainability Reporting Standards & Frameworks

TYPE	NAME	ABBREVIATION
National sustainability reporting standard	German Sustainability Code	DNK
	Sustainability Accounting Standards Board	SASB
	Global Reporting Initiative	GRI
	International Integrated Reporting Framework	IIRC
International & European sustainability reporting frameworks and standards	Task Force on Climate-related Financial Disclosures	TCFD
	United Nations (UN) Guiding Principles Reporting Framework	
	UN Global Compact	
	OECD guidelines for multinational enterprises	
	ISO 26000	
	European Sustainability Reporting Standards	ESRS

All information in the table is extracted from Hahnkamper-Vandenbulcke (2021).

Appendix 3 – The GRI Standard Structure

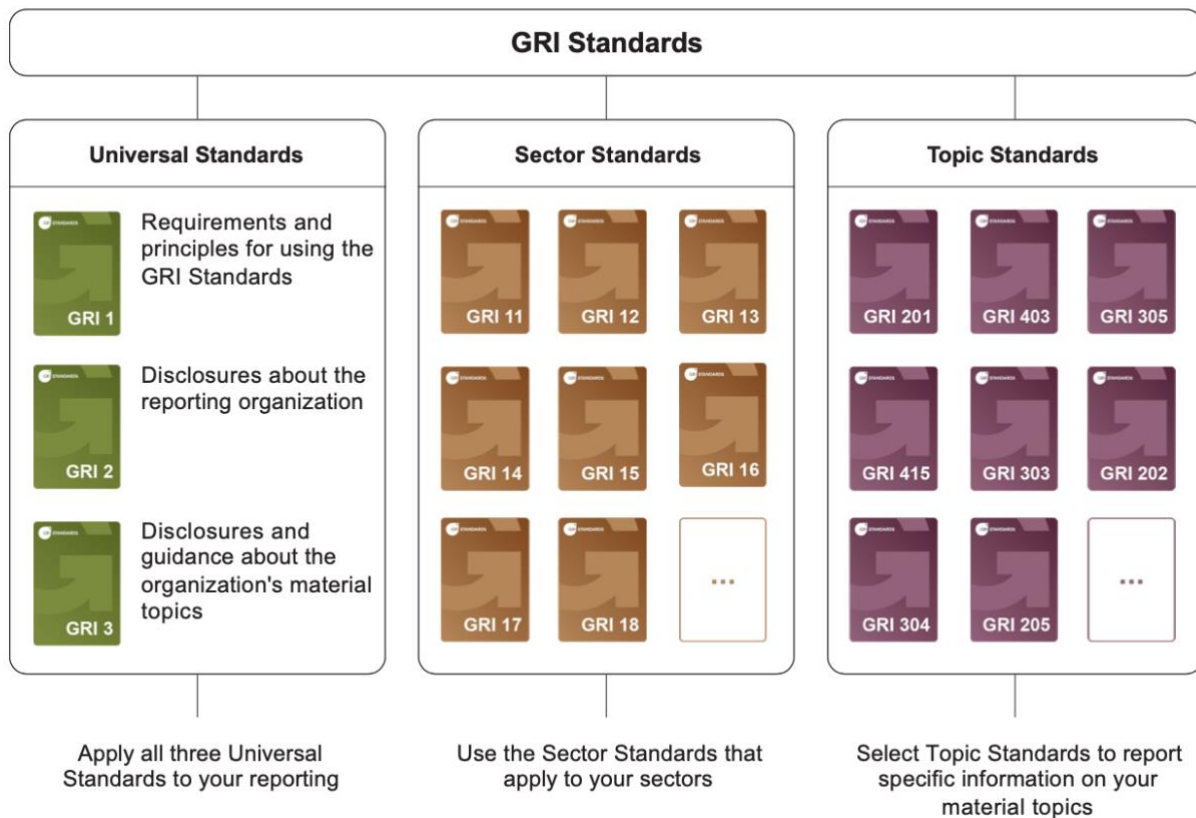


Figure 1: GRI Standards: Universal, Sector and Topic Standards (Global Reporting Initiative 2021, 5)

The GRI standards consist of the “Universal Standards”, the “Topic Standards” and the “Sector Standards”. The “Universal Standards” contain the “GRI 1: Foundation 2021”, “GRI 2: General Disclosures 2021” and “GRI 3: Material Topics 2021” (Global Reporting Initiative 2021, 5). The latter offers a detailed approach to identifying material topics. This entails Disclosure 3-1 Process to determine material topics, Disclosure 3-2 List of material topics and Disclosure 3-3 Management of material topics (Global Reporting Initiative 2021, 16–19).

Appendix 4 – Comparison of Studies’ Methodologies and the utilized Terminology

Table 1) Comparison of Studies’ Methodologies and the utilized Terminology

	Gerwanski, Kordsachia and Velte (2019)	Velte (2022)	Beske, Haustein and Lorson (2019)	Machado, Dias and Fonseca (2021)
TERMINOLOGY	Materiality disclosure quality (MDQ)	Materiality disclosure quality (MDQ)	Transparency of materiality analysis Beske, Haustein and Lorson (2019) distance their study visibly from the term quality : “the aim of this paper is to address whether companies report on their materiality processes, not to assess the quality of such information” (Beske, Haustein, and Lorson 2019, 173).	No specific Terminology
ELABORATIONS IN CONTEXT OF THE UNDERLYING CONCEPT TO BE MEASURED	The authors point to a significant link between MDQ and transparency in reporting by stating: “higher quality of materiality disclosure provides greater transparency for report users” (Gerwanski, Kordsachia, and Velte 2019, 751)	The study likewise highlights the significance of comprehensive materiality disclosure and, thus, MDQ “to ensure adequate transparency ” (Velte 2022, 1660).	Among other research question the study investigates “ to what extent [...] companies report on their materiality analysis” (Beske, Haustein, and Lorson 2019, 164)	The analysis delved into the extent of transparency in reports based on the GRI by investigating “ the rate of disclosure of six of GRI’s indicators related to materiality” (Machado, Dias, and Fonseca 2021, 573)
SCORING COMPONENTS	- Identification process of material impacts including associated stakeholder engagement - Description of the material topics - Existence of a separate materiality section - Consideration of a time horizon - Existence of a materiality matrix - Disclosure of risks and opportunities - Reporting of mitigation actions	- Identification process of material impacts including associated stakeholder engagement - Description of the material topics - Existence of a separate materiality section - Consideration of a time horizon - Existence of a materiality matrix - Disclosure of risks and opportunities - Reporting of mitigation actions	- Material Topic Identification - Material Topics - Stakeholder - Methods for stakeholder identification - Definition of the term materiality analysis	- Process to define the report content as well as the topic boundaries - The undertaking’s method for stakeholder engagement - List of the material topics as well as one containing the consolidated stakeholders - Fundament for the stakeholder identification - Central topics and worries addressed within the context of the stakeholder consolidation
CONCLUSION	Gerwanski, Kordsachia and Velte (2019) as well as Velte (2022) both use the term materiality disclosure <i>quality</i> for their variable while both additionally highlight a connection to <i>transparency</i> . Conversely, Machado, Dias and Fonseca (2021) use the term <i>transparency</i> of materiality analysis while Beske, Haustein and Lorson (2019) do not use a specific term for their variable. Nevertheless, the paper describes its variable similarly to the one under the terminology transparency as they investigate with their variable “to what extent [...] companies report on their materiality analysis” (Beske, Haustein, and Lorson 2019, 164) while Machado, Dias and Fonseca’s (2021) “study investigated the rate of disclosure” (Machado, Dias, and Fonseca 2021, 573) by utilizing their defined indicators. Not only the objectives or descriptions of the papers resemble each other, also their scoring components are alike. All papers show significant similarities in their variables. Only Beske, Haustein and Lorson (2019) distance their study visibly from the term <i>quality</i> : “the aim of this paper is to address whether companies report on their materiality processes, not to assess the quality of such information” (Beske, Haustein, and Lorson 2019, 173). While the two terms in the literature appear closely intertwined, one study deliberately separates itself from this terminology. Moreover, the term <i>quality</i> can be ambiguous, as it might relate to data quality aspects.			

Appendix 5 – Research Design

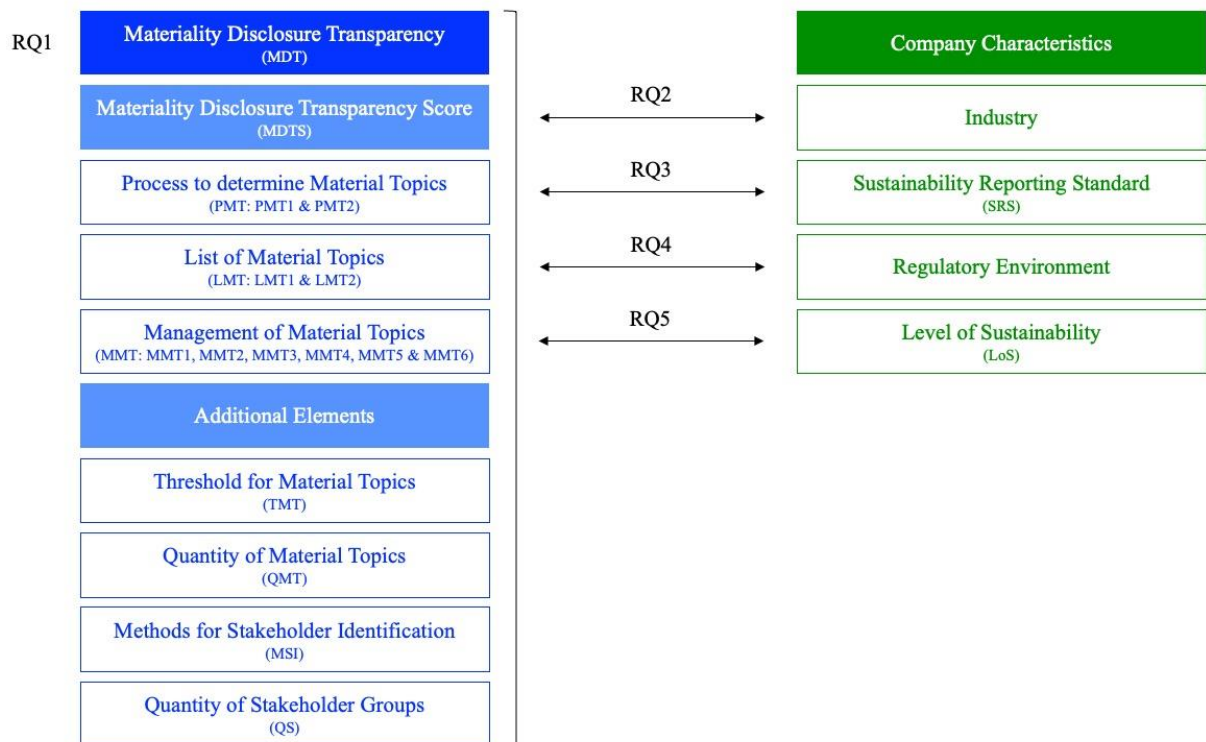


Figure 1: Research Design

PMT - Process to determine Material Topics

PMT1 - Process to determine material topics

PMT2 - Specifications on stakeholders and experts

LMT - List of Material Topics

LMT1 - List of material topics

LMT2 - Changes in material topics

MMT - Management of Material Topics

MMT1 - Description of impacts

MMT2 - Involvement through own activities or business relationships

MMT3 - Policies or commitment

MMT4 - Actions

MMT5 - Effectiveness

MMT6 - Stakeholder engagement in actions and evaluation

Research Questions:

RQ1: To what extent do companies demonstrate *Materiality Disclosure Transparency* in sustainability reports?

RQ2: How does *Materiality Disclosure Transparency* vary across industries?

RQ3: Is a difference in *Materiality Disclosure Transparency* identifiable when companies utilize different *Sustainability Reporting Standards*?

RQ4: Does *Materiality Disclosure Transparency* vary across the *Regulatory Environments*, in which companies disclose non-financial information?

RQ5: How is the *Level of Sustainability* of companies' industries associated with *Materiality Disclosure Transparency* in sustainability reports?

Appendix 6 – Additional Insights on MDT Variables

Table 1) Materiality Disclosure Transparency Score Structure and additional Insights

MDTS COMPONENT	GRI DISCLOSURE***	GRI DISCLOSURE REQUIREMENT***	RANGE OF EVALUATION
PMT Process to determine Material Topics	Disclosure 3-1 Process to determine material topics	“The organization shall:”	0 - 1
PMT1 Process to determine material topics	3-1-a	“describe the process it has followed to determine its material topics ”	0, 0.5, 1
	3-1-a-i*	“how it has identified actual and potential, negative and positive impacts on the economy, environment, and people, including impacts on their human rights, across its activities and business relationships”	
	3-1-a-ii*	“how it has prioritized the impacts for reporting based on their significance”	
PMT2 Specification on stakeholders and experts	3-1-b	“ specify the stakeholders and experts whose views have informed the process of determining its material topics.”	0,0.5,1
LMT List of Material Topics	Disclosure 3-2 List of material topics	“The organization shall:”	0 - 1
LMT1 List of material topics	3-2-a	“ list its material topics ”	0,0.5,1
LMT2 Changes in material topics	3-2-b	“report changes to the list of material topics compared to the previous reporting period”	0,0.5,1
MMT Management of Material Topics****	Disclosure 3-3 Management of material topics	“ For each material topic reported under Disclosure 3-2, the organization shall:”**	0 – 1
MMT1 Description of impacts	3-3-a	“ describe the actual and potential, negative and positive impacts on the economy, environment, and people, including impacts on their human rights”	0,0.5,1
MMT2 Involvement through own activities or business relationships	3-3-b	“report whether the organization is involved with the negative impacts through its activities or as a result of its business relationships , and describe the activities or business relationships”	0,0.5,1
MMT3 Policies or commitment	3-3-c	“describe policies or commitments regarding the material topic”	0,0.5,1

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Table 1) Materiality Disclosure Transparency Score Structure and additional Insights
(continued)

MMT4 Actions	3-3-d	“describe actions taken to manage the topic”	0,0,5,1
	3-3-d-i*	“to prevent or mitigate potential negative impacts”	
	3-3-d-ii*	“to address actual negative impacts, including actions to provide for or cooperate in their remediation”	
	3-3-d-iii*	“to manage actual and potential positive impacts”	
MMT5 Effectiveness	3-3-e	“report the following information about tracking the effectiveness of the actions”	0,0,5,1
	3-3-e-i*	“processes used to track the effectiveness”	
	3-3-e-ii*	“goals, targets, and indicators used to evaluate progress”	
	3-3-e-iii*	“the effectiveness of the actions, including progress toward the goals and targets”	
	3-3-e-iv*	“lessons learned and how these have been incorporated	
MMT6 Stakeholder engagement in action and effectiveness	3-3-f	“describe how engagement with stakeholders has informed the actions taken (3-3-d) and how it has informed whether the actions have been effective (3-3-e).”	
MDTS			0-1

* Not evaluated individually. Elements are nevertheless considered. All subordinated elements need to be disclosed to evaluate the superordinated element with 1.

** Generic disclosures are evaluated as 0 as the GRI requires disclosures on the management per material topic identified.

*** The information used in these columns are extracted from the GRI 3: Material Topics 2021 (Global Reporting Initiative 2021, 16–19). While the disclosures are accompanied by guidance, recommendations as well as further possibilities and options, is the MDTS solely considering the GRI *requirements* as these are demanded to be considered GRI-compliant (Global Reporting Initiative 2021, 5–6).

**** For MMT only one material topic per report is evaluated which is picked through random selection.

Quantity of Stakeholder Groups

If stakeholder engagement within the Process to determine Material Topics context is not disclosed, Quantity of Stakeholder Groups is not assigned a value of 0; rather, it remains unevaluated. This is the case as non-disclosure does not necessarily indicate that no stakeholders have been considered but that there is no information disclosed.

Methods for Stakeholder Identification

While evaluating variables, only chapters related to materiality disclosure were taken into account. Given that there are often separate chapters specifically addressing general stakeholder engagement in entities, future research should encompass these sections in their analysis as well. This would help determine whether information on stakeholders, within the context of materiality disclosure, is provided in those chapters.

For all other variables no additional instructions occur as necessary. One-time cases are evaluated in the data base.

Appendix 7 – Air and Greenhouse Gas Emissions by Industry

Table 1) Air and Greenhouse Gas Emissions by Industry

INDUSTRY	AUSTRIA	BELGIUM	CZECH REPUBLIC	DENMARK	ESTONIA	FINLAND	FRANCE
Real estate activities	44812	78457	156708	102073	48328	39165	419887
Arts, entertainment and recreation	184435	358647	68055	81519	73407	72923	1783965
Financial and insurance activities	44155	253728	58719	47066	6795	140192	895746
Information and communication	89930	272614	99172	72107	13728	10189	980141
Other service activities	75567	505211	39297	61846	15708	78794	1195171
Education	95931	429128	135226	129821	16292	72650	3223075
Accommodation and food service activities	239034	697948	60684	96372	37117	4816	2213114
Professional, scientific and technical activities	216555	1178485	228051	147520	28582	11408	2175574
Human health and social work activities	171690	824081	290821	160829	15937	150275	5726269
Administrative and support service activities	480568	1867846	506331	245275	34199	238751	7866332
Public administration and defence; compulsory social security	684698	1012568	186104	430728	33014	508649	4933563
Water supply; sewerage, waste management and remediation activities	206601	673009	846566	1481227	69342	323514	10909760
Mining and quarrying	698587	419415	3633311	929943	84389	454201	490330
Construction	1101254	2198642	1465864	1366274	145920	1651199	7939471
Wholesale and retail trade; repair of motor vehicles and motorcycles	1172890	2283917	1153650	851187	127541	57046	8936728
Agriculture, forestry and fishing	955330	3066766	1716009	1750790	183480	1603702	14020865
Transportation and storage	6878110	6247961	8730937	33889119	1368775	6855040	30383721
Electricity, gas, steam and air conditioning supply	5819580	13413747	38021504	5019185	5793887	10814661	24774571
Manufacturing	27328843	32376361	19591148	5352636	1983706	10948908	83238198
Industry Total	46488570	68158531	76988157	52215517	10080147	34036083	212106481

(Continues on the next page)

Table 1) Air and Greenhouse Gas Emissions by Industry (continued)

INDUSTRY	GERMANY	GREECE	HUNGARY	ICELAND	IRELAND	ITALY	LITHUANIA
Real estate activities	378452	746	511183	6500	21199	390622	24564
Arts, entertainment and recreation	830660	31475	73378	1828	121926	547731	17572
Financial and insurance activities	1220629	12135	209241	3270	53068	501947	27826
Information and communication	1368012	16491	300993	2739	131107	276573	37864
Other service activities	4365413	36042	78223	1649	138766	591644	17784
Education	2996299	36551	222465	1460	270208	858676	41347
Accommodation and food service activities	2224597	31348	81760	5222	253893	2650994	16649
Professional, scientific and technical activities	3549094	69425	371593	5357	163829	1120564	39227
Human health and social work activities	5687339	41749	270542	2007	297280	4134790	39154
Administrative and support service activities	1018525	12657	760557	30319	163882	1043283	80399
Public administration and defence; compulsory social security	4637322	539099	791619	6291	485603	2097810	99751
Water supply; sewerage, waste management and remediation activities	4061045	43958	147732	11104	764419	7413462	42259
Mining and quarrying	4300582	59180	461368	4200	95426	2704992	19565
Construction	9686227	183233	1176625	152659	528026	5409409	143820
Wholesale and retail trade; repair of motor vehicles and motorcycles	14666041	506682	1741780	37418	877648	6953105	163198
Agriculture, forestry and fishing	8781572	1013078	2567714	405352	1307607	9229397	562328
Transportation and storage	65196754	20933944	5238911	1031246	9777855	39527481	8258727
Electricity, gas, steam and air conditioning supply	205930885	21107438	9753711	175282	8927163	74527411	1409938
Manufacturing	192562002	14306769	11031415	1922311	7413405	79673036	5628138
Industry Total	533461450	58982000	35790810	3806214	31792310	239652927	16670110

(Continues on the next page)

Table 1) Air and Greenhouse Gas Emissions by Industry (continued)

INDUSTRY	LATVIA	LUXEMBOURG	NETHERLANDS	NORWAY	POLAND	PORTUGAL	SLOVAK REPUBLIC
Real estate activities	92436	15511	241020	74925	1259618	13204	228317
Arts, entertainment and recreation	12488	13363	410992	20716	562385	57554	101420
Financial and insurance activities	5905	137949	355969	1058	2086970	53291	53420
Information and communication	10020	40061	173903	20754	3116385	57616	53921
Other service activities	10879	8830	383485	39509	817525	52108	121132
Education	19054	33562	573045	4397	1105586	72699	91978
Accommodation and food service activities	13935	16090	950637	57665	706815	124028	139048
Professional, scientific and technical activities	24453	77203	705537	89568	3023245	130784	499524
Human health and social work activities	49105	41027	1355258	21757	2618877	502062	161216
Administrative and support service activities	48991	69552	2220540	211692	4948290	227161	404322
Public administration and defence; compulsory social security	94025	21249	851942	167838	4015346	411781	247014
Water supply; sewerage, waste management and remediation activities	36364	12543	2650140	126640	1811709	1453804	91581
Mining and quarrying	55046	6173	1660867	15354822	2606075	275474	48327
Construction	199108	173145	3249703	2176147	893540	1156904	2382849
Wholesale and retail trade; repair of motor vehicles and motorcycles	289952	171688	3522644	1163658	25080636	1570448	465477
Agriculture, forestry and fishing	705806	81315	9515258	1633785	22785293	1742129	227594
Transportation and storage	2147369	5131163	22274460	21670498	9066743	6347029	2005602
Electricity, gas, steam and air conditioning supply	1413865	259920	32477793	1476377	140353115	6255010	4606063
Manufacturing	1207068	1344600	43642601	11049662	65058974	13913061	16549796
Industry Total	6435869	7654944	127215794	55361468	291917127	34416147	28478601

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Table 1) Air and Greenhouse Gas Emissions by Industry (continued)

INDUSTRY	SLOVENIA	SPAIN	SWEDEN	BULGARIA	CROATIA	CYPRUS	MALTA
Real estate activities	35587	478455	158558	18195	122204	4744	3988
Arts, entertainment and recreation	29817	361411	129817	5108	23523	6528	293
Financial and insurance activities	54646	194496	72242	4843	57404	12008	429
Information and communication	45212	235218	90755	20716	73155	7146	6666
Other service activities	44740	1300572	103227	12162	73611	11904	12257
Education	63746	494905	87958	16580	69397	6871	2617
Accommodation and food service activities	90149	1849422	63784	26474	41180	46989	42293
Professional, scientific and technical activities	159832	436865	352563	28794	129671	19348	12918
Human health and social work activities	78314	647076	253760	19221	77720	8558	20540
Administrative and support service activities	114939	394200	438881	81877	101594	25079	6727
Public administration and defence; compulsory social security	42603	4074167	125759	23189	55684	51540	46811
Water supply; sewerage, waste management and remediation activities	65831	1883648	260271	97744	1022	23877	17569
Mining and quarrying	87904	1196536	831699	269370	469267	41616	16321
Construction	581866	2723980	1682439	650140	304301	133419	42146
Wholesale and retail trade; repair of motor vehicles and motorcycles	449840	1886287	1182935	589316	409196	136296	64818
Agriculture, forestry and fishing	271481	12884100	1851792	766604	821785	90271	26270
Transportation and storage	952093	36421350	4814537	7057951	1261899	244009	319581
Electricity, gas, steam and air conditioning supply	4201804	31233401	5256577	22042872	3311763	3020313	790119
Manufacturing	2645500	69960532	12979524	8997611	4311095	1527939	53167
Industry Total	10015904	168656621	30737078	40728767	11715471	5418455	1485530

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Table 1) Air and Greenhouse Gas Emissions by Industry (continued)

INDUSTRY	ROMANIA	TOTAL	TOTAL IN %
Real estate activities	486095	486095	0.75
Arts, entertainment and recreation	99019	99019	0.15
Financial and insurance activities	226949	226949	0.35
Information and communication	306562	306562	0.47
Other service activities	322235	322235	0.50
Education	245150	245150	0.38
Accommodation and food service activities	175393	175393	0.27
Professional, scientific and technical activities	551727	551727	0.85
Human health and social work activities	327530	327530	0.51
Administrative and support service activities	394045	394045	0.61
Public administration and defence; compulsory social security	430496	430496	0.66
Water supply; sewerage, waste management and remediation activities	653348	653348	1.01
Mining and quarrying	1080696	1080696	1.67
Construction	3465542	3465542	5.35
Wholesale and retail trade; repair of motor vehicles and motorcycles	1563618	1563618	2.42
Agriculture, forestry and fishing	2024343	2024343	3.13
Transportation and storage	5771169	5771169	8.91
Electricity, gas, steam and air conditioning supply	19181030	19181030	29.63
Manufacturing	27436284	27436284	42.38
Industry Total	64741231	64741231	100.00

All Data is derived from OECD (2022). The highlighted industries are the ones considered in the research and, thus, in the Level of Sustainability.

Appendix 8 – Level of Sustainability and associated CO₂-eq

Table 1) Level of Sustainability and the corresponding industries and CO₂-eq.

LEVEL OF SUSTAINABILITY	INDUSTRY	CO ₂ -eq (in tonnes)	CO ₂ -eq (in % of total)	
High Emissions	Manufacturing	774,034,290	33.6%	80%
	Electricity, gas, steam and air conditioning supply	701,368,985	30.4%	
	Transportation and storage	369,804,034	16%	
Low Emissions	Professional, scientific and technical activities	15,547,296	0.7%	1.6%
	Accommodation and food service activities	7,929,750	0.6%	
	Information and communication	7,929,750	0.3%	

Data is derived from OECD (2022).

Appendix 9 – The Sample

Table 1) The Sample

COMPANY	LISTED ON EU REGULATED MARKET	EU COMPANY /PRESENCE	COUNTRY	COMPANY SIZE	REGULATORY ENVIRONMENT	SRS	LEVEL OF SUSTAINABILITY	INDUSTRY	CRITERIA FOR EXCLUSION	IN SAMPLE	NON-FINANCIAL INFORMATION SOURCE	FINANCIAL INFORMATION SOURCE	ADDITIONAL SOURCE	ADDITIONAL SOURCE
ACCOR	Yes	Yes	France	Large	NFRD	GRI and others	Low Emissions	Accommodation and food service activities		Yes	https://group.accor.com/en/finance/results-and-publications/universal-registration-document	https://group.accor.com/en/finance/results-and-publications/universal-registration-document	https://group.accor.com/-/media/Corporate/Group/Documents/2023/04/19/Accor_GRI_Report_EN.pdf	
ADVANCED MICRO DEVICES	Yes	Yes	USA	Large	Non-NFRD	GRI and others	High Emissions	Manufacturing		Yes	https://www.amd.com/content/dam/amd/en/documents/corporate/cr/2022-23-amd-cr-report.pdf	https://ir.amd.com/sec-filings/content/000002488-23-000047/000002488-23-000047.pdf	https://www.amd.com/en/corporate/corporate-responsibility/gri-content-index.html	
AIRBUS	Yes	Yes	Netherlands	Large	NFRD	GRI and others	High Emissions	Manufacturing		Yes	https://www.airbus.com/sites/g/files/jlcba136/files/2023-05/Airbus_SE_2022_Annual_Report.pdf	https://www.airbus.com/sites/g/files/jlcba136/files/2023-03/airbus-2022-12-31-en.zip		
ALTEN	Yes	Yes	France	Large	NFRD	GRI only	Low Emissions	Professional, scientific and technical activities		Yes	https://alten.fr/digital-report.net/en/content/introduction-146	https://alten.fr/digital-report.net/en/content/introduction-146		
ARCADIS	Yes	Yes	Netherlands	Large	NFRD	GRI and others	Low Emissions	Professional, scientific and technical activities		Yes	https://www.arcadis.com/en/investors/arcadis-annual-integrated-report	https://www.arcadis.com/en/investors/arcadis-annual-integrated-report	https://www.arcadis.com/en/about-us/sustainability/our-non-financial-reporting	https://www.arcadis.com/en/investors/publications-and-presentations---download-center#search-download-center_downloadyear=2021
ATOS	Yes	Yes	France	Large	NFRD	GRI and others	Low Emissions	Professional, scientific and technical activities		Yes	https://atos.net/wp-content/uploads/2023/04/atos-2022-universal-registration-document.pdf	https://atos.net/wp-content/uploads/2023/04/atos-2022-universal-registration-document.pdf		
AUBAY	Yes	Yes	France	Large	NFRD	GRI only	Low Emissions	Professional, scientific and technical activities		Yes	https://aubay.com/wp-content/uploads/2023/05/URD_Aubay_2022_UK_OPTI-2.pdf	https://aubay.com/wp-content/uploads/2023/05/URD_Aubay_2022_UK_OPTI-2.pdf		
AZELIS GROUP	Yes	Yes	Belgium	Large	NFRD	GRI and others	High Emissions	Manufacturing		Yes	https://www.azelis.com/sites/default/files/uploads/2022%20Azelis%20Sustainability%20Report_ENG.pdf	https://www.azelis.com/sites/default/files/uploads/Azelis%20Group%20NV%20-%20Annual%20Report%202022.pdf	https://www.azelis.com/sites/default/files/uploads/Azelis%20Sustainability%20report%20F1NAL_sept%202020.pdf	
CATERPILLAR INC	Yes	Yes	USA	Large	Non-NFRD	GRI and others	High Emissions	Manufacturing		Yes	https://s7d2.scene7.com/is/content/Caterpillar/CM20230428-315ef-024e2	https://s7d2.scene7.com/is/content/Caterpillar/CM20230503-58d3d-2ac19		
COMPASS GROUP	Yes	Yes	UK	Large	NFRD	GRI and others	Low Emissions	Accommodation and food service activities		Yes	https://www.compass-group.com/content/dam/compass-group/corporate/sustainability/sustainability-updates-2023/reports---statements/CG-Sustainability-Report-2022-Med-Res.pdf	https://www.compass-group.com/content/dam/compass-group/corporate/sustainability/sustainability-updates-2023/reports---statements/CG-Sustainability-Report-2022-Med-Res.pdf	https://www.compass-group.com/content/dam/compass-group/corporate/sustainability/sustainability-updates-2023/reports---statements/GR1%20SASB%202022.pdf	
CTT CORREIOS PORT	Yes	Yes	Portugal	Large	NFRD	GRI only	High Emissions	Transportation and storage		Yes	https://relatoriointegrado2022.ctt.pt/en/home	https://relatoriointegrado2022.ctt.pt/en/home		
D'AMICO	Yes	Yes	Italy	Large	NFRD	GRI and others	High Emissions	Transportation and storage		Yes	https://en.damicointernationalshipping.com/media/9486/damico-international-shipping-sa-2021-annual-report-locked.pdf	https://en.damicointernationalshipping.com/media/9486/damico-international-shipping-sa-2021-annual-report-locked.pdf	https://en.damicoship.com/media/9561/damico-group-2021-sustainability-report.pdf	
DELIVERY HERO	Yes	Yes	Germany	Large	NFRD	GRI and others	Low Emissions	Accommodation and food service activities		Yes	https://ir.deliveryhero.com/non-financial-report-for-the-group/	https://ir.deliveryhero.com/financial-reports-and-presentations/		
DEUTSCHE POST	Yes	Yes	Germany	Large	NFRD	GRI and others	High Emissions	Transportation and storage		Yes	https://www.dpdhl.com/de/nachhaltigkeit/unser-ansatz/nachhaltigkeitsberichte.html	https://www.dpdhl.com/de/nachhaltigkeit/unser-ansatz/nachhaltigkeitsberichte.html		

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Table 1) The Sample (continued)

COMPANY	LISTED ON EU REGULATED MARKET	EU COMPANY /PRESENCE	COUNTRY	COMPANY SIZE	REGULATORY ENVIRONMENT	SRS	LEVEL OF SUSTAINABILITY	INDUSTRY	CRITERIA FOR EXCLUSION	IN SAMPLE	NON-FINANCIAL INFORMATION SOURCE	FINANCIAL INFORMATION SOURCE	ADDITIONAL SOURCE	ADDITIONAL SOURCE
ENAV	Yes	Yes	Italy	Large	NFRD	GRI and others	High Emissions	Transportation and storage		Yes	https://cdn-web.enav.it/content/2023-04/Enav_Sustainability%20Report%202022.pdf?VersionId=9f5df5e-0d0e-4d48-9737-7334887d9d0e	https://cdn-web.enav.it/content/2023-04/Enav_Annual%20Financial%20Report%202022_1.pdf?VersionId=199ece37-6f62-46d1-bf3d-530893ef3812		
ENEL	Yes	Yes	Italy	Large	NFRD	GRI and others	High Emissions	Electricity, gas, steam and air conditioning supply		Yes	https://www.enel.com/content/dam/enel-com/documenti/investitori/sostenibilita/2022/sustainability-report_2022.pdf	https://www.enel.com/content/dam/enel-com/documenti/investitori/informazioni-finanziarie/2022/annuali/en/integrated-annual-report_2022.pdf		
ENGIE	Yes	Yes	France	Large	NFRD	GRI and others	High Emissions	Electricity, gas, steam and air conditioning supply		Yes	https://www.engie.com/sites/default/files/assets/documents/2023-05/Non-Financial%20Statement%202022%20VA.pdf	https://www.engie.com/sites/default/files/assets/documents/2023-02/ENGIE_2022%20Management%20report%20and%20annual%20consolidated%20financial%20statements.pdf		
FINE FOODS & PHARM	Yes	Yes	Italy	Large	NFRD	GRI and others	High Emissions	Manufacturing		Yes	https://www.finefoods.it/wp-content/uploads/2023/04/Fine-Foods-DNF-eng.pdf	https://www.finefoods.it/wp-content/uploads/2023/03/Annual-Financial-Report-as-of-31-December-2022.pdf		
FLUXYS BELGIUM	Yes	Yes	Belgium	Large	NFRD	GRI only	High Emissions	Electricity, gas, steam and air conditioning supply		Yes	https://www.fluxys.com/en/about-us/fluxys-belgium/annual-report	https://www.fluxys.com/en/about-us/fluxys-belgium/annual-report		
FORTUM	Yes	Yes	Finland	Large	NFRD	GRI and others	High Emissions	Electricity, gas, steam and air conditioning supply		Yes	https://www.fortum.com/files/fortum-sustainability-2022/download	https://www.fortum.com/files/fortum-financials-2022/download		
GETLINK SE	Yes	Yes	France	Large	NFRD	GRI and others	High Emissions	Transportation and storage		Yes	https://www.getlinkgroup.com/content/uploads/2023/09/getlink-se-urd-2022_bm_s-uk.pdf	https://www.getlinkgroup.com/content/uploads/2023/09/getlink-se-urd-2022_bm_s-uk.pdf		
GPI	Yes	Yes	Italy	Large	NFRD	GRI only	Low Emissions	Information and communication		Yes	https://www.gpigroup.com/en/investors/reports/#1696010917678-087eabbb-5b8c	https://www.gpigroup.com/en/investors/reports/#1696010917678-087eabbb-5b8c	https://www.gpigroup.com/ap/uploads/2022/04/CNFS-2021_WEB_ENG.pdf	
HILTON WORLDWIDE	Yes	Yes	USA	Large	Non-NFRD	GRI and others	Low Emissions	Accommodation and food service activities		Yes	https://esg.hilton.com/wp-content/uploads/sites/4/2023/04/Hilton-2022-Environmental-Social-and-Governance-Report.pdf	https://stories-editor.hilton.com/wp-content/uploads/2023/04/HILTON-WORLDWIDE-INC_10K_2023_V1.pdf	https://esg.hilton.com/wp-content/uploads/2021/04/Hilton-2020-Materiality-Assessment.pdf	
IBERDROLA	Yes	Yes	Spain	Large	NFRD	GRI and others	High Emissions	Electricity, gas, steam and air conditioning supply		Yes	https://www.iberdrola.com/documentos/20125/2931678/gsm23_1A_SustainabilityReport2022.pdf	https://www.iberdrola.com/documentos/20125/2931678/gsm23_FinancialStatements_AuditorsReport_Consolidated2022.pdf		
IBERSOL, SGPS	Yes	Yes	Portugal	Large	NFRD	GRI only	Low Emissions	Accommodation and food service activities		Yes	https://www.iberisol.pt/investidores/relatorio-contas/2022/iberisol_2022_EN_vf.pdf	https://www.iberisol.pt/investidores/relatorio-contas/2022/iberisol_2022_EN_vf.pdf		
IBM	Yes	Yes	USA	Large	Non-NFRD	GRI and others	Low Emissions	Information and communication		Yes	https://www.ibm.com/impact/files/reports-policies/2022/IBM_2022_ESG_Report_and_Addendum.pdf	https://www.ibm.com/annualreport/assets/downloads/IBM_Annual_Report_2022.pdf	https://www.ibm.com/impact/pdf/2021_GRI_Index.pdf	
INTEL	Yes	Yes	USA	Large	Non-NFRD	GRI and others	High Emissions	Manufacturing		Yes	https://csrreportbuilder.intel.com/pdfbuilder/pdfs/CSR-2022-23-Full-Report.pdf	https://reports-content/0000050863-23-000039/0000050863-23-000039.pdf		

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Table 1) The Sample (continued)

COMPANY	LISTED ON EU REGULATED MARKET	EU COMPANY /PRESENCE	COUNTRY	COMPANY SIZE	REGULATORY ENVIRONMENT	SRS	LEVEL OF SUSTAINABILITY	INDUSTRY	CRITERIA FOR EXCLUSION	IN SAMPLE	NON-FINANCIAL INFORMATION SOURCE	FINANCIAL INFORMATION SOURCE	ADDITIONAL SOURCE	ADDITIONAL SOURCE
MARRIOTT INTERNATIONAL	Yes	Yes	USA	Large	Non-NFRD	GRI and others	Low Emissions	Accommodation and food service activities		Yes	http://serve360.marriott.com/wp-content/uploads/2023/06/Marriott-2023-Serve-360-ESG-Report-accessible.pdf	https://marriott.gcs-web.com/static-files/b82978a6-9d28-4e38-9855-fc4ae2cebe11		
NETFLIX	Yes	Yes	USA	Large	Non-NFRD	GRI and others	Low Emissions	Information and communication		Yes	https://s22.q4cdn.com/959853165/files/doc_downloads/2023/06/29/Netflix_2022-ESG-Report-FINAL.pdf	https://s22.q4cdn.com/959853165/files/doc_financials/2022/ar/4e32b45c-a99e-4c7d-b988-4eef8377500c.pdf		
NOKIA CORPORATION	Yes	Yes	Finland	Large	NFRD	GRI and others	Low Emissions	Information and communication		Yes	https://www.nokia.com/sites/default/files/2023-03/nokia-people-and-planet-2022-sustainability-report.pdf	https://www.nokia.com/system/files/2023-03/nokia-form-20-f-2022.pdf		
POSTE ITALIANE	Yes	Yes	Italy	Large	NFRD	GRI and others	High Emissions	Transportation and storage		Yes	https://www.posteitaliane.it/files/1476582640957/Annual-Financial-Report-2022.pdf	https://www.posteitaliane.it/files/1476582640957/Annual-Financial-Report-2022.pdf		
POSTNL	Yes	Yes	Netherlands	Large	NFRD	GRI and others	High Emissions	Transportation and storage		Yes	https://annualreport.postnl.nl	https://annualreport.postnl.nl		
PROXIMUS	Yes	Yes	Belgium	Large	NFRD	GRI and others	Low Emissions	Information and communication		Yes	https://www.proximus.com/dam/jcr:29b8b936-587f-4624-825d-051276d8e4c2/proximus-integrated-annual-report-2022_en.pdf	https://www.proximus.com/dam/jcr:29b8b936-587f-4624-825d-051276d8e4c2/proximus-integrated-annual-report-2022_en.pdf		
PUBLICIS GROUPE	Yes	Yes	France	Large	NFRD	GRI and others	Low Emissions	Professional, scientific and technical activities		Yes	https://documents.publicisgroup.com/urd2022/PBS_PUBLICIS_URD_EN_2022_MEL_23_05_11.pdf	https://documents.publicisgroup.com/urd2022/PBS_PUBLICIS_URD_EN_2022_MEL_23_05_11.pdf		
SAIPEM	Yes	Yes	Italy	Large	NFRD	GRI and others	High Emissions	Electricity, gas, steam and air conditioning supply		Yes	https://www.saipem.com/sites/default/files/2023-06/2022%20Consolidated%20Non%20Financial%20Statement.pdf	https://www.saipem.com/sites/default/files/2023-04/Annual%20Report%202022.pdf		
SERVICENOW	Yes	Yes	USA	Large	Non-NFRD	GRI and others	Low Emissions	Information and communication		Yes	https://www.servicenow.com/default/standard/other-documents/servicenow-global-impact-report-2022.html	https://www.servicenow.com/content/dam/servicenow-assets/public/en-us/document/public-document/servicenow-annual-report-2022.pdf		
SII	Yes	Yes	France	Large	NFRD	GRI and others	Low Emissions	Professional, scientific and technical activities		Yes	https://sii-group.com/sites/default/files/document/RFA%202021_2022_UK_0.pdf	https://sii-group.com/sites/default/files/document/RFA%202021_2022_UK_0.pdf	https://sii-group.com/sites/default/files/document/RFA%202021_2022_UK_0.pdf	
SODEXO	Yes	Yes	France	Large	NFRD	GRI and others	Low Emissions	Accommodation and food service activities		Yes	https://www.sodexo.com/en/investors/financial-results-and-publications/financial-results	https://www.sodexo.com/en/investors/financial-results-and-publications/financial-results		
SOPRA STERIA GROUP	Yes	Yes	France	Large	NFRD	GRI and others	Low Emissions	Professional, scientific and technical activities		Yes	https://www.soprasteria.com/docs/librariesprovider2/publications-re/sopra-steria-2022-corporate-responsibility-report_pdf?sfvrsn=cde19fde_19	https://www.soprasteria.com/docs/librariesprovider2/soprasteria-corporate/finance/rapports-financiers/sop2022_urd_en_mel_230317_compressed.pdf?sfvrsn=f3db9fde_12		
STELLANTIS	Yes	Yes	Netherlands	Large	NFRD	GRI and others	High Emissions	Manufacturing		Yes	https://www.stellantis.com/content/dam/stellantis-corporate/sustainability/csr-disclosure/stellantis/2022/Stellantis-2022-CSR-Report-Accessible.pdf	https://www.stellantis.com/content/dam/stellantis-corporate/investors/financial-reports/Stellantis-NV-20221231-Annual-Report.pdf		
TELEFONICA	Yes	Yes	Germany	Large	NFRD	GRI only	Low Emissions	Information and communication		Yes	https://www.telefonica.com/en/shareholders-investors/financial-reports/integrated-annual-report/	https://www.telefonica.com/en/shareholders-investors/financial-reports/integrated-annual-report/		
VERBUND	Yes	Yes	Austria	Large	NFRD	GRI and others	High Emissions	Electricity, gas, steam and air conditioning supply		Yes	https://www.verbund.com/en-at/about-verbund/responsibility/reports	https://www.verbund.com/en-at/about-verbund/responsibility/reports	https://www.verbund.com/en-at/about-verbund/responsibility/reports	

Appendix 10 – Sample Descriptives

Table 1) Sample Descriptives Level of Sustainability

LEVEL OF SUSTAINABILITY	FREQUENCY	PERCENT
High Emissions	21	50.0
Low Emissions	21	50.0
Total	42	100.0

Table 2) Sample Descriptives Industry

INDUSTRY	FREQUENCY	PERCENT
Accommodation and food service activities	7	16.7
Electricity, gas, steam and air conditioning supply	7	16.7
Information and communication	7	16.7
Manufacturing	7	16.7
Professional, scientific and technical activities	7	16.7
Transportation and storage	7	16.7
Total	42	100.0

Table 3) Sample Descriptives Sustainability Reporting Standard

SRS	FREQUENCY	PERCENT
GRI only	8	19.0
GRI and others	34	81.0
Total	42	100.0

Table 4) Sample Descriptives Regulatory Environment

REGULATORY ENVIRONMENT	FREQUENCY	PERCENT
NFRD	34	81.0
NON-NFRD	8	19.0
Total	42	100.0

Table 5) Sample Descriptives Company Size (in Total Assets)

MINIMUM	299,820 €
MAXIMUM	261,626,000€
MEAN	50,322,449 €
MEDIAN	14,498,570 €
STANDARD DEVIATION	72,659,395 €

(in thousands)

Table 6) Sample Descriptives Net Income

MINIMUM	-10,290,000 €
MAXIMUM	16,799,000 €
MEAN	1,408,461 €
MEDIAN	408,000 €
STANDARD DEVIATION	3,692,259 €

(in thousands)

Appendix 11 – The Database

Table 1) Database Excerpt: Company Characteristics and Additional MDT Variables

Company	Country	Regulatory Environment	Level of Sustainability	Industry	Sustainability Reporting Standard	Total Assets (in thousands)	Net Income (in thousands)	Threshold for Material Topics (Threshold=1; Priorization=0.5, Neither=0)	Quantity of Material Topics	Quantity of Stakeholder Groups	Stakeholder Groups named for Materiality Assessment	Methods for Stakeholder Identification (Yes=1, No=0)
ACCOR	France	NFRD	Low Emissions	Accommodation and food service activities	GRI and others	10,769,000 €	426,000 €	0.5	10		Hotels, group executives, employees	0
ADVANCED MICRO DEVICES	USA	Non-NFRD	High Emissions	Manufacturing	GRI and others	63,842,620 €	1,247,000 €	0	13			0
AIRBUS	Netherlands	NFRD	High Emissions	Manufacturing	GRI and others	115,944,000 €	4,136,000 €	0.5	13		Employees, customers, suppliers, investors, 5 social partners	0
ALTEN	France	NFRD	Low Emissions	Professional, scientific and technical activities	GRI only	3,367,051 €	457,525 €	0	18			0
ARCADIS	Netherlands	NFRD	Low Emissions	Professional, scientific and technical activities	GRI and others	3,830,443 €	134,997 €	0	9		Investors, clients, employees, NGOs, shareholders, subcontractors, and 7 suppliers	0
ATOS	France	NFRD	Low Emissions	Professional, scientific and technical activities	GRI and others	16,394,000 €	-1,012,000 €	0	11		Internal and external 2 stakeholders	0
AUBAY	France	NFRD	Low Emissions	Professional, scientific and technical activities	GRI and others	445,805 €	35,629 €	0	13		Employees, clients, investors, 4 subcontractors	The quantity of material topics has been derived from the materiality matrix. A clear statement on the quantity or whether all topics depicted on the matrix are considered material could not have been identified.
AZELIS GROUP	Belgium	NFRD	High Emissions	Manufacturing	GRI and others	4,976,725 €	218,879 €	0.5	21			0
CATERPILLAR INC	USA	Non-NFRD	High Emissions	Manufacturing	GRI and others	77,411,310 €	6,334,190 €	0.5	9		Customers, dealers, suppliers, investors, nongovernmental 5 organizations and others	0
COMPASS GROUP	UK	NFRD	Low Emissions	Accommodation and food service activities	GRI and others	21,518,620 €	1,282,070 €	0	22		Employees, investors, clients and consumers, suppliers, NGOs and 6 government agencies	It has not been clearly expressed which the material topics are. The number evaluated is the number of topics depicted on the materiality matrix provided on page 4 of their 2022 sustainability report "Our Planet Promise" 0 (2023).
CTT CORREIOS PORT	Portugal	NFRD	High Emissions	Transportation and storage	GRI only	4,057,500 €	36,407 €	0.5	7		Media, partners, regulators, other public entities, suppliers, clients, government, workforce, shareholders and investors, city councils, philately, workers' representatives, community, NGO & 14 associations	1

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Table 1) Database Excerpt: Company Characteristics and Additional MDT Variables (continued)

Company	Country	Regulatory Environment	Level of Sustainability	Industry	Sustainability Reporting Standard	Total Assets (in thousands)	Net Income (in thousands)	Threshold for Material Topics (Threshold=1; Priorization=0.5, Neither=0)	Quantity of Material Topics	Quantity of Stakeholder Groups	Stakeholder Groups named for Materiality Assessment	Methods for Stakeholder Identification (Yes=1, No=0)
D'AMICO	Italy	NFRD	High Emissions	Transportation and storage	GRI and others	997,186 €	127,492 €	0.5	18	9	Media, public administrations, suppliers, banks, associations or foundations, business partners, customers, financial community, insurance companies	0
DELIVERY HERO	Germany	NFRD	Low Emissions	Accommodation and food service activities	GRI and others	3,528,800 €	-2,975,100 €	0.5	11	8	Investors, employees, suppliers, customers, regulators, community/NGOs, riders, restaurants, investors	0
DEUTSCHE POST	Germany	NFRD	High Emissions	Transportation and storage	GRI and others	68,278,000 €	5,717,000 €	0	6			0
ENAV	Italy	NFRD	High Emissions	Transportation and storage	GRI and others	2,418,987 €	104,497 €	0	15			0
ENEL	Italy	NFRD	High Emissions	Electricity, gas, steam and air conditioning supply	GRI and others	219,618,000 €	2,920,000 €	0.5	12.5	4	Internal, external, national, international stakeholders	As on page 58 13 material topics are listed and on page 35 and page 449 12 material topics are listed this will be evaluated as 12.5. ("Sustainability Report 2022" 2023)
ENGIE	France	NFRD	High Emissions	Electricity, gas, steam and air conditioning supply	GRI and others	235,490,000 €	390,000 €	0.5	20			0
FINE FOODS & PHARM	Italy	NFRD	High Emissions	Manufacturing	GRI only	299,820 €	-9,501 €	1	22	9	Employees, shareholders, future generations, local communities, investors, banks, local authorities, regulatory authorities, insurance companies, customers, suppliers	1
FLUXYS BELGIUM D	Belgium	NFRD	High Emissions	Electricity, gas, steam and air conditioning supply	GRI only	3,406,570 €	83,728 €	0	16	8	Employees, local residents, shareholders, customers, suppliers, authorities and regulators, financial institutions, non-governmental organisations	0
FORTUM	Finland	NFRD	High Emissions	Electricity, gas, steam and air conditioning supply	GRI and others	23,642,000 €	-10,290,000 €	0	19			0
GETLINK SE	France	NFRD	High Emissions	Transportation and storage	GRI and others	8,716,545 €	252,008 €	0.5	8	6	Board directors, local elected official, investor, client, person from the intergovernmental commission, representative panel	1

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Table 1) Database Excerpt: Company Characteristics and Additional MDT Variables (continued)

Company	Country	Regulatory Environment	Level of Sustainability	Industry	Sustainability Reporting Standard	Total Assets (in thousands)	Net Income (in thousands)	Threshold for Material Topics (Threshold=1; Priorization=0.5, Neither=0)	Quantity of Material Topics	Quantity of Stakeholder Groups	Stakeholder Groups named for Materiality Assessment	Methods for Stakeholder Identification (Yes=1, No=0)
GPI	Italy	NFRD	Low Emissions	Information and communication	GRI only	713,235 €	9,921 €	0	12	5	Customers, suppliers, the business community, the financial community, and local and national institutions	0
HILTON WORLDWIDE H	USA	Non-NFRD	Low Emissions	Accommodation and food service activities	GRI and others	16,466,760 €	1,334,200 €	0.5	17	7	Members of Hilton leadership, team members, NGOs and community organizations, owners and developers, 6 of largest investors, guests via hilton online community, suppliers	0
IBERDROLA	Spain	NFRD	High Emissions	Electricity, gas, steam and air conditioning supply	GRI and others	154,667,000 €	5,131,000 €	0.5	18	3	EFRAG, GRI, Major Influencer	0
IBERSOL, SGPS	Portugal	NFRD	Low Emissions	Accommodation and food service activities	GRI only	652,600 €	16,700 €	0.5	7	14	Stakeholders and investors, industry/professional associations, suppliers, clients, employees, franchisors and concessions, support partners, franchisees, state and regulators, auditing/certifying bodies, science and technology system, local communities, media & opinion makers, NGOs	0
IBM	USA	Non-NFRD	Low Emissions	Information and communication	GRI and others	120,851,300 €	1,556,670 €	0	0	0	&NPCs	0
INTEL	USA	Non-NFRD	High Emissions	Manufacturing	GRI and others	172,142,510 €	7,578,490 €	0	0	9	Community, customers, employees, government, international organizations, NGOs, investors, peer companies	0
MARRIOTT INTERNATIONAL/USA		Non-NFRD	Low Emissions	Accommodation and food service activities	GRI and others	23,456,680 €	2,228,930 €	0	20	4	Owners, customers, industry associations, and nongovernmental organizations	0
NETFLIX	USA	Non-NFRD	Low Emissions	Information and communication	GRI and others	46,153,743 €	4,266,284 €	0	3			"For this report, we focus on the following topics: Environment, Social and Governance." ("Environmental Social Governance Report 2022" 0 2023, 5)
NOKIA CORPORATION	Finland	NFRD	Low Emissions	Information and communication	GRI and others	42,943,000 €	4,259,000 €	0	13	8	Employees, customers, investors, suppliers, partners, NGOs, academics, sustainability experts	0
POSTE ITALIANE	Italy	NFRD	High Emissions	Transportation and storage	GRI and others	261,626,000 €	1,511,000 €	0.5	18			0
POSTNL	Netherlands	NFRD	High Emissions	Transportation and storage	GRI and others	2,221,000 €	-993,000 €	0	11			0

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Table 1) Database Excerpt: Company Characteristics and Additional MDT Variables (continued)

Company	Country	Regulatory Environment	Level of Sustainability	Industry	Sustainability Reporting Standard	Total Assets (in thousands)	Net Income (in thousands)	Threshold for Material Topics (Threshold=1; Priorization=0.5, Neither=0)	Quantity of Material Topics	Quantity of Stakeholder Groups	Stakeholder Groups named for Materiality Assessment	Methods for Stakeholder Identification (Yes=1, No=0)
PROXIMUS	Belgium	NFRD	Low Emissions	Information and communication	GRI and others	10,541,000 €	450,000 €	0.5	14		Investors, employees and senior management (Proximus Leadership Team), political and regulatory stakeholders, suppliers, partners, enterprise customers, journalists & opinion leaders, and a general public sample including residential customers as well as non-custom	0
PUBLICIS GROUPE	France	NFRD	Low Emissions	Professional, scientific and technical activities	GRI only	5,782,106 €	31,184 €	0	10		Clients, investors, and 3 employees	0
SAIPEM	Italy	NFRD	High Emissions	Electricity, gas, steam and air conditioning supply	GRI only	12,397,000 €	-209,000 €	0.5	16		Clients, business partners, trade associations, investors, insurance companies, NGOs, representatives of local communities, authority representatives, vendors, 10 employees	0
SERVICENOW	USA	Non-NFRD	Low Emissions	Information and communication	GRI and others	12,603,140 €	307,990 €	0.5	13			0
SII	France	NFRD	Low Emissions	Professional, scientific and technical activities	GRI and others	552,417 €	59,412 €	0	16			0
SODEXO	France	NFRD	Low Emissions	Accommodation and food service activities	GRI and others	20,920,000 €	704,000 €	0	5		Internal and external 2 stakeholders	0
SOPRA STERIA GROUP	France	NFRD	Low Emissions	Professional, scientific and technical activities	GRI and others	4,945,800 €	249,000 €	0	17		Customers, employees, job applicants, shareholders, investors, partners, suppliers and 8 civil society	0
STELLANTIS	Netherlands	NFRD	High Emissions	Manufacturing	GRI and others	186,156,000 €	16,779,000 €	0.5	22		Partners, clients, employees, civil society, financial community and 6 environment groups	0
TELEFONICA	Germany	NFRD	Low Emissions	Information and communication	GRI and others	109,642,000 €	2,319,000 €	0.5	13		Customers, employees, strategic partners and suppliers, shareholders and analysts, government bodies and regulators, opinion leaders, the media and communication services, 8 and society	0
VERBUND	Austria	NFRD	High Emissions	Electricity, gas, steam and air conditioning supply	GRI and others	19,156,600 €	1,948,767 €	0.5	20		internal (employees, Works Council, Supervisory Board) and external stakeholders (corporate customers, representatives of industry and professional associations, neighbouring communities, suppliers, science and research, politics and public authorities, capital market, media)	0

Table 2) Database Excerpt: MDTS and all scoring components

Company	Comments	Process to determine material topics	Specification on stakeholders and experts	Process to determine Material Topics	Comments	List of material topics	Changes in material topics	List of Material Topics	Comments & Material topic analysed	Description of impacts	Involvement through own activities or business relationships	Policies or commitment	Actions	Effectiveness	Stakeholder engagement in action and effectiveness	Management of Material Topics*	MDTS
		PMT1	PMT2	PMT		LMT1	LMT2	LMT		MMT1	MMT2	MMT3	MMT4	MMT5	MMT6	MMT	
ACCOR		0.5	0.5	0.5		1	0	0.5	Sustainable food	1	1	1	1	1	1	1.00	0.67
ADVANCED MICRO DEVICES		0.5	0	0.25		1	1		As the priority listed material topics and their management can not be clearly identified in the report this section is evaluated with 0.	0	0	0	0	0	0	0.00	0.42
AIRBUS		1	1	1		1	0	0.5	Cyber security	1	1	1	1	0.5	1	0.92	0.81
ALLEN		0.5	0	0.25		1	0	0.5	Business ethics and compliance	1	1	1	1	0.5	0.5	0.83	0.53
ARCADIS	The materiality assessment has not been disclosed in the 2022 report. The report including the disclosures on the process has not been referenced. Thus the elements under 3-1 will be evaluated with max 0.5.	0.5	0.5	0.5	Solely the topics for the next reporting period are listed.	0	0	0	As the priority listed material topics and their management can not be clearly identified in the report this section is evaluated with 0.	0	0	0	0	0	0	0.00	0.17
ATOS		0	0.5	0.25		1	0	0.5	Compliance with laws & regulations, including anti-bribery. As the priority listed material topics and their management can not be clearly identified in the report this section is evaluated with 0.	0	0	0	0	0	0	0.00	0.25
AUBAY		0.5	1	0.75		0	0	0	As the priority listed material topics and their management can not be clearly identified in the report this section is evaluated with 0.	0	0	0	0	0	0	0.00	0.25
AZELIS GROUP	The process is not disclosed in the 2022 report at all. The materiality assessment process was partially described in the 2019 sustainability report. As the 2022 report does solely mention that the last assessment took place in 2019 but does not refer to the document as a reference to obtain information on the materiality assessment process the disclosures under 3-1 will be max evaluated with 0.5.	0.5	0	0.25		1	1	1	As the priority listed material topics and their management can not be clearly identified in the report this section is evaluated with 0.	0	0	0	0	0	0	0.00	0.42
CATERPILLAR INC		0.5	0.5	0.5		1	0	0.5	Remanufacturing	1	1	0.5	1	0.5	0	0.67	0.56
COMPASS GROUP		0.5	0.5	0.5		0	0	0	As the (assumed) material topics and their management can not be clearly identified in the report this section is evaluated with 0.	0	0	0	0	0	0	0.00	0.17

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Table 2) Database Excerpt: MDTs and all scoring components (continued)

Company	Comments	Process to determine material topics PMT1	Specification on stakeholders and experts PMT2	Process to determine Material Topics PMT	Comments	List of material topics LMT1	Changes in material topics LMT2	List of Material Topics LMT	Comments & Material topic analysed	Description of impacts MMT1	Involvement through own activities or business relationships MMT2	Policies or commitment MMT3	Actions MMT4	Effectiveness MMT5	Stakeholder engagement in action and effectiveness MMT6	Management of Material Topics* MMT	MDTS
CTT CORREIOS PORT		1	1	1		1	0	0.5	Data security practices and confidentiality of personal information	1	1	1	1	0.5	0	0.75	0.75
D'AMICO	Materiality process not in 2022 report. Report refers to the 2021 Sustainability Report.	0.5	1	0.75		1	1	1	Ship Recycling	0	0	0	1	0.5	0.5	0.33	0.69
DELIVERY HERO		1	1	1		1	1	1	Employee Development	1	1	1	1	0.5	0.5	0.83	0.94
DEUTSCHE POST	The process is not disclosed in the 2022 report at all. The materiality assessment process was marginally described in the 2021 sustainability report. As the 2022 report does solely mention that the last assessment took place in 2019 but does not refer to the document as a reference to obtain information on the materiality assessment process the disclosures under 3-1 will be max evaluated with 0.5.	0.5	0	0.25		1	1	1	Occupational safety and health (Original: Arbeitssicherheit und Gesundheit)	0.5	1	1	1	1	0	0.75	0.67
ENAV		0.5	0	0.25		1	0	0.5	Adequacy, enhancement and development of human capital	1	1	1	1	0.5	1	0.92	0.56
ENEL		1	0.5	0.75		1	0	0.5	People Management, development and motivation	1	1	1	1	1	1	1.00	0.75
ENGIE		0.5	0	0.25	Instead of the terminology material topics, the terms "material challenges", "major issues", "decisive issues" were used. The terms were assessed in context to identify which topics are material topics. ("Non-Financial Statement 2022" 2023, 89)	0.5	0	0.25	Diversity & Inclusion in the workplace	0.5	0.5	1	1	0.5	0.5	0.67	0.39
FINE FOODS & PHARM		1	1	1		1	1	1	Cyber Security	1	1	1	1	0.5	1	0.92	0.97
FLUXYS BELGIUM D		0.5	1	0.75		0.5	1	0.75	Diversity & Inclusion	1	0.5	1	1	0.5	0	0.67	0.72
FORTUM		0.5	0	0.25		1	1	1	Customer rights and satisfaction. As the priority listed material topic and its management can not be fully identified in the report this section is evaluated with 0.	0	0	0	0	0	0	0.00	0.42
GETLINK SE		1	1	1		0.5	1	0.75	Quality of service and customer experiences	1	1	1	1	1	1	1.00	0.92
GPI	The 2022 report solely adds to the process which was conducted in 2021. The 2021 report was analysed but as it was not directly referenced to for the process to determine material topics, the comments are evaluated with a max of 0.5.	0.5	0.5	0.5		1	1	1	Finding qualified resources and enhancing professionalism. As the priority listed material topics and their management can not be clearly identified in the report this section is evaluated with 0.	0	0	0	0	0	0	0.00	0.50
HILTON WORLDWIDE H		1	1	1		1	1	1	Ethical business practices and regulatory compliance	0.5	1	1	1	0.5	1	0.83	0.94
IBERDROLA		1	0.5	0.75		1	1	1	Water availability and management	1	1	1	1	0.5	0	0.75	0.83

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Table 2) Database Excerpt: MDTs and all scoring components (continued)

Company	Comments	Process to determine material topics	Specification on stakeholders and experts	Process to determine Material Topics	Comments	List of material topics	Changes in material topics	List of Material Topics	Comments & Material topic analysed	Description of impacts	Involvement through own activities or business relationships	Policies or commitment	Actions	Effectiveness	Stakeholder engagement in action and effectiveness	Management of Material Topics*	MDTS		
		PMT1	PMT2	PMT		LMT1	LMT2	LMT		MMT1	MMT2	MMT3		MMT4	MMT6	MMT6		MMT	
IBERSOL, SGPS		0.5		1	0.75		1	0	0.5	Digital transformation of the business and the evolution of consumer habits. Management of the material topic could not have been identified and thus was evaluated with 0 overall.	0	0	0	0	0	0.00	0.42		
IBM	"However, we do not share our impact assessment publicly." (GRI Content Index, 5)	0		0	0		0	0	0	No material topics have been listed	0	0	0	0	0	0.00	0.00		
INTEL		0.5	1	0.75	Not clearly identified which topics are the material topics	0	0	0	0	Neither the material topics nor the disclosure of their management can be clearly identified.	0	0	0	0	0	0.00	0.25		
MARRIOTT INTERNATIONAL		0.5	1	0.75		1	0	0.5	0.5	0.5	Training and Education	0.5	0	0	0.5	0	0.17	0.47	
NETFLIX		0	0	0		0.5	0	0.25	0.25	0.25	Governance	1	1	1	1	0.5	0.83	0.36	
NOKIA CORPORATION		0.5	1	0.75	As the priority listed material topics and their management can not be clearly identified in the report this section is evaluated with 0.	1	1	1	1	0	0	0	0	0	0	0.00	0.58		
POSTE ITALIANE		0.5	0	0.25		1	0	0.5	0.5	0.5	Protection of human rights	1	1	1	1	1	1.00	0.58	
POSTNL		0.5	0	0.25		1	0	0.5	0.5	0.5	Digitalisation and data	1	1	0	0	0.5	0.58	0.44	
PROXIMUS		1	1	1		1	1	1	1	1	Workplace wellness	0.5	1	1	1	0.5	0.83	0.94	
PUBLICIS GROUPE		0.5	1	0.75		0.5	0	0.25	0.25	0.25	Sustainable services & consumption	1	1	0.5	0	0	0.42	0.47	
SAIPEM		1		1	1	1	1	1	1	Energy (Material topic: GHG emissions and energy: Climate change mitigation strategy: Climate change adaptation)	0.5	1		Generic policies have been identified. The GRI requests a description of policies for each material topic. Thus this 0 criteria is not met.	0.5	0.5	0	0.42	0.81
SERVICENOW	"While we disclose what we believe to be the material items in this report, certain information may not be disclosed within our Annex if it is not considered material, privileged, or confidential; could cause a competitive disadvantage to our business if publicly disseminated; or is not currently collected in a manner wholly correlated with the related ESG metric." ("Global Impact Report 2022" 2023, 50)	0.5	0	0.25		1	1	1	1	Climate and energy	1	1	1	1	0.5	1	0.92	0.72	
SII		0.5	0	0.25		1	0	0.5	0.5	Data Protection and Confidentiality	1	1	1	1	0.5	0.5	0.83	0.53	
SODEXO		0	0.5	0.25		1	0	0.5	0.5	Business Integrity	1	1	1	1	0.5	0	0.75	0.50	
SOPRA STERIA GROUP		0.5	1	0.75		1	0	0.5	0.5	Responsible purchasing	1	1	1	1	0.5	0	0.75	0.67	
STELLANTIS		0.5	1	0.75		1	0	0.5	0.5	Control of industrial discharges and nuisances	1	1	1	1	0.5	0	0.75	0.67	
TELEFONICA		1	1	1		1	0	0.5	0.5	Innovation	1	1	1	1	0.5	0	0.75	0.75	
VERBUND		0.5	1	0.75		1	1	1	1	Diversity and Inclusion	1	1	1	1	1	0.5	0.92	0.89	

Appendix 12 – Data Analysis

RQ1: Materiality Disclosure Transparency

Table 1) Descriptives MDTs and all scoring components

		Process to determine material topics	Specification on stakeholders and experts	Process to determine Material Topics	List of material topics	Changes in material topics	List of Material Topics	Description of impacts	Involvement through own activities or business relationships	Policies or commitment	Actions	Effectiveness	Stakeholder engagement in action and effectiveness	Management of Material Topics	MDTS
N	Valid	42	42	42	42	42	42	42	42	42	42	42	42	42	42
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		.583	.583	.5833	.821	.40	.6131	.619	.643	.595	.667	.405	.321	.5398	.5798
Median		.500	.500	.7500	1.000	.00	.5000	1.000	1.000	1.000	1.000	.500	.000	.7500	.5700
Mode		.5	1.0	.25 ^a	1.0	0	.50	1.0	1.0	1.0	1.0	.5	.0	.00	.42 ^a
Std. Deviation		.2904	.4406	.31558	.3461	.497	.34128	.4528	.4722	.4844	.4642	.3356	.4251	.38582	0
Variance		.084	.194	.100	.120	.247	.116	.205	.223	.235	.215	.113	.181	.149	.057
Skewness		-.015	-.341	-.139	-1.702	.403	-.288	-.503	-.618	-.402	-.733	.241	.778	-.484	-.276
Std. Error of Skewness		.365	.365	.365	.365	.365	.365	.365	.365	.365	.365	.365	.365	.365	.365
Kurtosis		-.074	-1.653	-1.315	1.417	-1.932	-.947	-1.624	-1.634	-1.872	-1.467	-.717	-1.163	-1.481	-.446
Std. Error of Kurtosis		.717	.717	.717	.717	.717	.717	.717	.717	.717	.717	.717	.717	.717	.717
Range		1.0	1.0	1.00	1.0	1	1.00	1.0	1.0	1.0	1.0	1.0	1.0	1.00	.97
Minimum		.0	.0	.00	.0	0	.00	.0	.0	.0	.0	.0	.0	.00	.00
Maximum		1.0	1.0	1.00	1.0	1	1.00	1.0	1.0	1.0	1.0	1.0	1.0	1.00	.97

a. Multiple modes exist. The smallest value is shown

Table 2) Descriptives QS and QMT

		Quantity of Stakeholder Groups	Quantity of Material Topics
N	Valid	29	42
	Missing	13	0
Mean		6.76	13.298
Median		7.00	13.000
Mode		8	13.0
Std. Deviation		3.158	5.7626
Variance		9.975	33.208
Skewness		.560	-.477
Std. Error of Skewness		.434	.365
Kurtosis		.142	-.246
Std. Error of Kurtosis		.845	.717
Range		12	22.0
Minimum		2	.0
Maximum		14	22.0

Frequencies

Table 3) Frequencies Threshold for Material Topics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	21	50.0	50.0	50.0
	Prioritization	20	47.6	47.6	97.6
	Threshold	1	2.4	2.4	100.0
	Total	42	100.0	100.0	

Table 4) Frequencies Methods for Stakeholder Identification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not disclosed	39	92.9	92.9	92.9
	Disclosed	3	7.1	7.1	100.0
	Total	42	100.0	100.0	

Table 5) Frequencies Process to determine material topics (PMT1)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	4	9.5	9.5	9.5
	.5	27	64.3	64.3	73.8
	1.0	11	26.2	26.2	100.0
	Total	42	100.0	100.0	

Table 6) Frequencies Specification on stakeholders and experts (PMT2)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	13	31.0	31.0	31.0
	.5	9	21.4	21.4	52.4
	1.0	20	47.6	47.6	100.0
	Total	42	100.0	100.0	

Table 7) Frequencies Process to determine Material Topics (PMT)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	4.8	4.8	4.8
	.25	13	31.0	31.0	35.7
	.50	5	11.9	11.9	47.6
	.75	13	31.0	31.0	78.6
	1.00	9	21.4	21.4	100.0
	Total	42	100.0	100.0	

Table 8) Frequencies List of material topics (LMT1)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	5	11.9	11.9	11.9
	.5	5	11.9	11.9	23.8
	1.0	32	76.2	76.2	100.0
	Total	42	100.0	100.0	

Table 9) Frequencies Changes in material topics (LMT2)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	25	59.5	59.5	59.5
	1	17	40.5	40.5	100.0
	Total	42	100.0	100.0	

Table 10) Frequencies List of Material Topics (LMT)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	5	11.9	11.9	11.9
	.25	3	7.1	7.1	19.0
	.50	17	40.5	40.5	59.5
	.75	2	4.8	4.8	64.3
	1.00	15	35.7	35.7	100.0
	Total	42	100.0	100.0	

Table 11) Frequencies Description of impacts (MMT1)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	13	31.0	31.0	31.0
	.5	6	14.3	14.3	45.2
	1.0	23	54.8	54.8	100.0
	Total	42	100.0	100.0	

Table 12) Frequencies Involvement through own activities or business relationships (MMT2)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	14	33.3	33.3	33.3
	.5	2	4.8	4.8	38.1
	1.0	26	61.9	61.9	100.0
	Total	42	100.0	100.0	

Table 13) Frequencies Policies or commitment (MMT3)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	16	38.1	38.1	38.1
	.5	2	4.8	4.8	42.9
	1.0	24	57.1	57.1	100.0
	Total	42	100.0	100.0	

Table 14) Frequencies Actions (MMT4)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	13	31.0	31.0	31.0
	.5	2	4.8	4.8	35.7
	1.0	27	64.3	64.3	100.0
	Total	42	100.0	100.0	

Table 15) Frequencies Effectiveness (MMT5)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	14	33.3	33.3	33.3
	.5	22	52.4	52.4	85.7
	1.0	6	14.3	14.3	100.0
	Total	42	100.0	100.0	

Table 16) Frequencies Stakeholder engagement in action and effectiveness (MMT6)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	25	59.5	59.5	59.5
	.5	7	16.7	16.7	76.2
	1.0	10	23.8	23.8	100.0
	Total	42	100.0	100.0	

Table 17) Frequencies Management of Material Topics (MMT)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	12	28.6	28.6	28.6
	.17	1	2.4	2.4	31.0
	.33	1	2.4	2.4	33.3
	.42	2	4.8	4.8	38.1
	.58	1	2.4	2.4	40.5
	.67	3	7.1	7.1	47.6
	.75	8	19.0	19.0	66.7
	.83	5	11.9	11.9	78.6
	.92	4	9.5	9.5	88.1
	.92	1	2.4	2.4	90.5
	1.00	4	9.5	9.5	100.0
	Total	42	100.0	100.0	

Table 18) Frequencies MDTs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	2.4	2.4	2.4
	.17	2	4.8	4.8	7.1
	.25	3	7.1	7.1	14.3
	.36	1	2.4	2.4	16.7
	.39	1	2.4	2.4	19.0
	.42	4	9.5	9.5	28.6
	.44	1	2.4	2.4	31.0
	.47	2	4.8	4.8	35.7
	.50	2	4.8	4.8	40.5
	.53	2	4.8	4.8	45.2
	.56	2	4.8	4.8	50.0
	.58	2	4.8	4.8	54.8
	.67	4	9.5	9.5	64.3
	.69	1	2.4	2.4	66.7
	.72	2	4.8	4.8	71.4
	.75	3	7.1	7.1	78.6
	.81	2	4.8	4.8	83.3
	.83	1	2.4	2.4	85.7
	.89	1	2.4	2.4	88.1
	.92	1	2.4	2.4	90.5
	.94	3	7.1	7.1	97.6
	.97	1	2.4	2.4	100.0
	Total	42	100.0	100.0	

Table 19) Frequencies Quantity of Stakeholder Groups

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	4.8	6.9	6.9
	3	3	7.1	10.3	17.2
	4	3	7.1	10.3	27.6
	5	3	7.1	10.3	37.9
	6	3	7.1	10.3	48.3
	7	2	4.8	6.9	55.2
	8	6	14.3	20.7	75.9
	9	3	7.1	10.3	86.2
	10	1	2.4	3.4	89.7
	11	1	2.4	3.4	93.1
	14	2	4.8	6.9	100.0
	Total	29	69.0	100.0	
Missing	System	13	31.0		
Total		42	100.0		

Table 20) Frequencies Quantity of Material Topics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.0	2	4.8	4.8	4.8
	3.0	1	2.4	2.4	7.1
	5.0	1	2.4	2.4	9.5
	6.0	1	2.4	2.4	11.9
	7.0	2	4.8	4.8	16.7
	8.0	1	2.4	2.4	19.0
	9.0	2	4.8	4.8	23.8
	10.0	2	4.8	4.8	28.6
	11.0	3	7.1	7.1	35.7
	12.0	1	2.4	2.4	38.1
	12.5	1	2.4	2.4	40.5
	13.0	6	14.3	14.3	54.8
	14.0	1	2.4	2.4	57.1
	15.0	1	2.4	2.4	59.5
	16.0	3	7.1	7.1	66.7
	17.0	2	4.8	4.8	71.4
	18.0	4	9.5	9.5	81.0
	19.0	1	2.4	2.4	83.3
	20.0	3	7.1	7.1	90.5
	21.0	1	2.4	2.4	92.9
	22.0	3	7.1	7.1	100.0
	Total	42	100.0	100.0	

RQ2: Materiality Disclosure Transparency & Industries

A) Descriptives

Table 1) Descriptives MDTs and all scoring components across Industries (pages 73-108)

	Industry		Statistic	Std. Error
Process to determine material topics	Information and communication	Mean	.500	.1543
		95% Confidence Interval for Mean		
		Lower Bound	.122	
		Upper Bound	.878	
		5% Trimmed Mean	.500	
		Median	.500	
		Variance	.167	
		Std. Deviation	.4082	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	.000	.794
		Kurtosis	-1.200	1.587
	Transportation and storage	Mean	.643	.0922
		95% Confidence Interval for Mean		
		Lower Bound	.417	
		Upper Bound	.868	
		5% Trimmed Mean	.631	
		Median	.500	
		Variance	.060	
		Std. Deviation	.2440	
		Minimum	.5	
		Maximum	1.0	
		Range	.5	
		Interquartile Range	.5	
		Skewness	1.230	.794

Electricity, gas, steam and air conditioning supply	Kurtosis		-.840	1.587
	Mean		.714	.1010
	95% Confidence Interval for Mean	Lower Bound	.467	
		Upper Bound	.961	
	5% Trimmed Mean		.710	
	Median		.500	
	Variance		.071	
	Std. Deviation		.2673	
	Minimum		.5	
	Maximum		1.0	
	Range		.5	
	Interquartile Range		.5	
	Skewness		.374	.794
	Kurtosis		-2.800	1.587
Manufacturing	Mean		.643	.0922
	95% Confidence Interval for Mean	Lower Bound	.417	
		Upper Bound	.868	
	5% Trimmed Mean		.631	
	Median		.500	
	Variance		.060	
	Std. Deviation		.2440	
	Minimum		.5	
	Maximum		1.0	
	Range		.5	
	Interquartile Range		.5	
	Skewness		1.230	.794
	Kurtosis		-.840	1.587
Acommodation and food service activities	Mean		.571	.1304
	95% Confidence Interval for Mean	Lower Bound	.252	
		Upper Bound	.891	
	5% Trimmed Mean		.579	

		Median	.500	
		Variance	.119	
		Std. Deviation	.3450	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	.5	
		Skewness	-.174	.794
		Kurtosis	.336	1.587
	Professional, scientific and technical activities	Mean	.429	.0714
		95% Confidence Interval for Mean	Lower Bound	.254
			Upper Bound	.603
		5% Trimmed Mean	.448	
		Median	.500	
		Variance	.036	
		Std. Deviation	.1890	
		Minimum	.0	
		Maximum	.5	
		Range	.5	
		Interquartile Range	.0	
		Skewness	-2.646	.794
		Kurtosis	7.000	1.587
Specification on stakeholders and experts	Information and communication	Mean	.500	.1890
		95% Confidence Interval for Mean	Lower Bound	.038
			Upper Bound	.962
		5% Trimmed Mean	.500	
		Median	.500	
		Variance	.250	
		Std. Deviation	.5000	
		Minimum	.0	
		Maximum	1.0	

Transportation and storage	Range		1.0	
	Interquartile Range		1.0	
	Skewness		.000	.794
	Kurtosis		-2.600	1.587
	Mean		.429	.2020
	95% Confidence Interval for Mean	Lower Bound	-.066	
		Upper Bound	.923	
	5% Trimmed Mean		.421	
	Median		.000	
	Variance		.286	
	Std. Deviation		.5345	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		1.0	
	Skewness		.374	.794
	Kurtosis		-2.800	1.587
Electricity, gas, steam and air conditioning supply	Mean		.571	.1700
	95% Confidence Interval for Mean	Lower Bound	.155	
		Upper Bound	.987	
	5% Trimmed Mean		.579	
	Median		.500	
	Variance		.202	
	Std. Deviation		.4499	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		1.0	
	Skewness		-.353	.794
	Kurtosis		-1.817	1.587
Manufacturing	Mean		.643	.1798

	95% Confidence Interval for Mean	Lower Bound	.203	
		Upper Bound	1.083	
	5% Trimmed Mean		.659	
	Median		1.000	
	Variance		.226	
	Std. Deviation		.4756	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		1.0	
	Skewness		-.764	.794
	Kurtosis		-1.687	1.587
Acommodation and food service activities	Mean		.786	.1010
	95% Confidence Interval for Mean	Lower Bound	.539	
		Upper Bound	1.033	
	5% Trimmed Mean		.790	
	Median		1.000	
	Variance		.071	
	Std. Deviation		.2673	
	Minimum		.5	
	Maximum		1.0	
	Range		.5	
	Interquartile Range		.5	
	Skewness		-.374	.794
	Kurtosis		-2.800	1.587
Professional, scientific and technical activities	Mean		.571	.1700
	95% Confidence Interval for Mean	Lower Bound	.155	
		Upper Bound	.987	
	5% Trimmed Mean		.579	
	Median		.500	
	Variance		.202	

Process to determine Material Topics	Information and communication	Std. Deviation	.4499	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.353	.794
		Kurtosis	-1.817	1.587
	Transportation and storage	Mean	.5000	.16366
		95% Confidence Interval for Mean	Lower Bound	.0995
			Upper Bound	.9005
		5% Trimmed Mean	.5000	
		Median	.5000	
		Variance	.188	
		Std. Deviation	.43301	
		Minimum	.00	
		Maximum	1.00	
		Range	1.00	
		Interquartile Range	1.00	
		Skewness	.000	.794
		Kurtosis	-1.978	1.587
		Mean	.5357	.13832
		95% Confidence Interval for Mean	Lower Bound	.1973
			Upper Bound	.8742
		5% Trimmed Mean	.5258	
		Median	.2500	
		Variance	.134	
		Std. Deviation	.36596	
		Minimum	.25	
		Maximum	1.00	
		Range	.75	
		Interquartile Range	.75	

Electricity, gas, steam and air conditioning supply	Skewness		.556	.794
	Kurtosis		-2.234	1.587
	Mean		.6429	.10714
	95% Confidence Interval for Mean	Lower Bound	.3807	
		Upper Bound	.9050	
	5% Trimmed Mean		.6448	
	Median		.7500	
	Variance		.080	
	Std. Deviation		.28347	
	Minimum		.25	
	Maximum		1.00	
	Range		.75	
	Interquartile Range		.50	
	Skewness		-.725	.794
	Kurtosis		-.743	1.587
Manufacturing	Mean		.6429	.12023
	95% Confidence Interval for Mean	Lower Bound	.3487	
		Upper Bound	.9371	
	5% Trimmed Mean		.6448	
	Median		.7500	
	Variance		.101	
	Std. Deviation		.31810	
	Minimum		.25	
	Maximum		1.00	
	Range		.75	
	Interquartile Range		.75	
	Skewness		-.222	.794
	Kurtosis		-1.715	1.587
Acommodation and food service activities	Mean		.6786	.10514
	95% Confidence Interval for Mean	Lower Bound	.4213	
		Upper Bound	.9358	

		5% Trimmed Mean		.6845	
		Median		.7500	
		Variance		.077	
		Std. Deviation		.27817	
		Minimum		.25	
		Maximum		1.00	
		Range		.75	
		Interquartile Range		.50	
		Skewness		-.249	.794
		Kurtosis		-.944	1.587
	Professional, scientific and technical activities	Mean		.5000	.09449
		95% Confidence Interval for Mean	Lower Bound	.2688	
			Upper Bound	.7312	
		5% Trimmed Mean		.5000	
		Median		.5000	
		Variance		.063	
		Std. Deviation		.25000	
		Minimum		.25	
		Maximum		.75	
		Range		.50	
		Interquartile Range		.50	
		Skewness		.000	.794
		Kurtosis		-2.600	1.587
	List of material topics	Mean		.786	.1487
		95% Confidence Interval for Mean	Lower Bound	.422	
			Upper Bound	1.150	
		5% Trimmed Mean		.817	
		Median		1.000	
		Variance		.155	
		Std. Deviation		.3934	
	Information and communication	Minimum		.0	

	Transportation and storage	Maximum		1.0	
		Range		1.0	
		Interquartile Range		.5	
		Skewness		-1.760	.794
		Kurtosis		2.361	1.587
		Mean		.929	.0714
		95% Confidence Interval for Mean	Lower Bound	.754	
			Upper Bound	1.103	
		5% Trimmed Mean		.948	
		Median		1.000	
		Variance		.036	
		Std. Deviation		.1890	
		Minimum		.5	
		Maximum		1.0	
		Range		.5	
		Interquartile Range		.0	
		Skewness		-2.646	.794
		Kurtosis		7.000	1.587
	Electricity, gas, steam and air conditioning supply	Mean		.857	.0922
		95% Confidence Interval for Mean	Lower Bound	.632	
			Upper Bound	1.083	
		5% Trimmed Mean		.869	
		Median		1.000	
		Variance		.060	
		Std. Deviation		.2440	
		Minimum		.5	
		Maximum		1.0	
		Range		.5	
		Interquartile Range		.5	
		Skewness		-1.230	.794
		Kurtosis		-.840	1.587

Manufacturing	Mean		.857	.1429
	95% Confidence Interval for	Lower Bound	.508	
	Mean	Upper Bound	1.207	
	5% Trimmed Mean		.897	
	Median		1.000	
	Variance		.143	
	Std. Deviation		.3780	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		.0	
	Skewness		-2.646	.794
	Kurtosis		7.000	1.587
Acommodation and food service activities	Mean		.857	.1429
	95% Confidence Interval for	Lower Bound	.508	
	Mean	Upper Bound	1.207	
	5% Trimmed Mean		.897	
	Median		1.000	
	Variance		.143	
	Std. Deviation		.3780	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		.0	
	Skewness		-2.646	.794
	Kurtosis		7.000	1.587
Professional, scientific and technical activities	Mean		.643	.1798
	95% Confidence Interval for	Lower Bound	.203	
	Mean	Upper Bound	1.083	
	5% Trimmed Mean		.659	
	Median		1.000	

Changes in material topics	Information and communication	Variance		.226	
		Std. Deviation		.4756	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.764	.794
		Kurtosis		-1.687	1.587
	Transportation and storage	Mean		.57	.202
		95% Confidence Interval for Mean	Lower Bound	.08	
			Upper Bound	1.07	
		5% Trimmed Mean		.58	
		Median		1.00	
		Variance		.286	
		Std. Deviation		.535	
		Minimum		0	
		Maximum		1	
		Range		1	
		Interquartile Range		1	
		Skewness		-.374	.794
		Kurtosis		-2.800	1.587
		Mean		.43	.202
		95% Confidence Interval for Mean	Lower Bound	-.07	
			Upper Bound	.92	
		5% Trimmed Mean		.42	
		Median		.00	
		Variance		.286	
		Std. Deviation		.535	
		Minimum		0	
		Maximum		1	
		Range		1	

Electricity, gas, steam and air conditioning supply	Interquartile Range		1	
	Skewness		.374	.794
	Kurtosis		-2.800	1.587
	Mean		.71	.184
	95% Confidence Interval for Mean	Lower Bound	.26	
		Upper Bound	1.17	
	5% Trimmed Mean		.74	
	Median		1.00	
	Variance		.238	
	Std. Deviation		.488	
	Minimum		0	
	Maximum		1	
	Range		1	
	Interquartile Range		1	
	Skewness		-1.230	.794
	Kurtosis		-.840	1.587
Manufacturing	Mean		.43	.202
	95% Confidence Interval for Mean	Lower Bound	-.07	
		Upper Bound	.92	
	5% Trimmed Mean		.42	
	Median		.00	
	Variance		.286	
	Std. Deviation		.535	
	Minimum		0	
	Maximum		1	
	Range		1	
	Interquartile Range		1	
	Skewness		.374	.794
	Kurtosis		-2.800	1.587
Acommodation and food service activities	Mean		.29	.184
	Lower Bound		-.17	

		95% Confidence Interval for Mean	Upper Bound	.74	
		5% Trimmed Mean		.26	
		Median		.00	
		Variance		.238	
		Std. Deviation		.488	
		Minimum		0	
		Maximum		1	
		Range		1	
		Interquartile Range		1	
		Skewness		1.230	.794
		Kurtosis		-.840	1.587
	Professional, scientific and technical activities	Mean		.00	.000
		95% Confidence Interval for Mean	Lower Bound	.00	
			Upper Bound	.00	
		5% Trimmed Mean		.00	
		Median		.00	
		Variance		.000	
		Std. Deviation		.000	
		Minimum		0	
		Maximum		0	
		Range		0	
		Interquartile Range		0	
		Skewness		.	.
		Kurtosis		.	.
	List of Material Topics	Mean		.6786	.16104
		95% Confidence Interval for Mean	Lower Bound	.2845	
			Upper Bound	1.0726	
		5% Trimmed Mean		.6984	
		Median		1.0000	
		Variance		.182	

		Std. Deviation	.42608	
		Minimum	.00	
		Maximum	1.00	
		Range	1.00	
		Interquartile Range	.75	
		Skewness	-.796	.794
		Kurtosis	-1.301	1.587
	Transportation and storage	Mean	.6786	.08988
		95% Confidence Interval for Mean	Lower Bound	.4586
			Upper Bound	.8985
		5% Trimmed Mean	.6706	
		Median	.5000	
		Variance	.057	
		Std. Deviation	.23780	
		Minimum	.50	
		Maximum	1.00	
		Range	.50	
		Interquartile Range	.50	
	Electricity, gas, steam and air conditioning supply	Skewness	.764	.794
		Kurtosis	-1.687	1.587
		Mean	.7857	.11481
		95% Confidence Interval for Mean	Lower Bound	.5048
			Upper Bound	1.0666
		5% Trimmed Mean	.8036	
		Median	1.0000	
		Variance	.092	
		Std. Deviation	.30375	
		Minimum	.25	
		Maximum	1.00	
		Range	.75	
		Interquartile Range	.50	

Manufacturing	Skewness		-1.147	.794
	Kurtosis		-.057	1.587
	Mean		.6429	.14286
	95% Confidence Interval for Mean	Lower Bound	.2933	
		Upper Bound	.9924	
	5% Trimmed Mean		.6587	
	Median		.5000	
	Variance		.143	
	Std. Deviation		.37796	
	Minimum		.00	
	Maximum		1.00	
	Range		1.00	
	Interquartile Range		.50	
	Skewness		-.595	.794
	Kurtosis		-.350	1.587
Acommodation and food service activities	Mean		.5714	.13041
	95% Confidence Interval for Mean	Lower Bound	.2523	
		Upper Bound	.8905	
	5% Trimmed Mean		.5794	
	Median		.5000	
	Variance		.119	
	Std. Deviation		.34503	
	Minimum		.00	
	Maximum		1.00	
	Range		1.00	
	Interquartile Range		.50	
	Skewness		-.174	.794
	Kurtosis		.336	1.587
Professional, scientific and technical activities	Mean		.3214	.08988
	95% Confidence Interval for Mean	Lower Bound	.1015	
		Upper Bound	.5414	

Description of impacts	Information and communication	5% Trimmed Mean		.3294	
		Median		.5000	
		Variance		.057	
		Std. Deviation		.23780	
		Minimum		.00	
		Maximum		.50	
		Range		.50	
		Interquartile Range		.50	
		Skewness		-.764	.794
		Kurtosis		-1.687	1.587
		Mean		.500	.1890
		95% Confidence Interval for Mean	Lower Bound	.038	
			Upper Bound	.962	
	Transportation and storage	5% Trimmed Mean		.500	
		Median		.500	
		Variance		.250	
		Std. Deviation		.5000	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		.000	.794
		Kurtosis		-2.600	1.587
		Mean		.786	.1487
		95% Confidence Interval for Mean	Lower Bound	.422	
			Upper Bound	1.150	
		5% Trimmed Mean		.817	
		Median		1.000	
		Variance		.155	
		Std. Deviation		.3934	
		Minimum		.0	

Electricity, gas, steam and air conditioning supply	Maximum		1.0	
	Range		1.0	
	Interquartile Range		.5	
	Skewness		-1.760	.794
	Kurtosis		2.361	1.587
	Mean		.714	.1487
	95% Confidence Interval for Mean	Lower Bound	.350	
		Upper Bound	1.078	
	5% Trimmed Mean		.738	
	Median		1.000	
	Variance		.155	
	Std. Deviation		.3934	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		.5	
	Skewness		-1.115	.794
	Kurtosis		.273	1.587
Manufacturing	Mean		.571	.2020
	95% Confidence Interval for Mean	Lower Bound	.077	
		Upper Bound	1.066	
	5% Trimmed Mean		.579	
	Median		1.000	
	Variance		.286	
	Std. Deviation		.5345	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		1.0	
	Skewness		-.374	.794
	Kurtosis		-2.800	1.587

	Acommodation and food service activities	Mean		.571	.1700
		95% Confidence Interval for Mean	Lower Bound	.155	
			Upper Bound	.987	
		5% Trimmed Mean		.579	
		Median		.500	
		Variance		.202	
		Std. Deviation		.4499	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.353	.794
		Kurtosis		-1.817	1.587
	Professional, scientific and technical activities	Mean		.571	.2020
		95% Confidence Interval for Mean	Lower Bound	.077	
			Upper Bound	1.066	
		5% Trimmed Mean		.579	
		Median		1.000	
		Variance		.286	
		Std. Deviation		.5345	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.374	.794
		Kurtosis		-2.800	1.587
	Involvement through own activities or business relationships	Information and communication	Mean	.571	.2020
			95% Confidence Interval for Mean	Lower Bound	.077
				Upper Bound	1.066
			5% Trimmed Mean	.579	
			Median	1.000	

		Variance	.286	
		Std. Deviation	.5345	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.374	.794
		Kurtosis	-2.800	1.587
	Transportation and storage	Mean	.857	.1429
		95% Confidence Interval for Mean	Lower Bound	.508
			Upper Bound	1.207
		5% Trimmed Mean	.897	
		Median	1.000	
		Variance	.143	
		Std. Deviation	.3780	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	.0	
		Skewness	-2.646	.794
		Kurtosis	7.000	1.587
	Electricity, gas, steam and air conditioning supply	Mean	.714	.1487
		95% Confidence Interval for Mean	Lower Bound	.350
			Upper Bound	1.078
		5% Trimmed Mean	.738	
		Median	1.000	
		Variance	.155	
		Std. Deviation	.3934	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	

	Manufacturing	Interquartile Range	.5	
		Skewness	-1.115	.794
		Kurtosis	.273	1.587
		Mean	.571	.2020
		95% Confidence Interval for Mean	Lower Bound	.077
			Upper Bound	1.066
		5% Trimmed Mean	.579	
		Median	1.000	
		Variance	.286	
		Std. Deviation	.5345	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.374	.794
		Kurtosis	-2.800	1.587
	Acommodation and food service activities	Mean	.571	.2020
		95% Confidence Interval for Mean	Lower Bound	.077
			Upper Bound	1.066
		5% Trimmed Mean	.579	
		Median	1.000	
		Variance	.286	
		Std. Deviation	.5345	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.374	.794
		Kurtosis	-2.800	1.587
	Professional, scientific and technical activities	Mean	.571	.2020
			Lower Bound	.077

		95% Confidence Interval for Mean	Upper Bound	1.066	
		5% Trimmed Mean		.579	
		Median		1.000	
		Variance		.286	
		Std. Deviation		.5345	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.374	.794
		Kurtosis		-2.800	1.587
Policies or commitment	Information and communication	Mean		.571	.2020
		95% Confidence Interval for Mean	Lower Bound	.077	
			Upper Bound	1.066	
		5% Trimmed Mean		.579	
		Median		1.000	
		Variance		.286	
		Std. Deviation		.5345	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.374	.794
		Kurtosis		-2.800	1.587
	Transportation and storage	Mean		.714	.1844
		95% Confidence Interval for Mean	Lower Bound	.263	
			Upper Bound	1.166	
		5% Trimmed Mean		.738	
		Median		1.000	
		Variance		.238	

Electricity, gas, steam and air conditioning supply	Std. Deviation		.4880	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		1.0	
	Skewness		-1.230	.794
	Kurtosis		-.840	1.587
	Mean		.714	.1844
	95% Confidence Interval for Mean	Lower Bound	.263	
		Upper Bound	1.166	
	5% Trimmed Mean		.738	
	Median		1.000	
	Variance		.238	
	Std. Deviation		.4880	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		1.0	
	Skewness		-1.230	.794
	Kurtosis		-.840	1.587
Manufacturing	Mean		.500	.1890
	95% Confidence Interval for Mean	Lower Bound	.038	
		Upper Bound	.962	
	5% Trimmed Mean		.500	
	Median		.500	
	Variance		.250	
	Std. Deviation		.5000	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		1.0	

Actions	Acommodation and food service activities	Skewness	.000	.794
		Kurtosis	-2.600	1.587
		Mean	.571	.2020
		95% Confidence Interval for Mean	Lower Bound	.077
			Upper Bound	1.066
		5% Trimmed Mean	.579	
		Median	1.000	
		Variance	.286	
		Std. Deviation	.5345	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.374	.794
		Kurtosis	-2.800	1.587
	Professional, scientific and technical activities	Mean	.500	.1890
		95% Confidence Interval for Mean	Lower Bound	.038
			Upper Bound	.962
		5% Trimmed Mean	.500	
		Median	.500	
		Variance	.250	
		Std. Deviation	.5000	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	.000	.794
		Kurtosis	-2.600	1.587
	Information and communication	Mean	.571	.2020
		95% Confidence Interval for Mean	Lower Bound	.077
			Upper Bound	1.066

		5% Trimmed Mean		.579	
		Median		1.000	
		Variance		.286	
		Std. Deviation		.5345	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.374	.794
		Kurtosis		-2.800	1.587
	Transportation and storage	Mean		1.000	.0000
		95% Confidence Interval for Mean	Lower Bound	1.000	
			Upper Bound	1.000	
		5% Trimmed Mean		1.000	
		Median		1.000	
		Variance		.000	
		Std. Deviation		.0000	
		Minimum		1.0	
		Maximum		1.0	
		Range		.0	
		Interquartile Range		.0	
		Skewness		.	.
		Kurtosis		.	.
	Electricity, gas, steam and air conditioning supply	Mean		.786	.1487
		95% Confidence Interval for Mean	Lower Bound	.422	
			Upper Bound	1.150	
		5% Trimmed Mean		.817	
		Median		1.000	
		Variance		.155	
		Std. Deviation		.3934	
		Minimum		.0	

Manufacturing	Maximum		1.0	
	Range		1.0	
	Interquartile Range		.5	
	Skewness		-1.760	.794
	Kurtosis		2.361	1.587
	Mean		.571	.2020
	95% Confidence Interval for Mean	Lower Bound	.077	
		Upper Bound	1.066	
	5% Trimmed Mean		.579	
	Median		1.000	
	Variance		.286	
	Std. Deviation		.5345	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		1.0	
	Skewness		-.374	.794
	Kurtosis		-2.800	1.587
Acommodation and food service activities	Mean		.643	.1798
	95% Confidence Interval for Mean	Lower Bound	.203	
		Upper Bound	1.083	
	5% Trimmed Mean		.659	
	Median		1.000	
	Variance		.226	
	Std. Deviation		.4756	
	Minimum		.0	
	Maximum		1.0	
	Range		1.0	
	Interquartile Range		1.0	
	Skewness		-.764	.794
	Kurtosis		-1.687	1.587

	Professional, scientific and technical activities	Mean		.429	.2020
		95% Confidence Interval for Mean	Lower Bound	-.066	
			Upper Bound	.923	
		5% Trimmed Mean		.421	
		Median		.000	
		Variance		.286	
		Std. Deviation		.5345	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		.374	.794
		Kurtosis		-2.800	1.587
Effectiveness	Information and communication	Mean		.286	.1010
		95% Confidence Interval for Mean	Lower Bound	.039	
			Upper Bound	.533	
		5% Trimmed Mean		.290	
		Median		.500	
		Variance		.071	
		Std. Deviation		.2673	
		Minimum		.0	
		Maximum		.5	
		Range		.5	
		Interquartile Range		.5	
		Skewness		-.374	.794
		Kurtosis		-2.800	1.587
	Transportation and storage	Mean		.714	.1010
		95% Confidence Interval for Mean	Lower Bound	.467	
			Upper Bound	.961	
		5% Trimmed Mean		.710	
		Median		.500	

		Variance		.071	
		Std. Deviation		.2673	
		Minimum		.5	
		Maximum		1.0	
		Range		.5	
		Interquartile Range		.5	
		Skewness		.374	.794
		Kurtosis		-2.800	1.587
	Electricity, gas, steam and air conditioning supply	Mean		.571	.1304
		95% Confidence Interval for Mean	Lower Bound	.252	
			Upper Bound	.891	
		5% Trimmed Mean		.579	
		Median		.500	
		Variance		.119	
		Std. Deviation		.3450	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.5	
		Skewness		-.174	.794
		Kurtosis		.336	1.587
	Manufacturing	Mean		.286	.1010
		95% Confidence Interval for Mean	Lower Bound	.039	
			Upper Bound	.533	
		5% Trimmed Mean		.290	
		Median		.500	
		Variance		.071	
		Std. Deviation		.2673	
		Minimum		.0	
		Maximum		.5	
		Range		.5	

		Interquartile Range	.5	
		Skewness	-.374	.794
		Kurtosis	-2.800	1.587
Acommodation and food service activities		Mean	.357	.1429
		95% Confidence Interval for Mean	Lower Bound	.008
			Upper Bound	.707
		5% Trimmed Mean	.341	
		Median	.500	
		Variance	.143	
		Std. Deviation	.3780	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	.5	
		Skewness	.595	.794
		Kurtosis	-.350	1.587
Professional, scientific and technical activities		Mean	.214	.1010
		95% Confidence Interval for Mean	Lower Bound	-.033
			Upper Bound	.461
		5% Trimmed Mean	.210	
		Median	.000	
		Variance	.071	
		Std. Deviation	.2673	
		Minimum	.0	
		Maximum	.5	
		Range	.5	
		Interquartile Range	.5	
		Skewness	.374	.794
		Kurtosis	-2.800	1.587
Stakeholder engagement in action and effectiveness	Information and communication	Mean	.357	.1798
			Lower Bound	-.083

		95% Confidence Interval for Mean	Upper Bound	.797	
		5% Trimmed Mean		.341	
		Median		.000	
		Variance		.226	
		Std. Deviation		.4756	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		.764	.794
		Kurtosis		-1.687	1.587
	Transportation and storage	Mean		.500	.1890
		95% Confidence Interval for Mean	Lower Bound	.038	
			Upper Bound	.962	
		5% Trimmed Mean		.500	
		Median		.500	
		Variance		.250	
		Std. Deviation		.5000	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		.000	.794
		Kurtosis		-2.600	1.587
Electricity, gas, steam and air conditioning supply		Mean		.286	.1487
		95% Confidence Interval for Mean	Lower Bound	-.078	
			Upper Bound	.650	
		5% Trimmed Mean		.262	
		Median		.000	
		Variance		.155	

		Std. Deviation	.3934	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	.5	
		Skewness	1.115	.794
		Kurtosis	.273	1.587
	Manufacturing	Mean	.286	.1844
		95% Confidence Interval for Mean	Lower Bound	-.166
			Upper Bound	.737
		5% Trimmed Mean	.262	
		Median	.000	
		Variance	.238	
		Std. Deviation	.4880	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	1.230	.794
		Kurtosis	-.840	1.587
	Acommodation and food service activities	Mean	.357	.1798
		95% Confidence Interval for Mean	Lower Bound	-.083
			Upper Bound	.797
		5% Trimmed Mean	.341	
		Median	.000	
		Variance	.226	
		Std. Deviation	.4756	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	

Management of Material Topics	Professional, scientific and technical activities	Skewness	.764	.794
		Kurtosis	-1.687	1.587
		Mean	.143	.0922
		95% Confidence Interval for Mean	Lower Bound	-.083
			Upper Bound	.368
		5% Trimmed Mean	.131	
		Median	.000	
		Variance	.060	
		Std. Deviation	.2440	
		Minimum	.0	
		Maximum	.5	
		Range	.5	
		Interquartile Range	.5	
		Skewness	1.230	.794
		Kurtosis	-.840	1.587
	Information and communication	Mean	.4762	.16934
		95% Confidence Interval for Mean	Lower Bound	.0618
			Upper Bound	.8905
		5% Trimmed Mean	.4782	
		Median	.7500	
		Variance	.201	
		Std. Deviation	.44803	
		Minimum	.00	
		Maximum	.92	
		Range	.92	
		Interquartile Range	.83	
		Skewness	-.329	.794
		Kurtosis	-2.735	1.587
	Transportation and storage	Mean	.7619	.09170
		95% Confidence Interval for Mean	Lower Bound	.5375
			Upper Bound	.9863

	5% Trimmed Mean		.7725	
	Median		.7500	
	Variance		.059	
	Std. Deviation		.24262	
	Minimum		.33	
	Maximum		1.00	
	Range		.67	
	Interquartile Range		.42	
	Skewness		-.878	.794
	Kurtosis		.224	1.587
Electricity, gas, steam and air conditioning supply	Mean		.6314	.12729
	95% Confidence Interval for Mean	Lower Bound	.3200	
		Upper Bound	.9429	
	5% Trimmed Mean		.6460	
	Median		.6667	
	Variance		.113	
	Std. Deviation		.33677	
	Minimum		.00	
	Maximum		1.00	
	Range		1.00	
	Interquartile Range		.50	
	Skewness		-1.135	.794
	Kurtosis		1.373	1.587
Manufacturing	Mean		.4643	.16751
	95% Confidence Interval for Mean	Lower Bound	.0544	
		Upper Bound	.8742	
	5% Trimmed Mean		.4649	
	Median		.6667	
	Variance		.196	
	Std. Deviation		.44320	
	Minimum		.00	

Acommodation and food service activities	Maximum		.92	
	Range		.92	
	Interquartile Range		.92	
	Skewness		-.224	.794
	Kurtosis		-2.600	1.587
	Mean		.5000	.16163
	95% Confidence Interval for Mean	Lower Bound	.1045	
		Upper Bound	.8955	
	5% Trimmed Mean		.5000	
	Median		.7500	
	Variance		.183	
	Std. Deviation		.42763	
	Minimum		.00	
	Maximum		1.00	
	Range		1.00	
	Interquartile Range		.83	
	Skewness		-.280	.794
	Kurtosis		-2.330	1.587
Professional, scientific and technical activities	Mean		.4048	.15261
	95% Confidence Interval for Mean	Lower Bound	.0313	
		Upper Bound	.7782	
	5% Trimmed Mean		.4034	
	Median		.4167	
	Variance		.163	
	Std. Deviation		.40377	
	Minimum		.00	
	Maximum		.83	
	Range		.83	
	Interquartile Range		.83	
	Skewness		-.001	.794
	Kurtosis		-2.552	1.587

MDTS	Information and communication	Mean		.5500	.11578
		95% Confidence Interval for Mean	Lower Bound	.2667	
			Upper Bound	.8333	
		5% Trimmed Mean		.5589	
		Median		.5800	
		Variance		.094	
		Std. Deviation		.30632	
		Minimum		.00	
		Maximum		.94	
		Range		.94	
		Interquartile Range		.39	
		Skewness		-.821	.794
		Kurtosis		.875	1.587
	Transportation and storage	Mean		.6586	.05804
		95% Confidence Interval for Mean	Lower Bound	.5166	
			Upper Bound	.8006	
		5% Trimmed Mean		.6562	
		Median		.6700	
		Variance		.024	
		Std. Deviation		.15356	
		Minimum		.44	
		Maximum		.92	
		Range		.48	
		Interquartile Range		.19	
		Skewness		.437	.794
		Kurtosis		.606	1.587
	Electricity, gas, steam and air conditioning supply	Mean		.6871	.07580
		95% Confidence Interval for Mean	Lower Bound	.5017	
			Upper Bound	.8726	
		5% Trimmed Mean		.6924	
		Median		.7500	

		Variance		.040	
		Std. Deviation		.20056	
		Minimum		.39	
		Maximum		.89	
		Range		.50	
		Interquartile Range		.41	
		Skewness		-.923	.794
		Kurtosis		-1.003	1.587
	Manufacturing	Mean		.5857	.09429
		95% Confidence Interval for	Lower Bound	.3550	
		Mean	Upper Bound	.8164	
		5% Trimmed Mean		.5830	
		Median		.5600	
		Variance		.062	
		Std. Deviation		.24946	
		Minimum		.25	
		Maximum		.97	
	Acommodation and food service activities	Range		.72	
		Interquartile Range		.39	
		Skewness		.326	.794
		Kurtosis		-.748	1.587
		Mean		.5871	.10681
		95% Confidence Interval for	Lower Bound	.3258	
		Mean	Upper Bound	.8485	
		5% Trimmed Mean		.5907	
		Median		.5000	
		Variance		.080	
		Std. Deviation		.28259	
		Minimum		.17	
		Maximum		.94	
		Range		.77	

Professional, scientific and technical activities	Interquartile Range		.52	
	Skewness		.092	.794
	Kurtosis		-.837	1.587
	Mean		.4100	.07051
	95% Confidence Interval for	Lower Bound	.2375	
	Mean	Upper Bound	.5825	
	5% Trimmed Mean		.4089	
	Median		.4700	
	Variance		.035	
	Std. Deviation		.18655	
	Minimum		.17	
	Maximum		.67	
	Range		.50	
	Interquartile Range		.28	
	Skewness		-.028	.794
	Kurtosis		-1.691	1.587

Table 2) Descriptives QMT across Industries (pages 109-111)

	Industry		Statistic	Std. Error
Quantity of Material Topics	Information and communication	Mean	9.714	2.1571
		95% Confidence Interval for Mean	Lower Bound	4.436
			Upper Bound	14.993
		5% Trimmed Mean	10.016	
		Median	13.000	
		Variance	32.571	
		Std. Deviation	5.7071	
		Minimum	.0	
		Maximum	14.0	
		Range	14.0	
		Interquartile Range	10.0	
		Skewness	-1.283	.794
		Kurtosis	-.275	1.587
	Transportation and storage	Mean	11.857	1.9448
		95% Confidence Interval for Mean	Lower Bound	7.098
			Upper Bound	16.616
		5% Trimmed Mean	11.841	
		Median	11.000	
		Variance	26.476	
		Std. Deviation	5.1455	
		Minimum	6.0	
		Maximum	18.0	
		Range	12.0	
		Interquartile Range	11.0	
		Skewness	.207	.794
		Kurtosis	-2.137	1.587
	Electricity, gas, steam and air conditioning supply	Mean	17.357	1.0277
			Lower Bound	14.843

		95% Confidence Interval for Mean	Upper Bound	19.872	
		5% Trimmed Mean		17.480	
		Median		18.000	
		Variance		7.393	
		Std. Deviation		2.7190	
		Minimum		12.5	
		Maximum		20.0	
		Range		7.5	
		Interquartile Range		4.0	
		Skewness		-.905	.794
		Kurtosis		.307	1.587
Manufacturing		Mean		14.286	3.0839
		95% Confidence Interval for Mean	Lower Bound	6.740	
			Upper Bound	21.832	
		5% Trimmed Mean		14.651	
		Median		13.000	
		Variance		66.571	
		Std. Deviation		8.1591	
		Minimum		.0	
		Maximum		22.0	
		Range		22.0	
		Interquartile Range		13.0	
		Skewness		-.793	.794
		Kurtosis		.028	1.587
Acommodation and food service activities		Mean		13.143	2.4826
		95% Confidence Interval for Mean	Lower Bound	7.068	
			Upper Bound	19.218	
		5% Trimmed Mean		13.103	
		Median		11.000	
		Variance		43.143	

Professional, scientific and technical activities	Std. Deviation		6.5683	
	Minimum		5.0	
	Maximum		22.0	
	Range		17.0	
	Interquartile Range		13.0	
	Skewness		.216	.794
	Kurtosis		-1.758	1.587
	Mean		13.429	1.3603
	95% Confidence Interval for Mean	Lower Bound	10.100	
		Upper Bound	16.757	
	5% Trimmed Mean		13.421	
	Median		13.000	
	Variance		12.952	
	Std. Deviation		3.5989	
	Minimum		9.0	
	Maximum		18.0	
	Range		9.0	
	Interquartile Range		7.0	
	Skewness		.083	.794
	Kurtosis		-2.060	1.587

Table 3) Case Processing Summary for Descriptives QS across Industries

	Industry	Cases Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Quantity of Stakeholder Groups	Information and communication	4	100.0%	0	0.0%	4	100.0%
	Transportation and storage	3	100.0%	0	0.0%	3	100.0%
	Electricity, gas, steam and air conditioning supply	5	100.0%	0	0.0%	5	100.0%
	Manufacturing	5	100.0%	0	0.0%	5	100.0%
	Acommodation and food service activities	7	100.0%	0	0.0%	7	100.0%
	Professional, scientific and technical activities	5	100.0%	0	0.0%	5	100.0%

Table 4) Descriptives QS across Industries (pages 112-115)

Industry		Statistic		Std. Error
Quantity of Stakeholder Groups	Information and communication	Mean	7.25	.750
	95% Confidence Interval for Mean	Lower Bound	4.86	
		Upper Bound	9.64	
	5% Trimmed Mean		7.33	
	Median		8.00	
	Variance		2.250	
	Std. Deviation		1.500	
	Minimum		5	
	Maximum		8	
	Range		3	

		Interquartile Range	2	
		Skewness	-2.000	1.014
		Kurtosis	4.000	2.619
	Transportation and storage	Mean	9.67	2.333
		95% Confidence Interval for Mean	Lower Bound	-.37
			Upper Bound	19.71
		5% Trimmed Mean	.	
		Median	9.00	
		Variance	16.333	
		Std. Deviation	4.041	
		Minimum	6	
		Maximum	14	
		Range	8	
		Interquartile Range	.	
		Skewness	.722	1.225
		Kurtosis	.	.
	Electricity, gas, steam and air conditioning supply	Mean	7.20	1.594
		95% Confidence Interval for Mean	Lower Bound	2.78
			Upper Bound	11.62
		5% Trimmed Mean	7.22	
		Median	8.00	
		Variance	12.700	
		Std. Deviation	3.564	
		Minimum	3	
		Maximum	11	
		Range	8	
		Interquartile Range	7	
		Skewness	-.272	.913
		Kurtosis	-2.680	2.000
	Manufacturing	Mean	6.80	.917
			Lower Bound	4.26

		95% Confidence Interval for Mean	Upper Bound	9.34	
		5% Trimmed Mean		6.78	
		Median		6.00	
		Variance		4.200	
		Std. Deviation		2.049	
		Minimum		5	
		Maximum		9	
		Range		4	
		Interquartile Range		4	
		Skewness		.441	.913
		Kurtosis		-3.163	2.000
	Acommodation and food service activities	Mean		6.29	1.523
		95% Confidence Interval for Mean	Lower Bound	2.56	
			Upper Bound	10.01	
		5% Trimmed Mean		6.10	
		Median		6.00	
		Variance		16.238	
		Std. Deviation		4.030	
		Minimum		2	
		Maximum		14	
		Range		12	
		Interquartile Range		5	
		Skewness		1.206	.794
		Kurtosis		1.735	1.587
	Professional, scientific and technical activities	Mean		4.80	1.158
		95% Confidence Interval for Mean	Lower Bound	1.59	
			Upper Bound	8.01	
		5% Trimmed Mean		4.78	
		Median		4.00	
		Variance		6.700	

	Std. Deviation	2.588	
	Minimum	2	
	Maximum	8	
	Range	6	
	Interquartile Range	5	
	Skewness	.363	.913
	Kurtosis	-2.413	2.000

Cross-tables

Table 5) Cross-table TMT & Industry

		Industry						Total
		Information and communication	Transportation and storage	Electricity, gas, steam and air conditioning supply	Manufacturing	Acommodation and food service activities	Professional, scientific and technical activities	
Threshold for Material Topics	None	4	3	2	2	3	7	21
	Prioritization	3	4	5	4	4	0	20
	Threshold	0	0	0	1	0	0	1
Total		7	7	7	7	7	7	42

Table 6) Cross-table MSI & Industry

		Industry						Total
		Information and communication	Transportation and storage	Electricity, gas, steam and air conditioning supply	Manufacturing	Acommodation and food service activities	Professional, scientific and technical activities	
Methods for Stakeholder Identification	Not disclosed	7	5	7	6	7	7	39
	Disclosed	0	2	0	1	0	0	3
Total		7	7	7	7	7	7	42

(Continues on the next page)

B) ANOVA Assumptions: MDTs across Industries

Due to the small quantity of data points per group a Shapiro-Wilk Test as well as visual inspection of histograms and Q-Q plots are considered for assessing normality. The histograms and Q-Q plots provided indicate that data is not normally distributed in all groups. Therefore, a Kruskal-Wallis-Test has been conducted.

Table 1) Tests of Normality for MDTs across Industries

	Industry	Shapiro-Wilk Statistic	df	Sig.
MDTS	Information and communication	.959	7	.814
	Transportation and storage	.979	7	.955
	Electricity, gas, steam and air conditioning supply	.833	7	.086
	Manufacturing	.971	7	.905
	Acommodation and food service activities	.925	7	.506
	Professional, scientific and technical activities	.910	7	.396

Histograms and Q-Q Plots

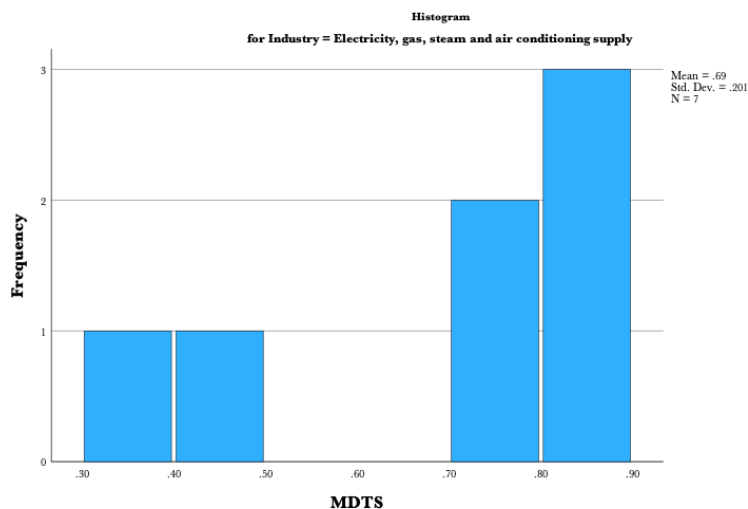


Figure 1: Histogram of MDTs for Electricity, gas, steam and air conditioning supply

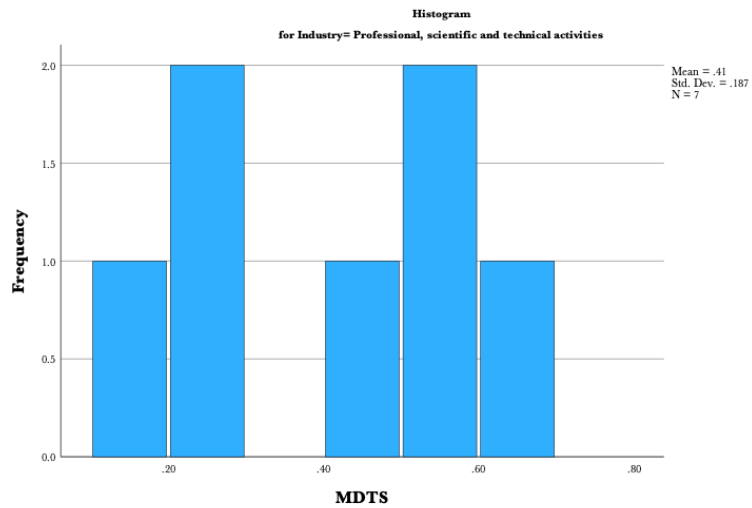


Figure 2: Histogram of MDTs for Professional, scientific and technical activities

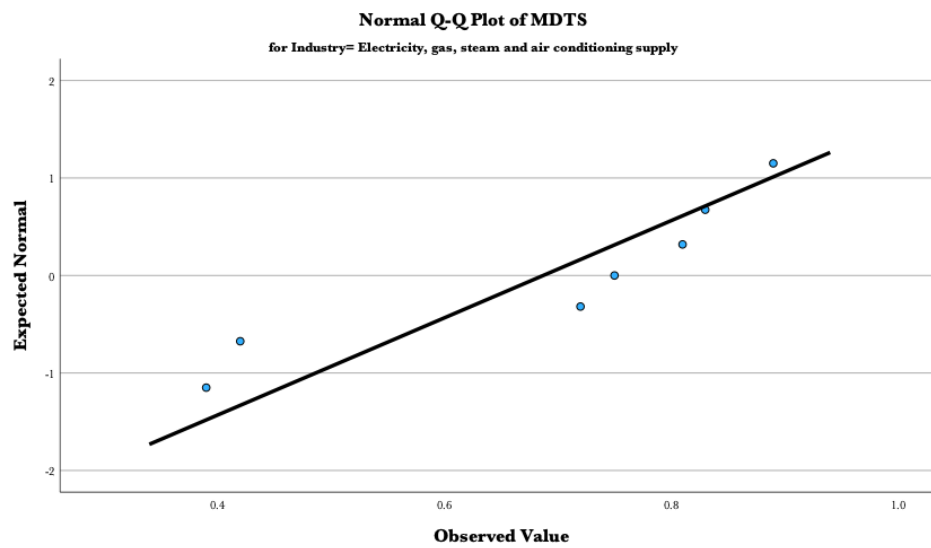


Figure 3: Normal Q-Q Plot of MDTs for Electricity, gas, steam and air conditioning supply

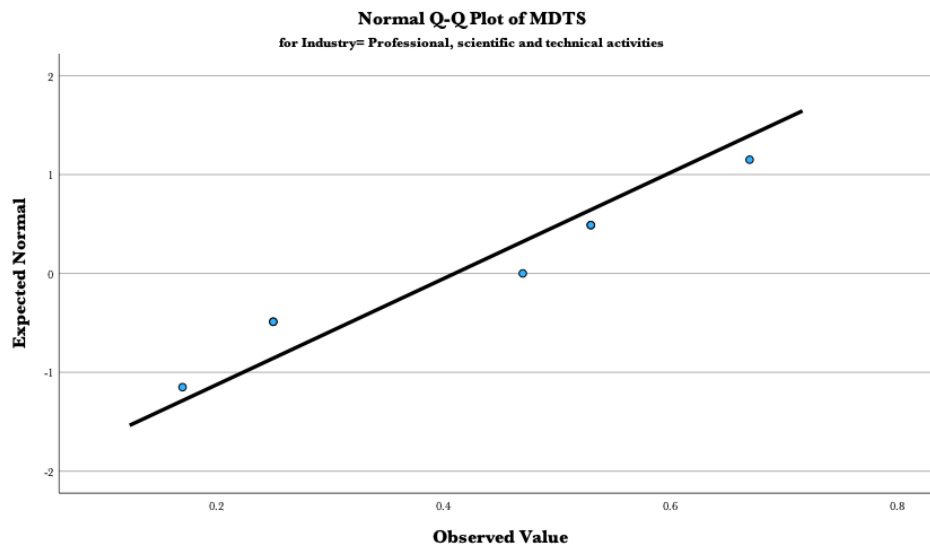


Figure 4: Normal Q-Q Plot of MDTs for Professional, scientific and technical activities

C) Kruskal-Wallis-Test: MDTs across Industries

A Kruskal-Wallis-Test was calculated to determine whether there are differences in MDTs between Industries. The distributions differed between groups which has been derived from visual analysis of box plot diagrams. There was no statistically significant difference in ranks of MDTs between Industries ($p=0.341$).

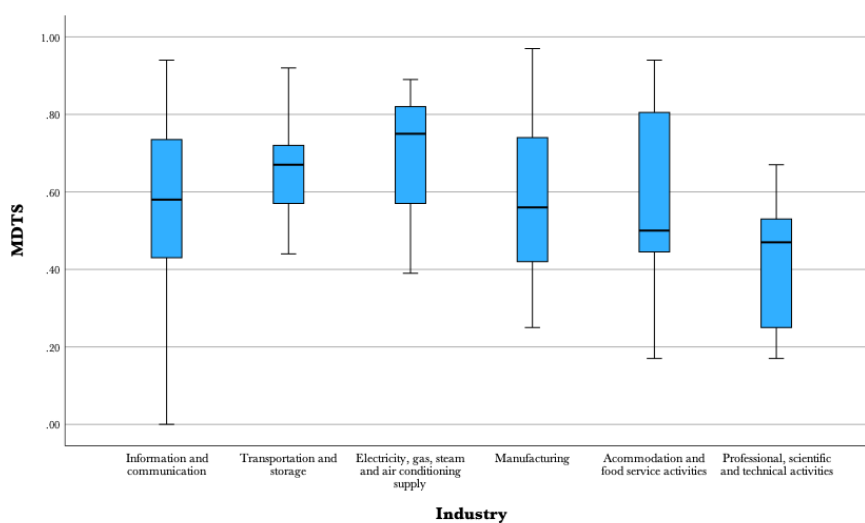


Figure 1: Box Plot of MDTs across Industries

Table 1) Independent-Samples Kruskal-Wallis-Test for MDTs across Industries

Total N	42
Test Statistic	5.657 ^a
Degree Of Freedom	5
Asymptotic Sig.(2-sided test)	.341

a. The test statistic is adjusted for ties.

D) ANOVA Assumptions: Process to determine Material Topics, List of Material Topics, Management of Material Topics, Quantity of Material Topics, Quantity of Stakeholder Groups.

A Shapiro-Wilk Test shows that for all variables the assumption of normality for each group is not met. Thus, non-parametric tests are conducted. Furthermore, are outliers visible in some box plots.

Tests of Normality

Table 1) Test of Normality: PMT, LMT, MMT and QMT across Industries

	Industry	Shapiro-Wilk Statistic	df	Sig.
Process to determine Material Topics	Accommod	.922	7	.482
	Electric	.794	7	.036
	Informat	.883	7	.240
	Manufact	.877	7	.215
	Professi	.759	7	.016
	Transpor	.729	7	.008
List of Material Topics	Accommod	.840	7	.099
	Electric	.773	7	.022
	Informat	.779	7	.025
	Manufact	.833	7	.086
	Professi	.732	7	.008
	Transpor	.732	7	.008
Management of Material Topics	Accommod	.836	7	.092
	Electric	.911	7	.403
	Informat	.736	7	.009
	Manufact	.774	7	.022
	Professi	.787	7	.031
	Transpor	.904	7	.359
Quantity of Material Topics	Accommod	.931	7	.555

	Electric	.897	7	.315
	Informat	.724	7	.007
	Manufact	.883	7	.239
	Professi	.915	7	.435
	Transpor	.876	7	.210

Table 2) Test of Normality: QS across Industries

	Industry	Shapiro-Wilk Statistic	df	Sig.
Quantity of Stakeholder Groups	Accommod	.910	7	.396
	Electric	.901	5	.415
	Informat	.630	4	.001
	Manufact	.782	5	.057
	Professi	.915	5	.501
	Transpor	.980	3	.726

Box Plots

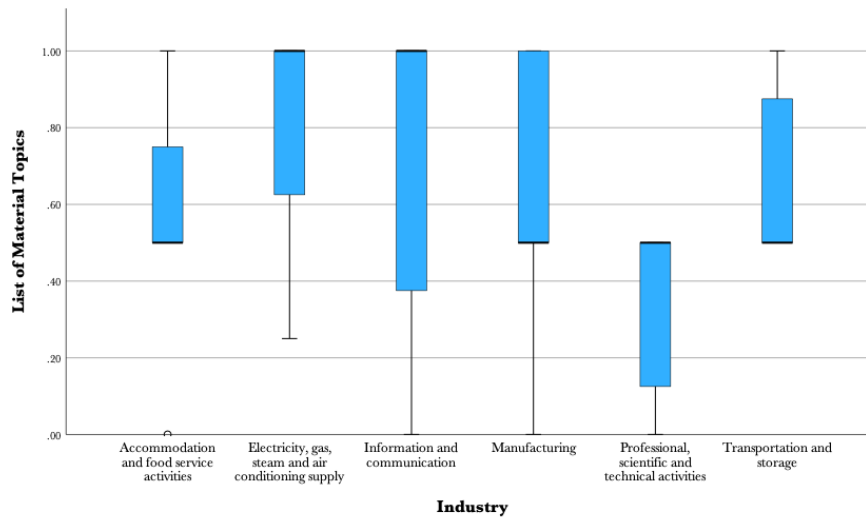


Figure 1: Box Plot of LMT across Industries

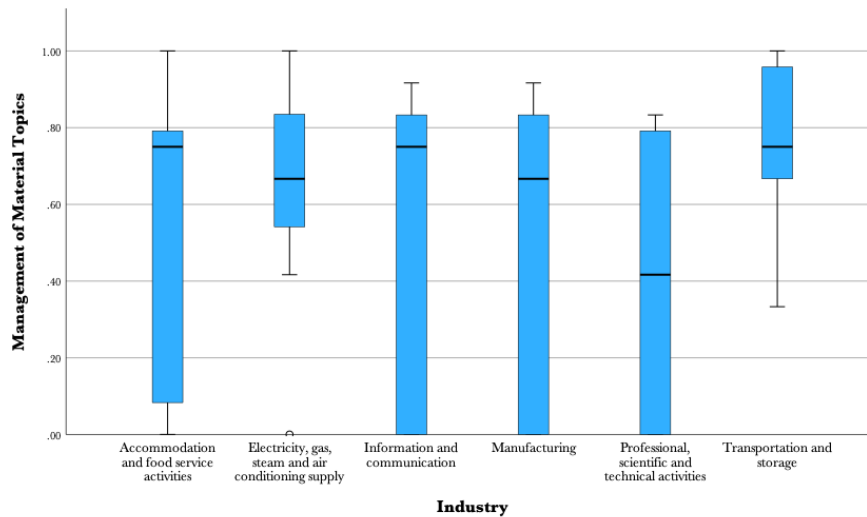


Figure 2: Box Plot of MMT across Industries

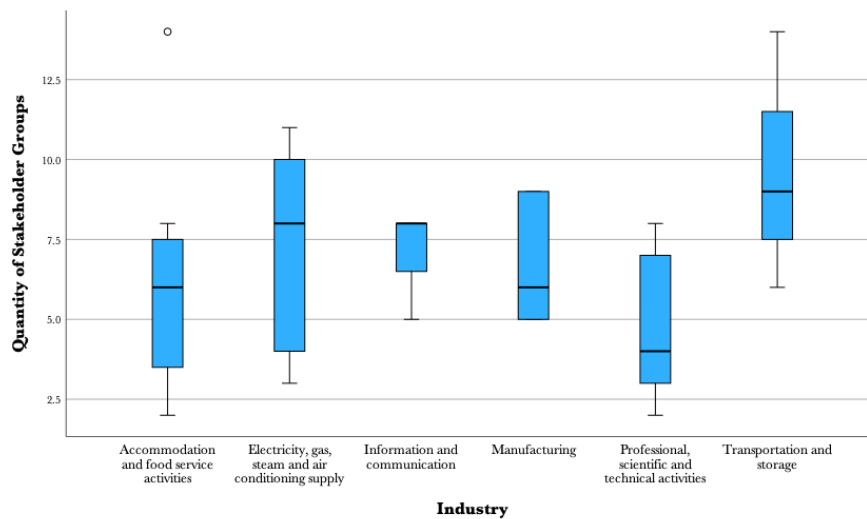


Figure 3: Box Plot of QS across Industries

E) Kruskal-Wallis-Test: Process to determine Material Topics, List of Material Topics, Management of Material Topics, Quantity of Material Topics, Quantity of Stakeholder Groups

A Kruskal-Wallis-Test was calculated to determine whether there are differences in PMT, LMT, MMT, QMT and QS across Industries. The distributions differed between groups which has been derived from visual analysis of box plot diagrams. There was no statistically significant difference in ranks of PMT, LMT, MMT, QMT and QS between Industries ($p > 0.05$).

Box Plots

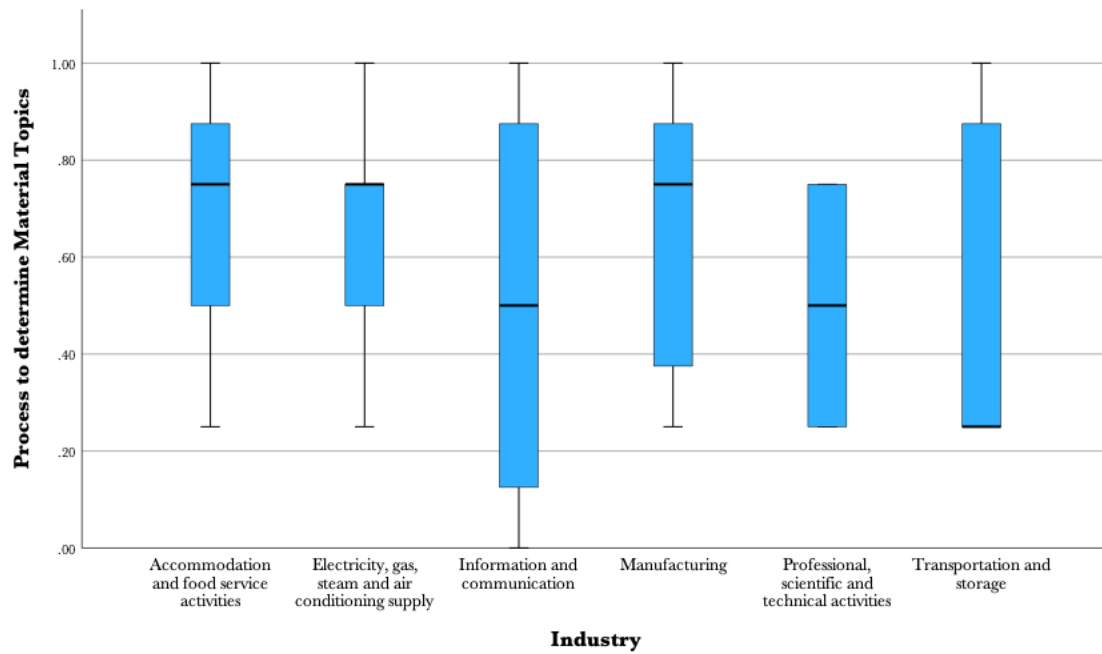


Figure 1: Box Plot of PMT across Industries

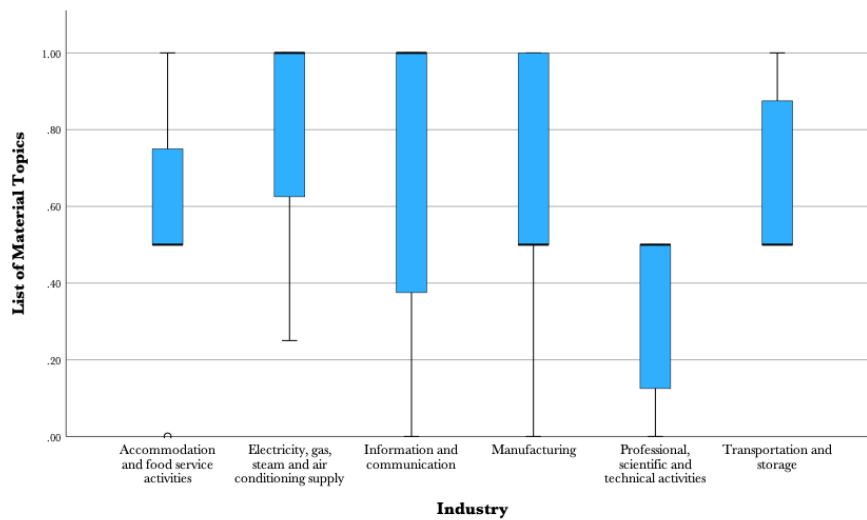


Figure 2: Box Plot of LMT across Industries

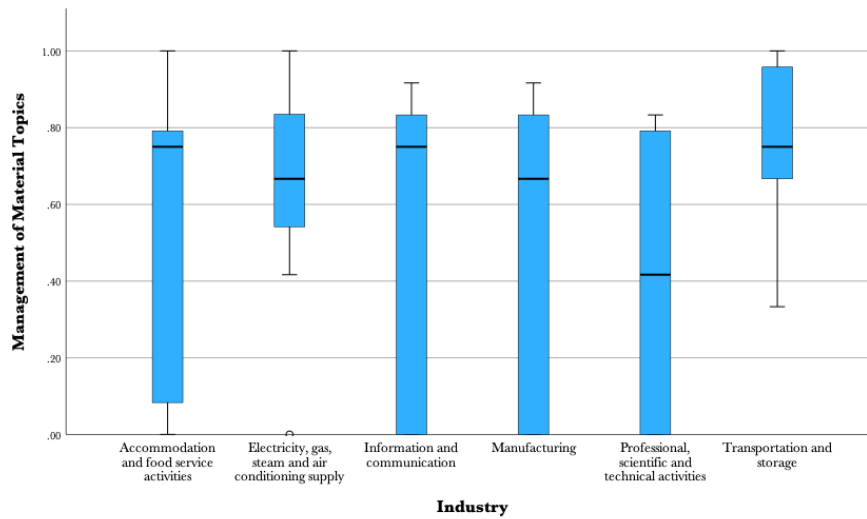


Figure 3: Box Plot of MMT across Industries

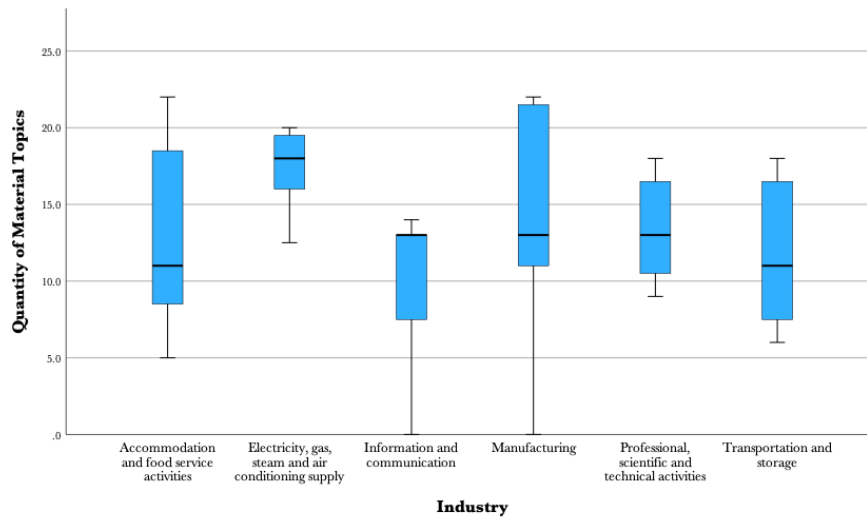


Figure 4: Box Plot of QMT across Industries

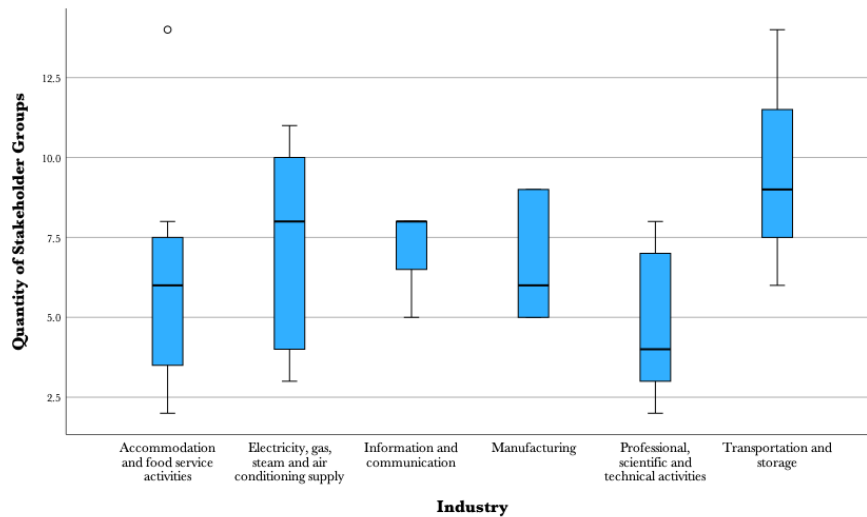


Figure 5: Box Plot of QS across Industries

Kruskal-Wallis-Test

Table 1) Kruskal-Wallis-Test for Process to determine Material Topics across Industries

Total N	42
Test Statistic	2.105 ^a
Degree Of Freedom	5
Asymptotic Sig.(2-sided test)	.834

a. The test statistic is adjusted for ties.

Table 2) Kruskal-Wallis-Test for List of Material Topics across Industries

Total N	42
Test Statistic	7.561 ^a
Degree Of Freedom	5
Asymptotic Sig.(2-sided test)	.182

a. The test statistic is adjusted for ties.

Table 3) Kruskal-Wallis-Test for Management of Material Topics across Industries

Total N	42
Test Statistic	3.421 ^a
Degree Of Freedom	5
Asymptotic Sig.(2-sided test)	.635

a. The test statistic is adjusted for ties.

Table 4) Kruskal-Wallis-Test for Quantity of Material Topics across Industries

Total N	42
Test Statistic	6.818 ^a
Degree Of Freedom	5
Asymptotic Sig.(2-sided test)	.235

a. The test statistic is adjusted for ties.

Table 5) Kruskal-Wallis-Test for Quantity of Stakeholder Groups across Industries

Total N	29
Test Statistic	5.144 ^a
Degree Of Freedom	5
Asymptotic Sig.(2-sided test)	.399

a. The test statistic is adjusted for ties.

RQ3: Materiality Disclosure Transparency & Sustainability Reporting Standards

A) Descriptives

Table 1) Descriptives of MDTs and all components across Sustainability Reporting Standards (pages 127-138)

Sustainability Reporting Standard			Statistic	Std. Error
Process to determine material topics	GRI only	Mean	.688	.0915
		95% Confidence Interval for Mean		
		Lower Bound	.471	
		Upper Bound	.904	
		5% Trimmed Mean	.681	
		Median	.500	
		Variance	.067	
		Std. Deviation	.2588	
		Minimum	.5	
		Maximum	1.0	
		Range	.5	
		Interquartile Range	.5	
		Skewness	.644	.752
		Kurtosis	-2.240	1.481
	GRI and others	Mean	.559	.0507
		95% Confidence Interval for Mean		
		Lower Bound	.456	
		Upper Bound	.662	
		5% Trimmed Mean	.565	
		Median	.500	
		Variance	.087	
		Std. Deviation	.2955	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	.1	
		Skewness	-.019	.403

Specification on stakeholders and experts	GRI only	Kurtosis		.011	.788
		Mean		.813	.1315
		95% Confidence Interval for Mean	Lower Bound	.501	
			Upper Bound	1.124	
		5% Trimmed Mean		.847	
		Median		1.000	
		Variance		.138	
		Std. Deviation		.3720	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.4	
		Skewness		-1.951	.752
		Kurtosis		3.205	1.481
	GRI and others	Mean		.529	.0759
		95% Confidence Interval for Mean	Lower Bound	.375	
			Upper Bound	.684	
		5% Trimmed Mean		.533	
		Median		.500	
		Variance		.196	
		Std. Deviation		.4428	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.119	.403
		Kurtosis		-1.753	.788
Process to determine Material Topics	GRI only	Mean		.7500	.09449
		95% Confidence Interval for Mean	Lower Bound	.5266	
			Upper Bound	.9734	
		5% Trimmed Mean		.7639	

		Median		.7500	
		Variance		.071	
		Std. Deviation		.26726	
		Minimum		.25	
		Maximum		1.00	
		Range		.75	
		Interquartile Range		.44	
		Skewness		-.935	.752
		Kurtosis		.350	1.481
	GRI and others	Mean		.5441	.05431
		95% Confidence Interval for Mean	Lower Bound	.4336	
			Upper Bound	.6546	
		5% Trimmed Mean		.5490	
		Median		.5000	
		Variance		.100	
		Std. Deviation		.31665	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	
		Interquartile Range		.50	
		Skewness		.028	.403
		Kurtosis		-1.333	.788
	List of material topics	Mean		.875	.0818
		95% Confidence Interval for Mean	Lower Bound	.681	
			Upper Bound	1.069	
		5% Trimmed Mean		.889	
		Median		1.000	
		Variance		.054	
		Std. Deviation		.2315	
		Minimum		.5	
	GRI only	Maximum		1.0	

		Range		.5			
		Interquartile Range		.4			
		Skewness		-1.440	.752		
		Kurtosis		.000	1.481		
		GRI and others	Mean		.809	.0634	
			95% Confidence Interval for Mean	Lower Bound	.680		
				Upper Bound	.938		
			5% Trimmed Mean		.843		
			Median		1.000		
			Variance		.137		
			Std. Deviation		.3696		
			Minimum		.0		
			Maximum		1.0		
			Range		1.0		
			Interquartile Range		.1		
			Skewness		-1.628	.403	
			Kurtosis		.997	.788	
Changes in material topics	GRI only	Mean		.50	.189		
		95% Confidence Interval for Mean	Lower Bound	.05			
			Upper Bound	.95			
		5% Trimmed Mean		.50			
		Median		.50			
		Variance		.286			
		Std. Deviation		.535			
		Minimum		0			
		Maximum		1			
		Range		1			
		Interquartile Range		1			
		Skewness		.000	.752		
		Kurtosis		-2.800	1.481		
			GRI and others	Mean		.38	.085

		95% Confidence Interval for Mean	Lower Bound	.21	
			Upper Bound	.55	
		5% Trimmed Mean		.37	
		Median		.00	
		Variance		.243	
		Std. Deviation		.493	
		Minimum		0	
		Maximum		1	
		Range		1	
		Interquartile Range		1	
		Skewness		.507	.403
		Kurtosis		-1.856	.788
List of Material Topics	GRI only	Mean		.6875	.10297
		95% Confidence Interval for Mean	Lower Bound	.4440	
			Upper Bound	.9310	
		5% Trimmed Mean		.6944	
		Median		.6250	
		Variance		.085	
		Std. Deviation		.29124	
		Minimum		.25	
		Maximum		1.00	
		Range		.75	
		Interquartile Range		.50	
		Skewness		-.090	.752
		Kurtosis		-1.613	1.481
	GRI and others	Mean		.5956	.06065
		95% Confidence Interval for Mean	Lower Bound	.4722	
			Upper Bound	.7190	
		5% Trimmed Mean		.6062	
		Median		.5000	
		Variance		.125	

Description of impacts	GRI only	Std. Deviation	.35363	
		Minimum	.00	
		Maximum	1.00	
		Range	1.00	
		Interquartile Range	.50	
		Skewness	-.258	.403
		Kurtosis	-1.015	.788
		Mean	.688	.1619
		95% Confidence Interval for Mean	Lower Bound	.305
			Upper Bound	1.070
		5% Trimmed Mean	.708	
		Median	1.000	
		Variance	.210	
	GRI and others	Std. Deviation	.4581	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	.9	
		Skewness	-.999	.752
		Kurtosis	-1.039	1.481
		Mean	.603	.0784
		95% Confidence Interval for Mean	Lower Bound	.444
			Upper Bound	.762
		5% Trimmed Mean	.614	
		Median	1.000	
		Variance	.209	
		Std. Deviation	.4569	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	

Involvement through own activities or business relationships	GRI only	Skewness		-.435	.403
		Kurtosis		-1.707	.788
		Mean		.688	.1619
		95% Confidence Interval for Mean	Lower Bound	.305	
			Upper Bound	1.070	
		5% Trimmed Mean		.708	
		Median		1.000	
		Variance		.210	
		Std. Deviation		.4581	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.9	
		Skewness		-.999	.752
		Kurtosis		-1.039	1.481
	GRI and others	Mean		.632	.0826
		95% Confidence Interval for Mean	Lower Bound	.464	
			Upper Bound	.800	
		5% Trimmed Mean		.647	
		Median		1.000	
		Variance		.232	
		Std. Deviation		.4816	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.574	.403
		Kurtosis		-1.738	.788
Policies or commitment	GRI only	Mean		.563	.1752
		95% Confidence Interval for Mean	Lower Bound	.148	
			Upper Bound	.977	

		5% Trimmed Mean		.569	
		Median		.750	
		Variance		.246	
		Std. Deviation		.4955	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.312	.752
		Kurtosis		-2.358	1.481
	GRI and others	Mean		.603	.0839
		95% Confidence Interval for Mean	Lower Bound	.432	
			Upper Bound	.774	
		5% Trimmed Mean		.614	
		Median		1.000	
		Variance		.239	
		Std. Deviation		.4890	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.440	.403
		Kurtosis		-1.885	.788
Actions	GRI only	Mean		.563	.1752
		95% Confidence Interval for Mean	Lower Bound	.148	
			Upper Bound	.977	
		5% Trimmed Mean		.569	
		Median		.750	
		Variance		.246	
		Std. Deviation		.4955	
		Minimum		.0	

Effectiveness	GRI and others	Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.312	.752
		Kurtosis	-2.358	1.481
		Mean	.691	.0790
		95% Confidence Interval for Mean	Lower Bound	.530
			Upper Bound	.852
		5% Trimmed Mean	.712	
		Median	1.000	
		Variance	.212	
		Std. Deviation	.4608	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.866	.403
		Kurtosis	-1.284	.788
	GRI only	Mean	.313	.0915
		95% Confidence Interval for Mean	Lower Bound	.096
			Upper Bound	.529
		5% Trimmed Mean	.319	
		Median	.500	
		Variance	.067	
		Std. Deviation	.2588	
		Minimum	.0	
		Maximum	.5	
		Range	.5	
		Interquartile Range	.5	
		Skewness	-.644	.752
		Kurtosis	-2.240	1.481

	GRI and others	Mean		.426	.0602
		95% Confidence Interval for Mean	Lower Bound	.304	
			Upper Bound	.549	
		5% Trimmed Mean		.418	
		Median		.500	
		Variance		.123	
		Std. Deviation		.3510	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.5	
		Skewness		.213	.403
		Kurtosis		-.867	.788
Stakeholder engagement in action and effectiveness	GRI only	Mean		.188	.1315
		95% Confidence Interval for Mean	Lower Bound	-.124	
			Upper Bound	.499	
		5% Trimmed Mean		.153	
		Median		.000	
		Variance		.138	
		Std. Deviation		.3720	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.4	
		Skewness		1.951	.752
		Kurtosis		3.205	1.481
	GRI and others	Mean		.353	.0747
		95% Confidence Interval for Mean	Lower Bound	.201	
			Upper Bound	.505	
		5% Trimmed Mean		.337	
		Median		.000	

Management of Material Topics		Variance		.190	
		Std. Deviation		.4357	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		.631	.403
		Kurtosis		-1.402	.788
	GRI only	Mean		.5000	.12599
		95% Confidence Interval for Mean	Lower Bound	.2021	
			Upper Bound	.7979	
		5% Trimmed Mean		.5046	
		Median		.5417	
		Variance		.127	
		Std. Deviation		.35635	
		Minimum		.00	
		Maximum		.92	
	GRI and others	Range		.92	
		Interquartile Range		.71	
		Skewness		-.512	.752
		Kurtosis		-1.237	1.481
		Mean		.5491	.06807
		95% Confidence Interval for Mean	Lower Bound	.4106	
			Upper Bound	.6876	
		5% Trimmed Mean		.5546	
		Median		.7500	
		Variance		.158	
		Std. Deviation		.39690	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	

MDTS	GRI only	Interquartile Range		.85	
		Skewness		-.517	.403
		Kurtosis		-1.521	.788
		Mean		.6462	.06879
		95% Confidence Interval for	Lower Bound	.4836	
		Mean	Upper Bound	.8089	
		5% Trimmed Mean		.6408	
		Median		.6250	
		Variance		.038	
		Std. Deviation		.19456	
		Minimum		.42	
		Maximum		.97	
		Range		.55	
		Interquartile Range		.32	
		Skewness		.468	.752
		Kurtosis		-1.054	1.481
	GRI and others	Mean		.5641	.04255
		95% Confidence Interval for	Lower Bound	.4776	
		Mean	Upper Bound	.6507	
		5% Trimmed Mean		.5707	
		Median		.5700	
		Variance		.062	
		Std. Deviation		.24810	
		Minimum		.00	
		Maximum		.94	
		Range		.94	
		Interquartile Range		.34	
		Skewness		-.263	.403
		Kurtosis		-.582	.788

Table 2) Descriptives of QMT across SRS

Quantity of Material Topics	Sustainability Reporting Standard		Statistic	Std. Error
	GRI only			
	GRI only	Mean	13.500	1.9086
		95% Confidence Interval for Mean	Lower Bound	8.987
			Upper Bound	18.013
		5% Trimmed Mean	13.389	
		Median	14.000	
		Variance	29.143	
		Std. Deviation	5.3984	
		Minimum	7.0	
		Maximum	22.0	
		Range	15.0	
		Interquartile Range	9.8	
		Skewness	.171	.752
		Kurtosis	-1.092	1.481
	GRI and others	Mean	13.250	1.0155
		95% Confidence Interval for Mean	Lower Bound	11.184
			Upper Bound	15.316
		5% Trimmed Mean	13.500	
		Median	13.000	
		Variance	35.064	
		Std. Deviation	5.9215	
		Minimum	.0	
		Maximum	22.0	
		Range	22.0	
		Interquartile Range	8.3	
		Skewness	-.569	.403
		Kurtosis	-.150	.788

Table 3) Case Processing Summary for QS across SRS Descriptives

	Sustainability Reporting Standard	Cases Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Quantity of Stakeholder Groups	GRI only	7	87.5%	1	12.5%	8	100.0%
	GRI and others	22	64.7%	12	35.3%	34	100.0%

Table 4) Descriptives of QS across SRS

Sustainability Reporting Standard		Statistic		Std. Error
Quantity of Stakeholder Groups	GRI only	Mean		9.00
		95% Confidence Interval for Mean	Lower Bound	5.15
			Upper Bound	12.85
		5% Trimmed Mean		9.06
		Median		9.00
		Variance		17.333
		Std. Deviation		4.163
		Minimum		3
		Maximum		14
		Range		11
		Interquartile Range		9
		Skewness		-.097
		Kurtosis		-1.045
	GRI and others	Mean		6.05
		95% Confidence Interval for Mean	Lower Bound	4.95
			Upper Bound	7.14
		5% Trimmed Mean		6.01
		Median		6.00

	Variance	6.141	
	Std. Deviation	2.478	
	Minimum	2	
	Maximum	11	
	Range	9	
	Interquartile Range	4	
	Skewness	-.016	.491
	Kurtosis	-.804	.953

Cross-tables

Table 4) Cross-table TMT and SRS

		Sustainability Reporting Standard		Total
		GRI only	GRI and others	
Threshold for Material Topics	None	4	17	21
	Prioritization	3	17	20
	Threshold	1	0	1
Total		8	34	42

Table 5) Cross-table MSI and SRS

		Sustainability Reporting Standard		Total
		GRI only	GRI and others	
Methods for Stakeholder Identification	Not disclosed	6	33	39
	Disclosed	2	1	3
Total		8	34	42

B) Assumptions for ANOVA: MDTS across SRS

As n=8 for GRI only, normality will not solely be tested by considering a Shapiro-Wilk Test but furthermore through visual analysis of histograms and Q-Q plots. As the histogram of the group GRI only does not suggest a normal distribution and the Q-Q plot presented below shows increased deviation, normality will not be assumed to prevent a type I error. Therefore, non-parametric tests will be conducted.

Table 1) Test of Normality: MDTS across SRS

Sustainability Reporting Standard		Shapiro-Wilk		
		Statistic	df	Sig.
MDTS	GRI only	.924	8	.464
	GRI and others	.968	34	.405

Histograms and Q-Q Plots

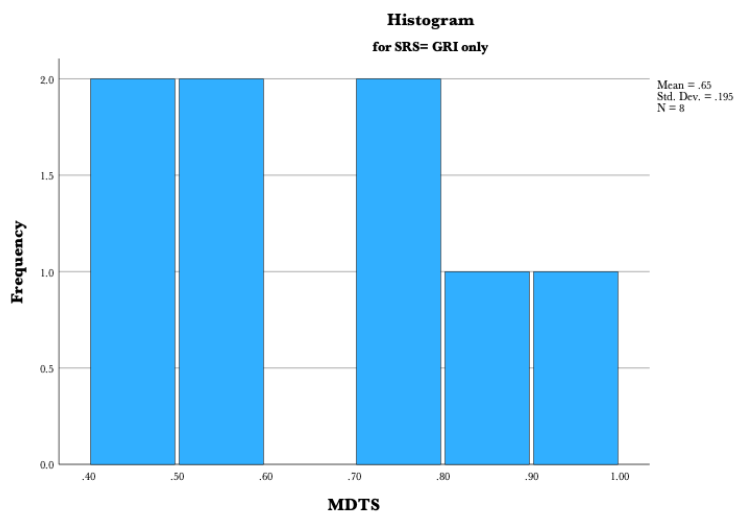


Figure 1: Histogram of MDTS for GRI only

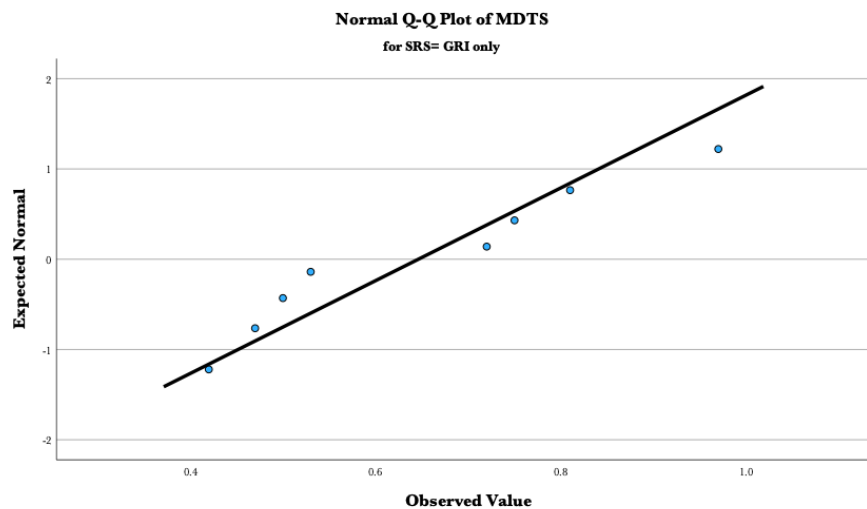


Figure 2: Normal Q-Q Plot of MDTs for GRI only

C) Mann-Whitney-U-Test: MDTs across SRS

A Mann-Whitney-U-Test was calculated to determine whether there are differences in MDTs between Sustainability Reporting Standards. The distributions do not differ between groups, Kolmogorov-Smirnov $p > .05$. There was no statistically significant difference in MDTs between GRI only and GRI and others reports, $U = 110.00$, $Z = -0.834$, $p = 0.404$.

Table 1) Frequencies for Distribution Testing MDTs across SRS

	Sustainability Reporting Standard	N
Zscore: MDTs	GRI only	8
	GRI and others	34
	Total	42

Table 2) Distribution Testing MDTs across SRS

Kolmogorov-Smirnov Z^a

		Zscore: MDTs
Most Extreme Differences	Absolute	.265
	Positive	.176
	Negative	-.265
Kolmogorov-Smirnov Z		.674
Asymp. Sig. (2-tailed)		.755

a. Grouping Variable: Sustainability Reporting Standard

Table 3) Ranks MDTS across SRS

	Sustainability Reporting Standard	N	Mean Rank	Sum of Ranks
MDTS	GRI only	8	24.75	198.00
	GRI and others	34	20.74	705.00
	Total	42		

Table 4) Mann-Whitney-U-Test: MDTS across SRS

Test Statistics^a

	MDTS
Mann-Whitney U	110.000
Wilcoxon W	705.000
Z	-.834
Asymp. Sig. (2-tailed)	.404
Point Probability	.005

a. Grouping Variable: Sustainability Reporting Standard

D) Assumptions for ANOVA: Process to determine Material Topics, List of Material Topics, Management of Material Topics, Quantity of Material Topics and Quantity of Stakeholder Groups across SRS

For no variable the assumption of normality for each group was met. This is derived from conducted Shapiro-Wilk Tests ($p < 0.05$) and for Quantity of Material Topics and Quantity of Stakeholder Groups also from visual inspection of Histograms and Q-Q plots. Therefore, a non-parametric test, to be precise a Mann-Whitney-U-Test was utilized.

Tests of Normality

Table 1) Test of Normality: PMT, LMT and MMT for each group of SRS

	Sustainability Reporting Standard	Shapiro-Wilk Statistic	df	Sig.
Process to determine Material Topics	GRI only	.860	8	.120
	GRI and others	.873	34	<.001
List of Material Topics	GRI only	.858	8	.114
	GRI and others	.830	34	<.001
Management of Material Topics	GRI only	.893	8	.247
	GRI and others	.794	34	<.001

Table 2) Test of Normality: QMT across each group of SRS

	Sustainability Reporting Standard	Shapiro-Wilk Statistic	df	Sig.
Quantity of Material Topics	GRI only	.938	8	.590
	GRI and others	.951	34	.133

Table 3) Test of Normality: QS for each group of SRS

	Sustainability Reporting Standard	Shapiro-Wilk Statistic	df	Sig.
Quantity of Stakeholder Groups	GRI only	.935	7	.598
	GRI and others	.957	22	.439

Histograms and Q-Q Plots

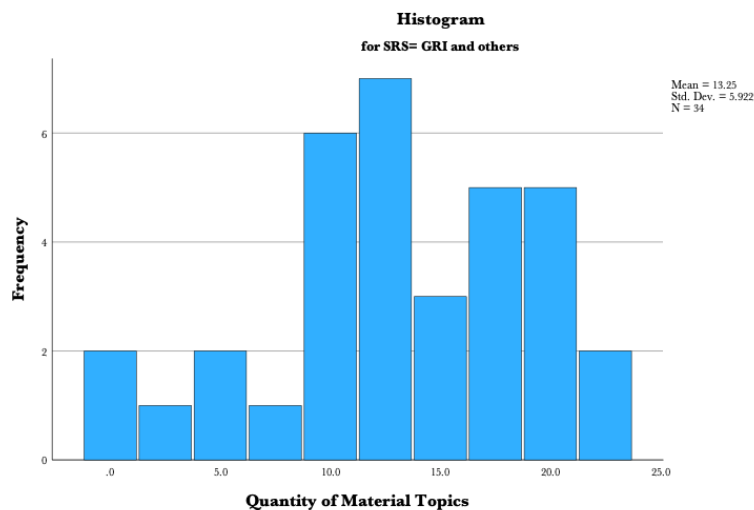


Figure 1: Histogram of QMT for GRI and others

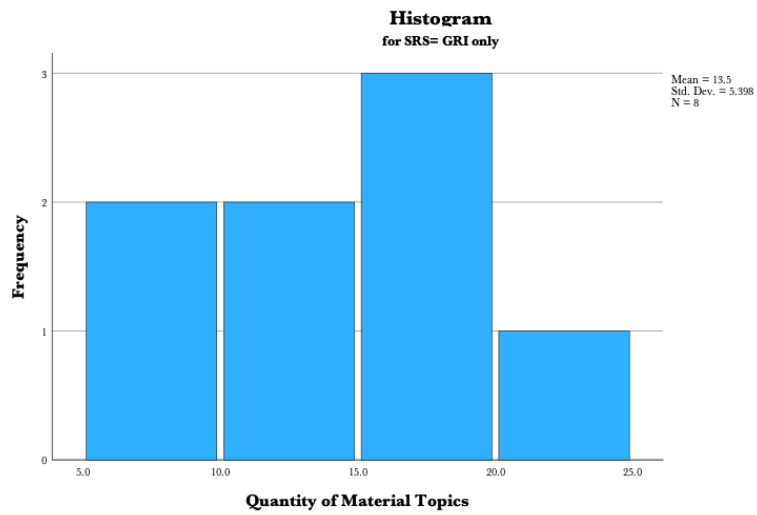


Figure 2: Histogram of QMT for GRI only

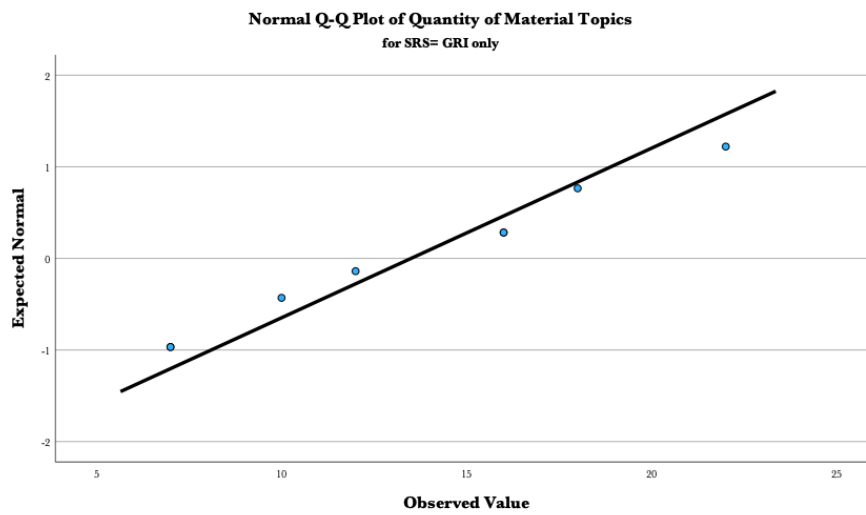


Figure 3: Normal Q-Q Plot of QMT for GRI only

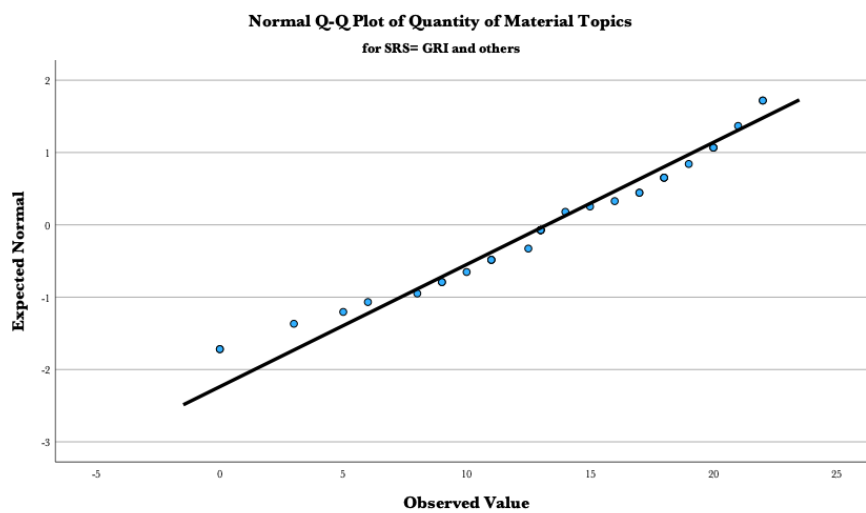


Figure 4: Normal Q-Q Plot of QMT for GRI and others

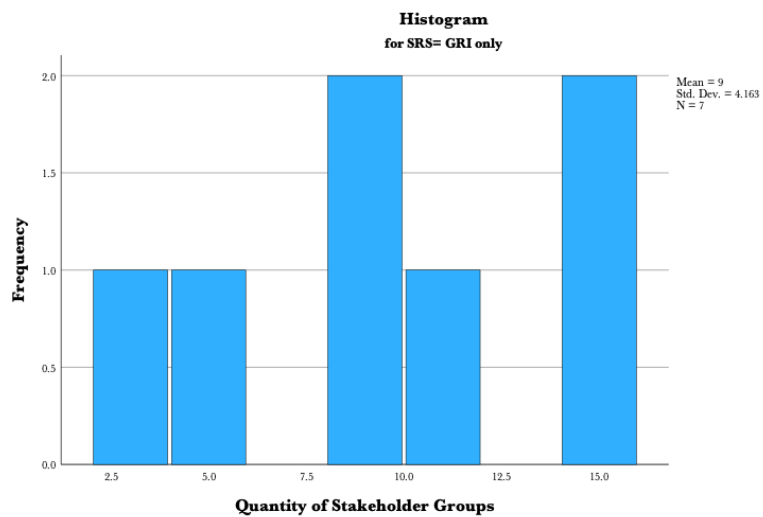


Figure 5: Histogram of QS for GRI only

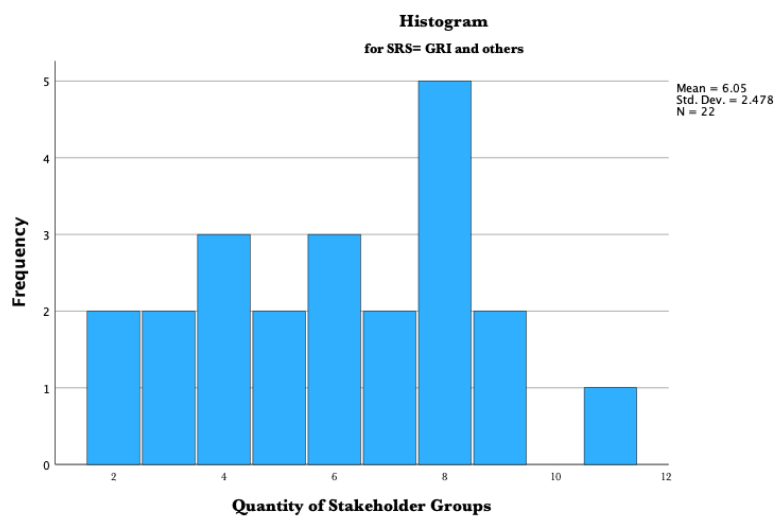


Figure 6: Histogram of QS for GRI and others

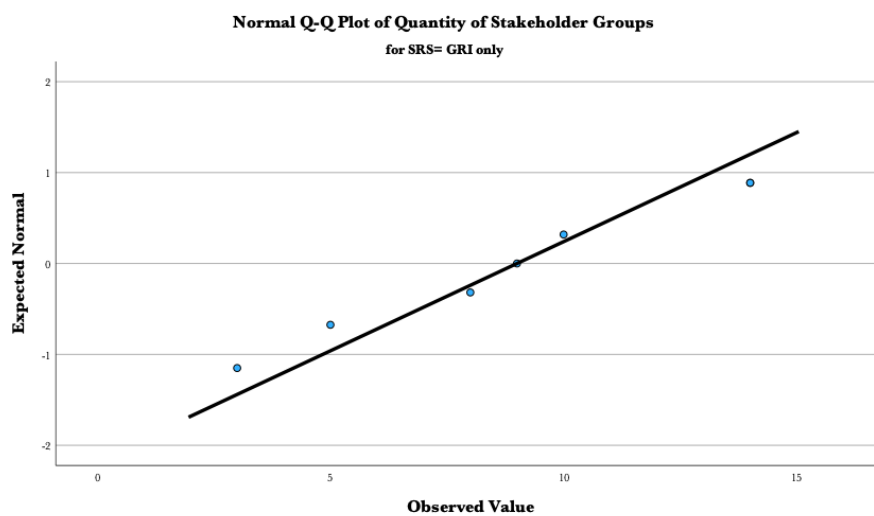


Figure 7: Normal Q-Q Plot of QS for GRI only

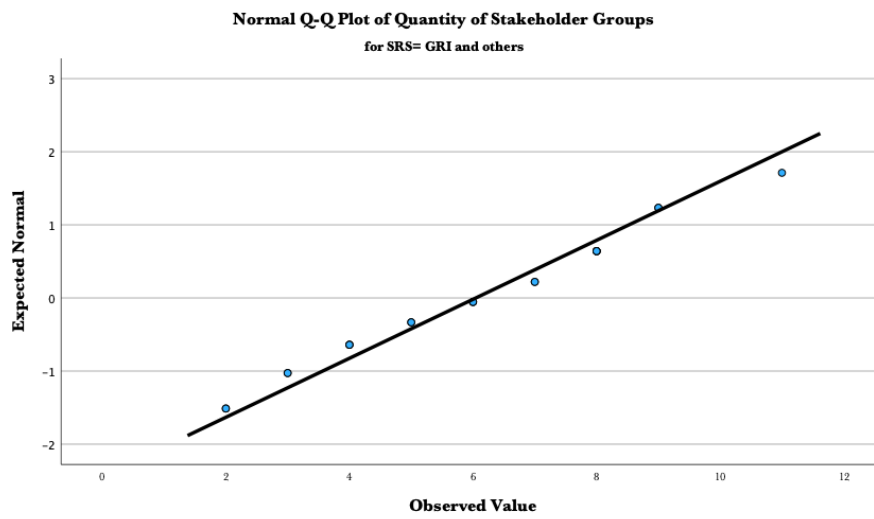


Figure 8: Normal Q-Q Plot of QS for GRI and others

E) Mann-Whitney-U-Test: Process to determine Material Topics, List of Material Topics, Management of Material Topics, Quantity of Material Topics and Quantity of Stakeholder Groups across SRS

A Mann-Whitney-U-Test was calculated to determine whether there are differences in the Process to determine Material Topics across Sustainability Reporting Standards. The distributions did not differ between the groups, Kolmogorov-Smirnov $p > 0.05$. When considering a level of significance of 0.1, there was a statistically significant difference in medians of the Process to determine material topics between GRI only (Median = 0.75) and GRI and others (Median = 0.5), $U = 86.00$, $Z = -1.661$, $p = 0.097$, $r = 0.26$. According to Cohen (1988) this translates into a small to moderate effect size.

For the List of Material Topics and the Management of Material Topics the Mann-Whitney-U-Test is non-significant, $p > 0.05$.

Table 1) Distribution Testing PMT, LMT and MMT across SRS

Kolmogorov-Smirnov Z^a

		Zscore: Process to determine Material Topics	Zscore: List of Material Topics	Zscore: Management of Material Topics
Most Extreme Differences	Absolute	.279	.353	.250
	Positive	.279	.147	.132
	Negative	-.191	-.353	-.250
Kolmogorov-Smirnov Z		.711	.898	.636
Asymp. Sig. (2-tailed)		.693	.395	.813
Point Probability		.040	.028	.024

a. Grouping Variable: Sustainability Reporting Standard

Table 2) Frequencies for Distribution Testing QMT across SRS

	Sustainability Reporting Standard	N
Zscore: Quantity of Material Topics	GRI only	8
	GRI and others	34
	Total	42

Table 3) Distribution Testing QMT across SRS

Test Statistics^a

		Zscore: Quantity of Material Topics
Most Extreme Differences	Absolute	.147
	Positive	.147
	Negative	-.147
Kolmogorov-Smirnov Z		.374
Asymp. Sig. (2-tailed)		.999

a. Grouping Variable: Sustainability Reporting Standard

Table 4) Frequencies for Distribution Testing QS across SRS

	Sustainability Reporting Standard	N
Zscore(QuantityofStakeholderGroups)	GRI only	7
Quantity of Stakeholder Groups	GRI and others	22
	Total	29

Table 5) Distribution Testing QS across SRS

Test Statistics^a

		Zscore(QuantityofStakeholderGroups) Quantity of Stakeholder Groups
Most Extreme Differences	Absolute	.240
	Positive	.240
	Negative	-.169
Kolmogorov-Smirnov Z		.554
Asymp. Sig. (2-tailed)		.919

a. Grouping Variable: Sustainability Reporting Standard

Table 6) Ranks PMT, LMT and MMT across SRS

	Sustainability Reporting Standard	N	Mean Rank	Sum of Ranks
Process to determine Material Topics	GRI only	8	27.75	222.00
	GRI and others	34	20.03	681.00
	Total	42		
List of Material Topics	GRI only	8	23.69	189.50
	GRI and others	34	20.99	713.50
	Total	42		
Management of Material Topics	GRI only	8	19.25	154.00
	GRI and others	34	22.03	749.00
	Total	42		

Table 7) Mann-Whitney-U-Test: PMT, LMT and MMT across SRS

Test Statistics^a

	Process to determine Material Topics	List of Material Topics	Management of Material Topics
Mann-Whitney U	86.000	118.500	118.000
Wilcoxon W	681.000	713.500	154.000
Z	-1.661	-.595	-.587
Asymp. Sig. (2-tailed)	.097	.552	.558
Point Probability	.014	.020	.007

a. Grouping Variable: Sustainability Reporting Standard

Table 8) Ranks QMT across SRS

	Sustainability Reporting StandardN		Mean Rank	Sum of Ranks
Quantity of Material Topics	GRI only	8	21.00	168.00
	GRI and others	34	21.62	735.00
	Total	42		

Table 9) Mann-Whitney-U-Test: QMT across SRS

Test Statistics^a

	Quantity of Material Topics
Mann-Whitney U	132.000
Wilcoxon W	168.000
Z	-.128
Asymp. Sig. (2-tailed)	.898

a. Grouping Variable: Sustainability Reporting Standard

Table 10) Ranks QS across SRS

	Sustainability Reporting Standard	N	Mean Rank	Sum of Ranks
Quantity of Stakeholder Groups	GRI only	7	20.07	140.50
	GRI and others	22	13.39	294.50
	Total	29		

Table 11) Mann-Whitney-U-Test: QS across SRS

Test Statistics^a

	Quantity of Stakeholder Groups
Mann-Whitney U	41.500
Wilcoxon W	294.500
Z	-1.822
Asymp. Sig. (2-tailed)	.068

a. Grouping Variable: Sustainability Reporting Standard

RQ4: Materiality Disclosure Transparency & Regulatory Environment

A) Descriptives

Table 1) Descriptives of MDTs across Regulatory Environment (pages 154-165)

Regulatory Environment				Statistic	Std. Error
Process to determine material topics	NFRD	Mean		.618	.0475
		95% Confidence Interval for Mean	Lower Bound	.521	
			Upper Bound	.714	
		5% Trimmed Mean		.631	
		Median		.500	
		Variance		.077	
		Std. Deviation		.2769	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.5	
		Skewness		.079	.403
		Kurtosis		-.144	.788
	Non-NFRD	Mean		.438	.1133
		95% Confidence Interval for Mean	Lower Bound	.170	
			Upper Bound	.705	
		5% Trimmed Mean		.431	
		Median		.500	
		Variance		.103	
		Std. Deviation		.3204	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.4	
		Skewness		.068	.752

Specification on stakeholders and experts	NFRD	Kurtosis		.741	1.481
		Mean		.618	.0733
		95% Confidence Interval for Mean	Lower Bound	.469	
			Upper Bound	.767	
		5% Trimmed Mean		.631	
		Median		.750	
		Variance		.183	
		Std. Deviation		.4274	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.488	.403
		Kurtosis		-1.470	.788
	Non-NFRD	Mean		.438	.1752
		95% Confidence Interval for Mean	Lower Bound	.023	
			Upper Bound	.852	
		5% Trimmed Mean		.431	
		Median		.250	
		Variance		.246	
		Std. Deviation		.4955	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		.312	.752
		Kurtosis		-2.358	1.481
Process to determine Material Topics	NFRD	Mean		.6176	.05088
		95% Confidence Interval for Mean	Lower Bound	.5141	
			Upper Bound	.7212	
		5% Trimmed Mean		.6168	

List of material topics		Median		.7500	
		Variance		.088	
		Std. Deviation		.29667	
		Minimum		.25	
		Maximum		1.00	
		Range		.75	
		Interquartile Range		.56	
		Skewness		-.099	.403
		Kurtosis		-1.528	.788
	Non-NFRD	Mean		.4375	.13153
		95% Confidence Interval for Mean	Lower Bound	.1265	
			Upper Bound	.7485	
		5% Trimmed Mean		.4306	
		Median		.3750	
		Variance		.138	
		Std. Deviation		.37201	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	
		Interquartile Range		.69	
		Skewness		.217	.752
		Kurtosis		-1.410	1.481
	NFRD	Mean		.853	.0539
		95% Confidence Interval for Mean	Lower Bound	.743	
			Upper Bound	.963	
		5% Trimmed Mean		.892	
		Median		1.000	
		Variance		.099	
		Std. Deviation		.3145	
		Minimum		.0	
		Maximum		1.0	

	Non-NFRD	Range	1.0	
		Interquartile Range	.0	
		Skewness	-2.019	.403
		Kurtosis	2.881	.788
		Mean	.688	.1619
		95% Confidence Interval for Mean	Lower Bound	.305
			Upper Bound	1.070
		5% Trimmed Mean	.708	
		Median	1.000	
		Variance	.210	
		Std. Deviation	.4581	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	.9	
		Skewness	-.999	.752
		Kurtosis	-1.039	1.481
Changes in material topics	NFRD	Mean	.41	.086
		95% Confidence Interval for Mean	Lower Bound	.24
			Upper Bound	.59
		5% Trimmed Mean	.40	
		Median	.00	
		Variance	.250	
		Std. Deviation	.500	
		Minimum	0	
		Maximum	1	
		Range	1	
		Interquartile Range	1	
		Skewness	.375	.403
		Kurtosis	-1.979	.788
	Non-NFRD	Mean	.38	.183

		95% Confidence Interval for Mean	Lower Bound	-.06	
			Upper Bound	.81	
		5% Trimmed Mean		.36	
		Median		.00	
		Variance		.268	
		Std. Deviation		.518	
		Minimum		0	
		Maximum		1	
		Range		1	
		Interquartile Range		1	
		Skewness		.644	.752
		Kurtosis		-2.240	1.481
List of Material Topics	NFRD	Mean		.6324	.05508
		95% Confidence Interval for Mean	Lower Bound	.5203	
			Upper Bound	.7444	
		5% Trimmed Mean		.6471	
		Median		.5000	
		Variance		.103	
		Std. Deviation		.32119	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	
		Interquartile Range		.50	
		Skewness		-.297	.403
		Kurtosis		-.743	.788
	Non-NFRD	Mean		.5313	.15264
		95% Confidence Interval for Mean	Lower Bound	.1703	
			Upper Bound	.8922	
		5% Trimmed Mean		.5347	
		Median		.5000	
		Variance		.186	

Description of impacts	NFRD	Std. Deviation		.43172		
		Minimum		.00		
		Maximum		1.00		
		Range		1.00		
		Interquartile Range		.94		
		Skewness		-.031	.752	
		Kurtosis		-1.836	1.481	
		Mean		.647	.0776	
		95% Confidence Interval for Mean		Lower Bound	.489	
				Upper Bound	.805	
		5% Trimmed Mean		.663		
		Median		1.000		
		Variance		.205		
		Std. Deviation		.4528		
		Minimum		.0		
		Maximum		1.0		
		Range		1.0		
		Interquartile Range		1.0		
		Skewness		-.639	.403	
		Kurtosis		-1.507	.788	
Non-NFRD	Mean		.500	.1637		
	95% Confidence Interval for Mean		Lower Bound	.113		
			Upper Bound	.887		
	5% Trimmed Mean		.500			
	Median		.500			
	Variance		.214			
	Std. Deviation		.4629			
	Minimum		.0			
	Maximum		1.0			
	Range		1.0			
Interquartile Range		1.0				

Involvement through own activities or business relationships	NFRD	Skewness		.000	.752
		Kurtosis		-2.100	1.481
		Mean		.676	.0787
		95% Confidence Interval for Mean	Lower Bound	.516	
			Upper Bound	.836	
		5% Trimmed Mean		.696	
		Median		1.000	
		Variance		.210	
		Std. Deviation		.4586	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.788	.403
		Kurtosis		-1.373	.788
	Non-NFRD	Mean		.500	.1890
		95% Confidence Interval for Mean	Lower Bound	.053	
			Upper Bound	.947	
		5% Trimmed Mean		.500	
		Median		.500	
		Variance		.286	
		Std. Deviation		.5345	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		.000	.752
		Kurtosis		-2.800	1.481
Policies or commitment	NFRD	Mean		.632	.0826
		95% Confidence Interval for Mean	Lower Bound	.464	
			Upper Bound	.800	

Actions	Non-NFRD	5% Trimmed Mean	.647	
		Median	1.000	
		Variance	.232	
		Std. Deviation	.4816	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.574	.403
		Kurtosis	-1.738	.788
	NFRD	Mean	.438	.1752
		95% Confidence Interval for Mean	Lower Bound	.023
			Upper Bound	.852
		5% Trimmed Mean	.431	
		Median	.250	
		Variance	.246	
		Std. Deviation	.4955	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	.312	.752
		Kurtosis	-2.358	1.481
		Mean	.691	.0790
		95% Confidence Interval for Mean	Lower Bound	.530
			Upper Bound	.852
		5% Trimmed Mean	.712	
		Median	1.000	
		Variance	.212	
		Std. Deviation	.4608	
		Minimum	.0	

Effectiveness	Non-NFRD	Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.866	.403
		Kurtosis	-1.284	.788
		Mean	.563	.1752
		95% Confidence Interval for	Lower Bound	.148
		Mean	Upper Bound	.977
		5% Trimmed Mean	.569	
		Median	.750	
		Variance	.246	
		Std. Deviation	.4955	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	1.0	
		Skewness	-.312	.752
		Kurtosis	-2.358	1.481
	NFRD	Mean	.441	.0588
		95% Confidence Interval for	Lower Bound	.321
		Mean	Upper Bound	.561
		5% Trimmed Mean	.435	
		Median	.500	
		Variance	.118	
		Std. Deviation	.3430	
		Minimum	.0	
		Maximum	1.0	
		Range	1.0	
		Interquartile Range	.5	
		Skewness	.153	.403
		Kurtosis	-.761	.788

Stakeholder engagement in action and effectiveness	Non-NFRD	Mean		.250	.0945
		95% Confidence Interval for Mean	Lower Bound	.027	
			Upper Bound	.473	
		5% Trimmed Mean		.250	
		Median		.250	
		Variance		.071	
		Std. Deviation		.2673	
		Minimum		.0	
		Maximum		.5	
		Range		.5	
		Interquartile Range		.5	
		Skewness		.000	.752
		Kurtosis		-2.800	1.481
	NFRD	Mean		.324	.0728
		95% Confidence Interval for Mean	Lower Bound	.175	
			Upper Bound	.472	
		5% Trimmed Mean		.304	
		Median		.000	
		Variance		.180	
		Std. Deviation		.4243	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.6	
		Skewness		.772	.403
		Kurtosis		-1.162	.788
	Non-NFRD	Mean		.313	.1619
		95% Confidence Interval for Mean	Lower Bound	-.070	
			Upper Bound	.695	
		5% Trimmed Mean		.292	
		Median		.000	

Management of Material Topics	NFRD	Variance		.210	
		Std. Deviation		.4581	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.9	
		Skewness		.999	.752
		Kurtosis		-1.039	1.481
	Non-NFRD	Mean		.5687	.06522
		95% Confidence Interval for Mean	Lower Bound	.4360	
			Upper Bound	.7014	
		5% Trimmed Mean		.5764	
		Median		.7500	
		Variance		.145	
		Std. Deviation		.38030	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	
		Interquartile Range		.85	
		Skewness		-.625	.403
		Kurtosis		-1.259	.788
	Non-NFRD	Mean		.4167	.14519
		95% Confidence Interval for Mean	Lower Bound	.0733	
			Upper Bound	.7600	
		5% Trimmed Mean		.4120	
		Median		.4167	
		Variance		.169	
		Std. Deviation		.41067	
		Minimum		.00	
		Maximum		.92	
		Range		.92	

MDTS	NFRD	Interquartile Range		.81	
		Skewness		.048	.752
		Kurtosis		-2.450	1.481
		Mean		.6068	.03817
		95% Confidence Interval for Mean	Lower Bound	.5291	
			Upper Bound	.6844	
		5% Trimmed Mean		.6115	
		Median		.6250	
		Variance		.050	
		Std. Deviation		.22256	
		Minimum		.17	
		Maximum		.97	
		Range		.80	
		Interquartile Range		.33	
		Skewness		-.242	.403
		Kurtosis		-.655	.788
	Non-NFRD	Mean		.4650	.10135
		95% Confidence Interval for Mean	Lower Bound	.2253	
			Upper Bound	.7047	
		5% Trimmed Mean		.4644	
		Median		.4450	
		Variance		.082	
		Std. Deviation		.28666	
		Minimum		.00	
		Maximum		.94	
		Range		.94	
		Interquartile Range		.40	
		Skewness		.104	.752
		Kurtosis		.393	1.481

Table 2) Case Processing Summary for Descriptives of QS across Regulatory Environment

	Regulatory Environment	Cases		Missing		Total	
		Valid N	Percent	N	Percent	N	Percent
Quantity of Stakeholder Groups	NFRD	25	73.5%	9	26.5%	34	100.0%
	Non-NFRD	4	50.0%	4	50.0%	8	100.0%

Table 3) Descriptives QS across Regulatory Environment (pages 166-167)

Regulatory Environment		Statistic		Std. Error
Quantity of Stakeholder Groups	NFRD	Mean	6.84	.663
		95% Confidence Interval for Mean	Lower Bound	5.47
			Upper Bound	8.21
		5% Trimmed Mean	6.71	
		Median	7.00	
		Variance	10.973	
		Std. Deviation	3.313	
		Minimum	2	
		Maximum	14	
		Range	12	
		Interquartile Range	5	
		Skewness	.511	.464
		Kurtosis	-.030	.902
	Non-NFRD	Mean	6.25	1.109
		95% Confidence Interval for Mean	Lower Bound	2.72
			Upper Bound	9.78
		5% Trimmed Mean	6.22	
		Median	6.00	
		Variance	4.917	

	Std. Deviation	2.217	
	Minimum	4	
	Maximum	9	
	Range	5	
	Interquartile Range	4	
	Skewness	.482	1.014
	Kurtosis	-1.700	2.619

Cross-tables

Table 4) Cross-table MSI and Regulatory Environment

		Regulatory Environment		
		NFRD	Non-NFRD	Total
Methods for Stakeholder Identification	Not disclosed	31	8	39
	Disclosed	3	0	3
Total		34	8	42

Table 5) Cross-table TMT and Regulatory Environment

		Regulatory Environment		
		NFRD	Non-NFRD	Total
Threshold for Material Topics	None	16	5	21
	Prioritization	17	3	20
	Threshold	1	0	1
Total		34	8	42

B) ANOVA Assumptions: Process to determine Material Topics, List of Material Topics, Management of Material Topics, Quantity of Material Topics and Quantity of Stakeholder Groups across Regulatory Environments

Process to determine Material Topics, List of Material Topics, Management of Material Topics, Quantity of Material Topics and Quantity of Stakeholder Groups were not normally distributed for NFRD, as assessed by the Shapiro-Wilk test ($p < 0.001$) and/or visual analysis of Histograms and Q-Q Plots. Therefore, non-parametric tests were conducted.

Table 1) Test of Normality: PMT, LMT, MMT and QMT across Regulatory Environments

	Regulatory Environment	Shapiro-Wilk		
		Statistic	df	Sig.
Process to determine Material Topics	NFRD	.826	34	<.001
	Non-NFRD	.920	8	.428
List of Material Topics	NFRD	.830	34	<.001
	Non-NFRD	.849	8	.094
Management of Material Topics	NFRD	.814	34	<.001
	Non-NFRD	.810	8	.036
Quantity of Material Topics	NFRD	.963	34	.306
	Non-NFRD	.915	8	.387

Table 2) Test of Normality: QS across Regulatory Environments

		Shapiro-Wilk		
Regulatory Environment		Statistic	df	Sig.
Quantity of Stakeholder Groups	NFRD	.943	25	.173
	Non-NFRD	.963	4	.798

Histograms and Q-Q Plots

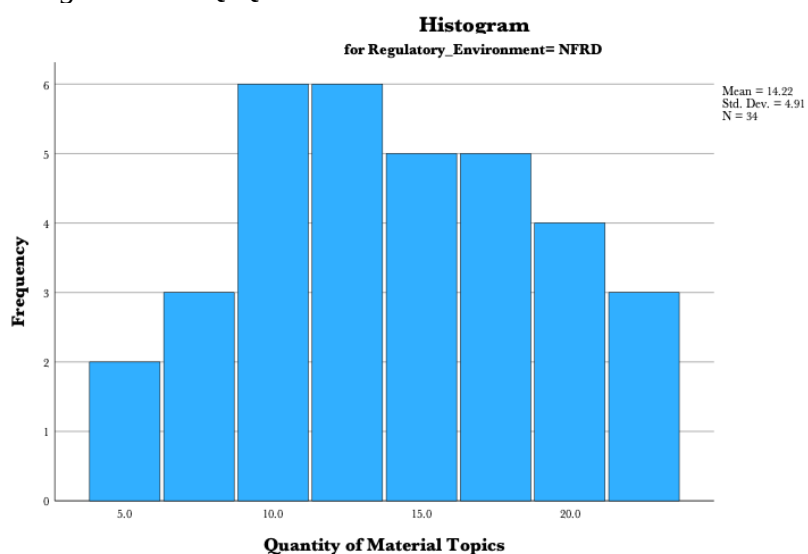


Figure 1: Histogram of QMT for NFRD

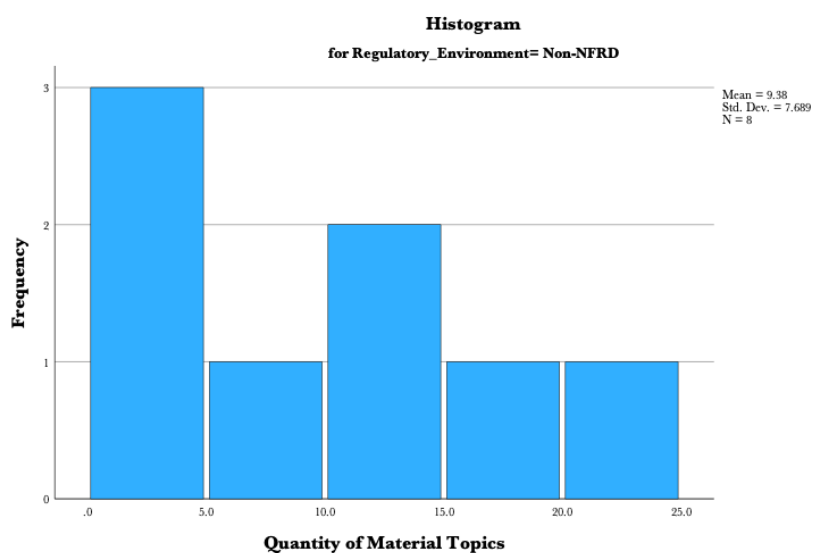


Figure 2: Histogram of QMT for Non-NFRD

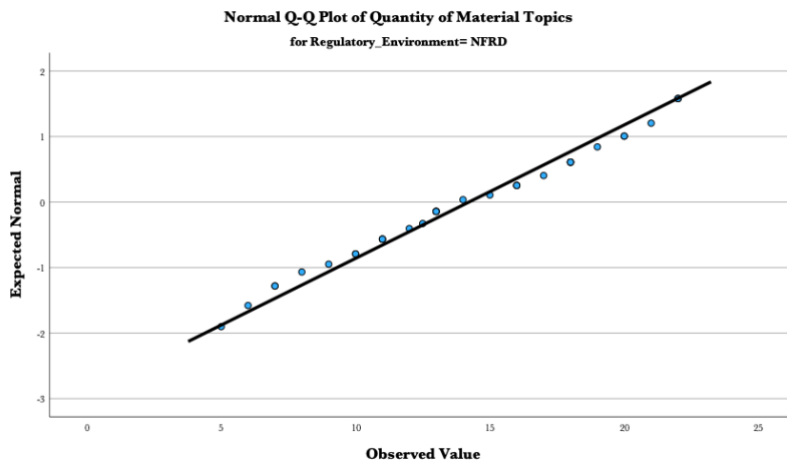


Figure 3: Normal Q-Q Plot of QMT for NFRD

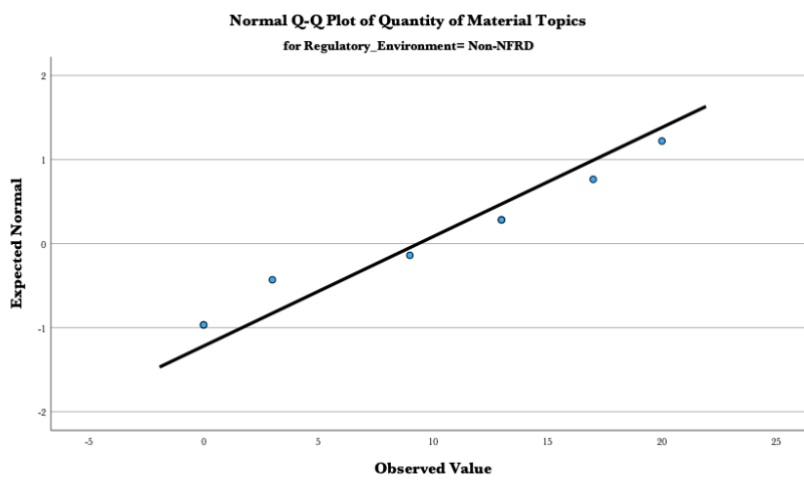


Figure 4: Normal Q-Q Plot of QMT for Non-NFRD

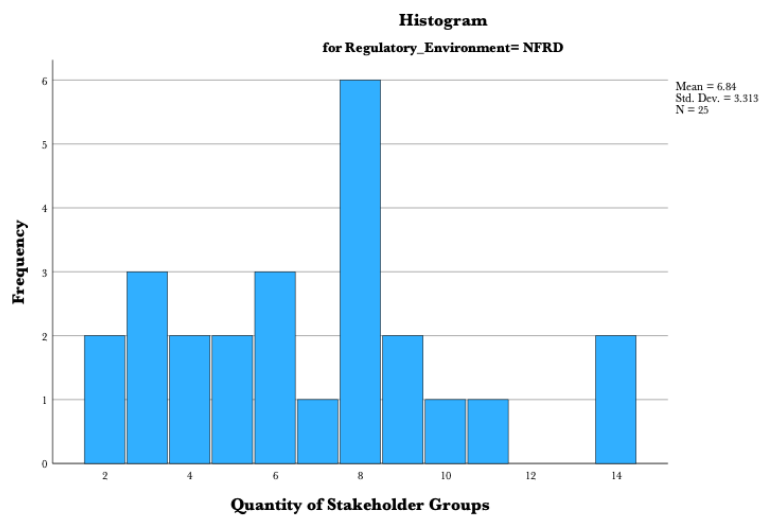


Figure 5: Histogram of QS for NFRD

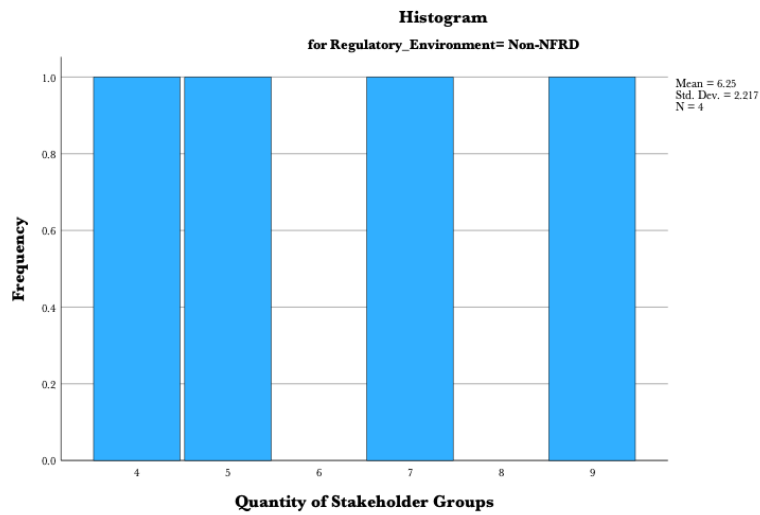


Figure 6: Histogram of QS for Non-NFRD

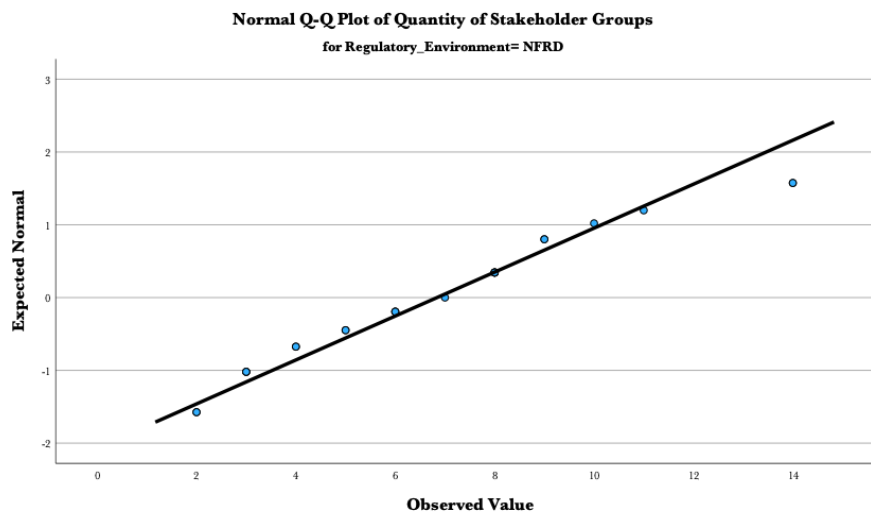


Figure 7: Normal Q-Q Plot of QS for NFRD

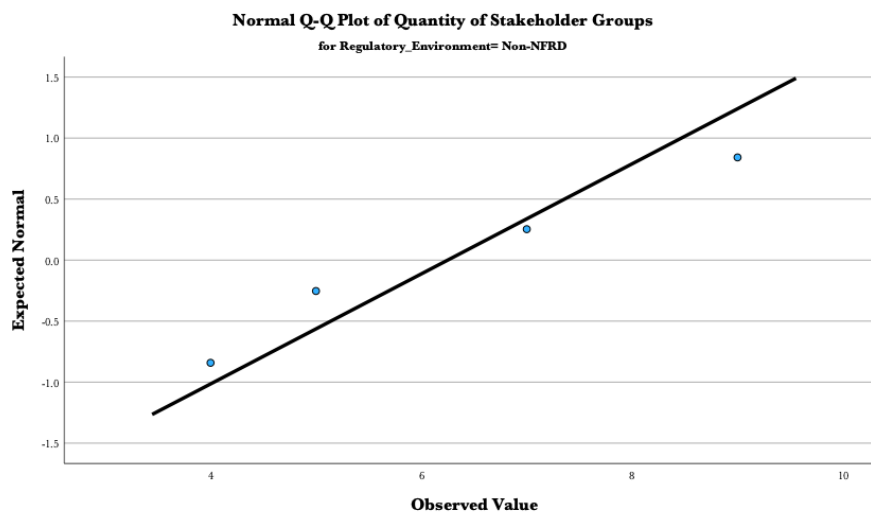


Figure 8: Normal Q-Q Plot of QS for Non-NFRD

C) Mann-Whitney-U-Test: Process to determine Material Topics, List of Material Topics, Management of Material Topics, Quantity of Material Topics and Quantity of Stakeholder Groups across Regulatory Environments

A Mann-Whitney-U-Test was calculated to determine if there were differences in Process to determine Material Topics, List of Material Topics, Management of Material Topics, Quantity of Material Topics and Quantity of Stakeholder Groups between NFRD and non-NFRD reports. The distributions did not differ between groups, Kolmogorov-Smirnov $p > 0.05$. There were no statistically significant differences in PMT, LMT, MMT, QMT and QS between groups, Mann-Whitney-U-Test $p > 0.05$.

Table 1) Distribution Testing PMT, LMT, MMT and QMT across Regulatory Environments

Kolmogorov-Smirnov Z ^a

		Zscore(PMT) Process to determine Material Topics	Zscore(LMT) List of Material Topics	Zscore(MMT) Management of Material Topics	Zscore(Quantity ofMaterialTopic s) Quantity of Material Topics
Most Extreme Differences	Absolute	.324	.353	.265	.147
	Positive	.324	.213	.265	.147
	Negative	-.184	-.353	-.206	-.140
Kolmogorov-Smirnov Z		.823	.898	.674	.374
Asymp. Sig. (2-tailed)		.507	.395	.755	.999

a. Grouping Variable: Regulatory Environment

Table 2) Distribution Testing QS across Regulatory Environments

Kolmogorov-Smirnov-Z^a

Zscore: Quantity
of Stakeholder
Groups

Most Extreme Differences	Absolute	.230
	Positive	.200
	Negative	-.230
Kolmogorov-Smirnov Z		.427
Asymp. Sig. (2-tailed)		.993

a. Grouping Variable: Regulatory Environment

Table 3) Ranks PMT, LMT, MMT and QMT across Regulatory Environments

	Regulatory Environment	N	Mean Rank	Sum of Ranks
Process to determine Material Topics	NFRD	34	22.71	772.00
	Non-NFRD	8	16.38	131.00
	Total	42		
List of Material Topics	NFRD	34	22.09	751.00
	Non-NFRD	8	19.00	152.00
	Total	42		
Management of Material Topics	NFRD	34	22.37	760.50
	Non-NFRD	8	17.81	142.50
	Total	42		
Quantity of Material Topics	NFRD	34	22.94	780.00
	Non-NFRD	8	15.38	123.00
	Total	42		

Table 4) Mann-Whitney-U-Test: PMT, LMT, MMT and QMT across Regulatory Environments

Test Statistics^a

	Process to determine Material Topics	List of Material Topics	Management of Material Topics	Quantity of Material Topics
Mann-Whitney U	95.000	116.000	106.500	87.000
Wilcoxon W	131.000	152.000	142.500	123.000
Z	-1.362	-.680	-.961	-1.574
Asymp. Sig. (2-tailed)	.173	.496	.336	.116

a. Grouping Variable: Regulatory Environment

Table 5) Ranks QS across Regulatory Environments

	Regulatory Environment	N	Mean Rank	Sum of Ranks
Quantity of Stakeholder Groups	NFRD	25	15.14	378.50
	Non-NFRD	4	14.13	56.50
	Total	29		

Table 5) Mann-Whitney-U-Test: QS across Regulatory Environments

Test Statistics^a

	Quantity of Stakeholder Groups
Mann-Whitney U	46.500
Wilcoxon W	56.500
Z	-.223
Asymp. Sig. (2-tailed)	.824

a. Grouping Variable: Regulatory Environment

D) ANOVA MDTs across Regulatory Environments

A one-way ANOVA was conducted to assess whether there are differences in MDTs across Regulatory Environments. MDTs was evaluated as close enough to being normally distributed for NFRD and non-NFRD reports as assessed by a Shapiro-Wilk test ($\alpha = 0.05$) and visual analysis of histograms and Q-Q plots. For MDTs no outliers are identifiable for the groups NFRD and non-NFRD according to inspection of a box plot. Homogeneity of variances was asserted using Levene's Test which showed that equal variances could be assumed ($p > 0.05$). The Materiality Disclosure Transparency Score decreased from NFRD reports (Mean = 0.61, SD = 0.22) to non-NFRD reports (Mean = 0.47, SD = 0.29). MDTs does not differ statistically significant for the different Regulatory Environments, $F(1, 40) = 236, p = 0.133$.

Table 1) Test of Normality MDTs across Regulatory Environments

Regulatory Environment		Shapiro-Wilk		
		Statistic	df	Sig.
MDTS	NFRD	.966	34	.355
	Non-NFRD	.992	8	.997

Histograms, Q-Q Plots and Box Plot

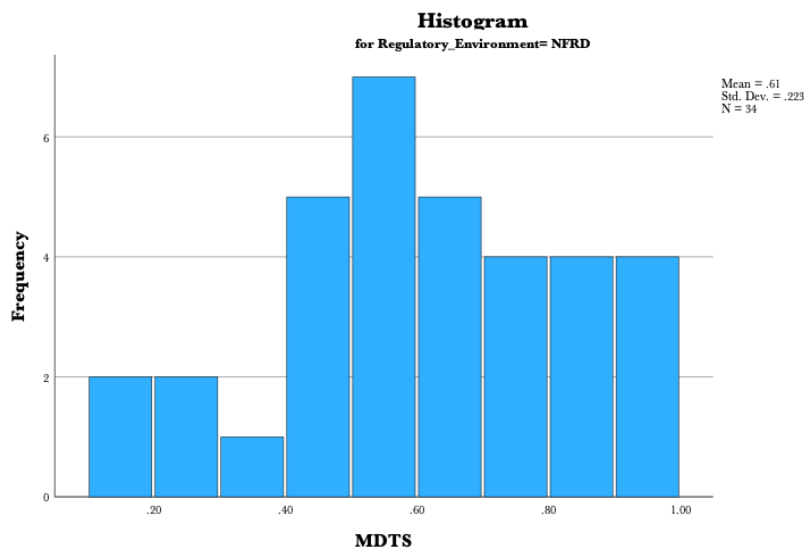


Figure 1: Histogram of MDTs for NFRD

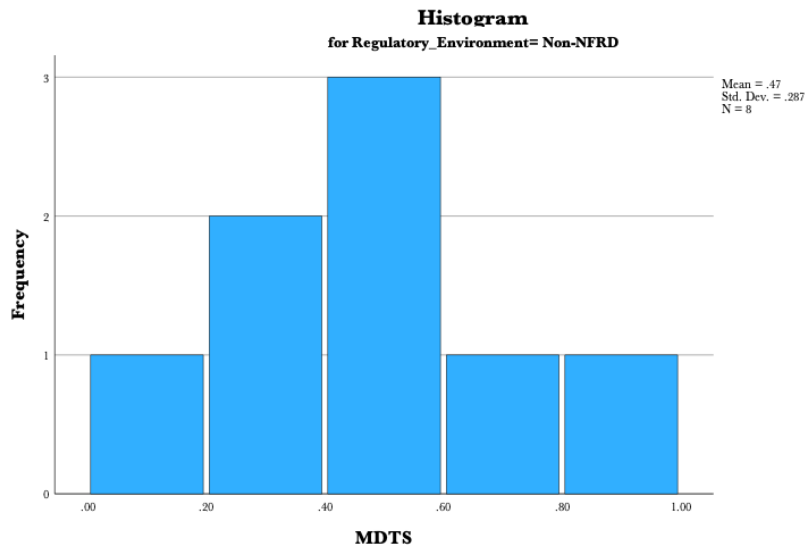


Figure 2: Histogram of MDTs for Non-NFRD

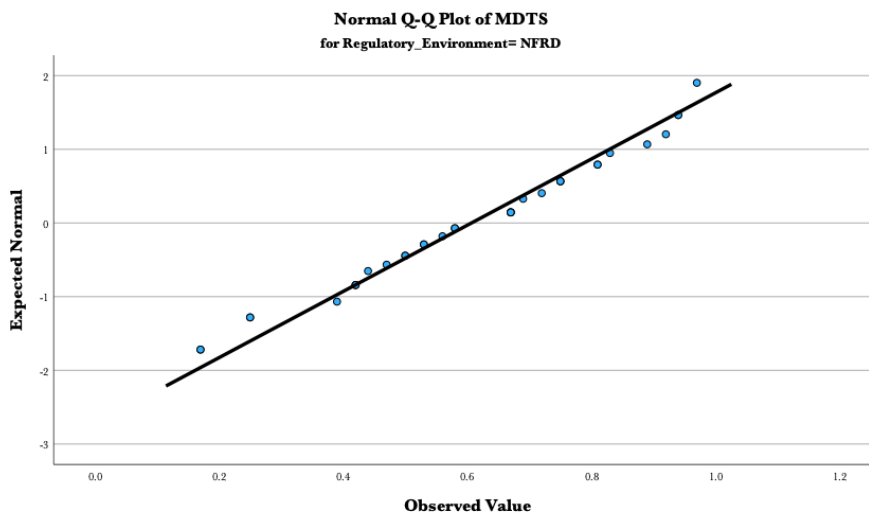


Figure 3: Normal Q-Q Plot of MDTs for NFRD

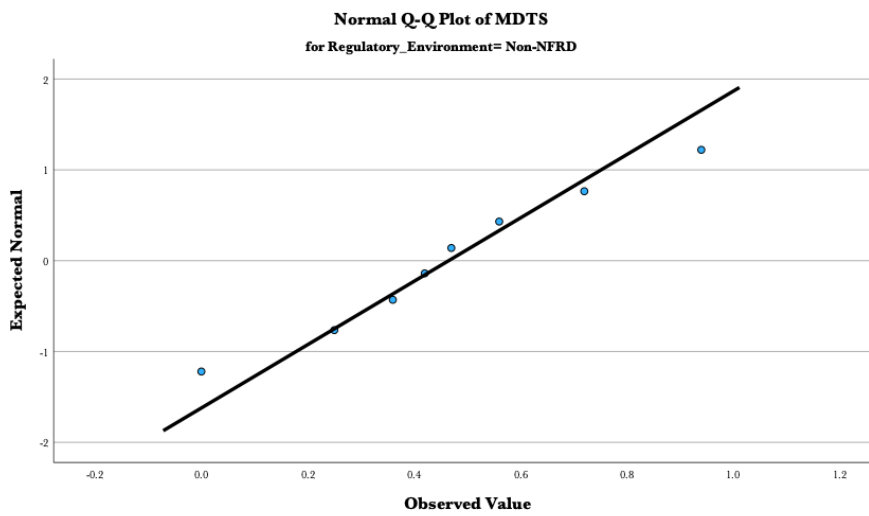


Figure 4: Normal Q-Q Plot of MDTs for Non-NFRD

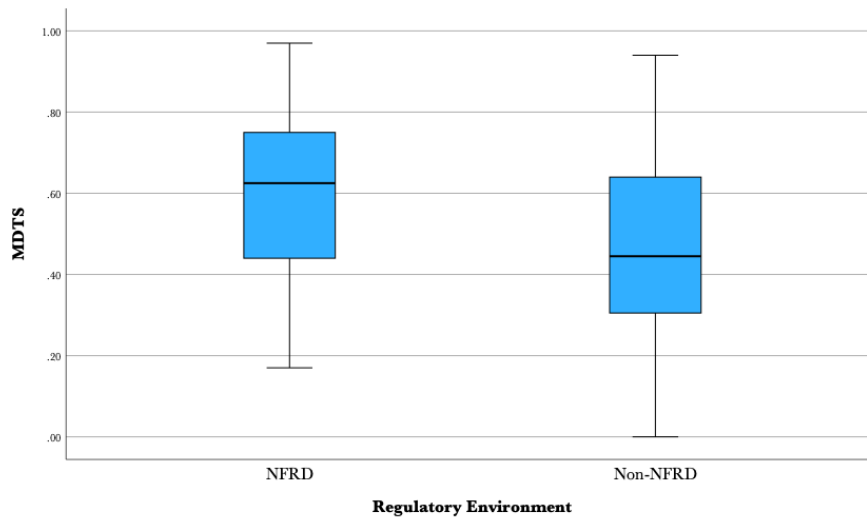


Figure 5: Box Plot of MDTs across Regulatory Environments

Table 2) Tests of Homogeneity of Variances: MDTs

		Levene Statistic	df1	df2	Sig.
MDTS	Based on Mean	.195	1	40	.661
	Based on Median	.191	1	40	.665
	Based on Median and with adjusted df	.191	1	34.710	.665
	Based on trimmed mean	.195	1	40	.662

Table 3) ANOVA: MDTs across Regulatory Environments

MDTS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.130	1	.130	2.356	.133
Within Groups	2.210	40	.055		
Total	2.340	41			

RQ5: Materiality Disclosure Transparency & Level of Sustainability

A) Descriptives

Table 1) Descriptives MDTs across Levels of Sustainability (pages 178-189)

Level of Sustainability				Statistic	Std. Error
Process to determine material topics	High Emissions	Mean		.667	.0527
		95% Confidence Interval for Mean	Lower Bound	.557	
			Upper Bound	.777	
		5% Trimmed Mean		.657	
		Median		.500	
		Variance		.058	
		Std. Deviation		.2415	
		Minimum		.5	
		Maximum		1.0	
		Range		.5	
		Interquartile Range		.5	
		Skewness		.763	.501
		Kurtosis		-1.579	.972
	Low Emissions	Mean		.500	.0690
		95% Confidence Interval for Mean	Lower Bound	.356	
			Upper Bound	.644	
		5% Trimmed Mean		.500	
		Median		.500	
		Variance		.100	
		Std. Deviation		.3162	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.0	
		Skewness		.000	.501

Specification on stakeholders and experts	High Emissions	Kurtosis		-.132	.972
		Mean		.548	.1030
		95% Confidence Interval for Mean	Lower Bound	.333	
			Upper Bound	.762	
		5% Trimmed Mean		.553	
		Median		.500	
		Variance		.223	
		Std. Deviation		.4718	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.204	.501
		Kurtosis		-1.957	.972
	Low Emissions	Mean		.619	.0907
		95% Confidence Interval for Mean	Lower Bound	.430	
			Upper Bound	.808	
		5% Trimmed Mean		.632	
		Median		.500	
		Variance		.173	
		Std. Deviation		.4155	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.8	
		Skewness		-.496	.501
		Kurtosis		-1.364	.972
Process to determine Material Topics	High Emissions	Mean		.6071	.06808
		95% Confidence Interval for Mean	Lower Bound	.4651	
			Upper Bound	.7491	
		5% Trimmed Mean		.6052	

List of material topics	Low Emissions	Median		.7500	
		Variance		.097	
		Std. Deviation		.31196	
		Minimum		.25	
		Maximum		1.00	
		Range		.75	
		Interquartile Range		.63	
		Skewness		-.077	.501
		Kurtosis		-1.710	.972
		Mean		.5595	.07093
		95% Confidence Interval for Mean	Lower Bound	.4116	
			Upper Bound	.7075	
		5% Trimmed Mean		.5661	
		Median		.5000	
		Variance		.106	
		Std. Deviation		.32505	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	
		Interquartile Range		.50	
		Skewness		-.187	.501
		Kurtosis		-1.086	.972
	High Emissions	Mean		.881	.0588
		95% Confidence Interval for Mean	Lower Bound	.758	
			Upper Bound	1.004	
		5% Trimmed Mean		.922	
		Median		1.000	
		Variance		.073	
		Std. Deviation		.2695	
		Minimum		.0	
		Maximum		1.0	

	Low Emissions	Range		1.0	
		Interquartile Range		.0	
		Skewness		-2.318	.501
		Kurtosis		5.058	.972
		Mean		.762	.0888
		95% Confidence Interval for Mean	Lower Bound	.577	
			Upper Bound	.947	
		5% Trimmed Mean		.791	
		Median		1.000	
		Variance		.165	
		Std. Deviation		.4068	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.5	
		Skewness		-1.316	.501
		Kurtosis		-.042	.972
Changes in material topics	High Emissions	Mean		.52	.112
		95% Confidence Interval for Mean	Lower Bound	.29	
			Upper Bound	.76	
		5% Trimmed Mean		.53	
		Median		1.00	
		Variance		.262	
		Std. Deviation		.512	
		Minimum		0	
		Maximum		1	
		Range		1	
		Interquartile Range		1	
		Skewness		-.103	.501
		Kurtosis		-2.211	.972
		Mean		.29	.101

List of Material Topics	Low Emissions	95% Confidence Interval for	Lower Bound	.08	
		Mean	Upper Bound	.50	
		5% Trimmed Mean		.26	
		Median		.00	
		Variance		.214	
		Std. Deviation		.463	
		Minimum		0	
		Maximum		1	
		Range		1	
		Interquartile Range		1	
		Skewness		1.023	.501
		Kurtosis		-1.064	.972
	High Emissions	Mean		.7024	.06596
		95% Confidence Interval for	Lower Bound	.5648	
		Mean	Upper Bound	.8400	
		5% Trimmed Mean		.7242	
		Median		.7500	
		Variance		.091	
		Std. Deviation		.30227	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	
		Interquartile Range		.50	
		Skewness		-.536	.501
		Kurtosis		-.521	.972
	Low Emissions	Mean		.5238	.07888
		95% Confidence Interval for	Lower Bound	.3593	
		Mean	Upper Bound	.6883	
		5% Trimmed Mean		.5265	
		Median		.5000	
		Variance		.131	

Description of impacts		Std. Deviation		.36146	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	
		Interquartile Range		.75	
		Skewness		.037	.501
		Kurtosis		-1.052	.972
	High Emissions	Mean		.690	.0943
		95% Confidence Interval for Mean	Lower Bound	.494	
			Upper Bound	.887	
		5% Trimmed Mean		.712	
		Median		1.000	
		Variance		.187	
		Std. Deviation		.4323	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.8	
		Skewness		-.876	.501
		Kurtosis		-1.073	.972
	Low Emissions	Mean		.548	.1030
		95% Confidence Interval for Mean	Lower Bound	.333	
			Upper Bound	.762	
		5% Trimmed Mean		.553	
		Median		.500	
		Variance		.223	
		Std. Deviation		.4718	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	

Involvement through own activities or business relationships	High Emissions	Skewness		-.204	.501
		Kurtosis		-1.957	.972
		Mean		.714	.0949
		95% Confidence Interval for Mean	Lower Bound	.516	
			Upper Bound	.912	
		5% Trimmed Mean		.738	
		Median		1.000	
		Variance		.189	
		Std. Deviation		.4351	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.8	
		Skewness		-1.017	.501
		Kurtosis		-.871	.972
	Low Emissions	Mean		.571	.1107
		95% Confidence Interval for Mean	Lower Bound	.341	
			Upper Bound	.802	
		5% Trimmed Mean		.579	
		Median		1.000	
		Variance		.257	
		Std. Deviation		.5071	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.311	.501
		Kurtosis		-2.115	.972
Policies or commitment	High Emissions	Mean		.643	.1043
		95% Confidence Interval for Mean	Lower Bound	.425	
			Upper Bound	.860	

				5% Trimmed Mean	.659	
				Median	1.000	
				Variance	.229	
				Std. Deviation	.4781	
				Minimum	.0	
				Maximum	1.0	
				Range	1.0	
				Interquartile Range	1.0	
				Skewness	-.642	.501
				Kurtosis	-1.689	.972
	Low Emissions	Mean		Mean	.548	.1086
				95% Confidence Interval for Mean		
			Lower Bound	.321		
			Upper Bound	.774		
		5% Trimmed Mean		5% Trimmed Mean	.553	
				Median	1.000	
		Variance		Variance	.248	
				Std. Deviation	.4976	
		Minimum		Minimum	.0	
				Maximum	1.0	
		Range		Range	1.0	
				Interquartile Range	1.0	
		Skewness		Skewness	-.206	.501
				Kurtosis	-2.110	.972
Actions	High Emissions	Mean		Mean	.786	.0884
				95% Confidence Interval for Mean		
			Lower Bound	.601		
			Upper Bound	.970		
		5% Trimmed Mean		5% Trimmed Mean	.817	
				Median	1.000	
		Variance		Variance	.164	
				Std. Deviation	.4053	
		Minimum		Minimum	.0	

		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.3	
		Skewness		-1.499	.501
		Kurtosis		.407	.972
	Low	Mean		.548	.1086
	Emissions	95% Confidence Interval for Mean	Lower Bound	.321	
			Upper Bound	.774	
		5% Trimmed Mean		.553	
		Median		1.000	
		Variance		.248	
		Std. Deviation		.4976	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		-.206	.501
		Kurtosis		-2.110	.972
Effectiveness	High	Mean		.524	.0730
	Emissions	95% Confidence Interval for Mean	Lower Bound	.372	
			Upper Bound	.676	
		5% Trimmed Mean		.526	
		Median		.500	
		Variance		.112	
		Std. Deviation		.3345	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.3	
		Skewness		-.052	.501
		Kurtosis		-.498	.972

	Low Emissions	Mean		.286	.0652
		95% Confidence Interval for Mean	Lower Bound	.150	
			Upper Bound	.422	
		5% Trimmed Mean		.263	
		Median		.500	
		Variance		.089	
		Std. Deviation		.2988	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.5	
		Skewness		.476	.501
		Kurtosis		-.560	.972
Stakeholder engagement in action and effectiveness	High Emissions	Mean		.357	.0985
		95% Confidence Interval for Mean	Lower Bound	.152	
			Upper Bound	.563	
		5% Trimmed Mean		.341	
		Median		.000	
		Variance		.204	
		Std. Deviation		.4512	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		1.0	
		Skewness		.635	.501
		Kurtosis		-1.518	.972
	Low Emissions	Mean		.286	.0884
		95% Confidence Interval for Mean	Lower Bound	.101	
			Upper Bound	.470	
		5% Trimmed Mean		.262	
		Median		.000	

Management of Material Topics	High Emissions	Variance		.164	
		Std. Deviation		.4053	
		Minimum		.0	
		Maximum		1.0	
		Range		1.0	
		Interquartile Range		.5	
		Skewness		.991	.501
		Kurtosis		-.665	.972
		Mean		.6192	.07752
	Low Emissions	95% Confidence Interval for Mean	Lower Bound	.4575	
			Upper Bound	.7809	
		5% Trimmed Mean		.6325	
		Median		.7500	
		Variance		.126	
		Std. Deviation		.35523	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	
		Interquartile Range		.54	
		Skewness		-.863	.501
		Kurtosis		-.572	.972
		Mean		.4603	.08883
		95% Confidence Interval for Mean	Lower Bound	.2750	
			Upper Bound	.6456	
		5% Trimmed Mean		.4561	
		Median		.7500	
		Variance		.166	
		Std. Deviation		.40707	
		Minimum		.00	
		Maximum		1.00	
		Range		1.00	

MDTS	High Emissions	Interquartile Range		.83	
		Skewness		-.161	.501
		Kurtosis		-1.984	.972
		Mean		.6438	.04349
		95% Confidence Interval for Mean	Lower Bound	.5531	
			Upper Bound	.7345	
		5% Trimmed Mean		.6473	
		Median		.6700	
		Variance		.040	
		Std. Deviation		.19931	
		Minimum		.25	
		Maximum		.97	
		Range		.72	
		Interquartile Range		.38	
		Skewness		-.221	.501
		Kurtosis		-.881	.972
	Low Emissions	Mean		.5157	.05718
		95% Confidence Interval for Mean	Lower Bound	.3964	
			Upper Bound	.6350	
		5% Trimmed Mean		.5203	
		Median		.5000	
		Variance		.069	
		Std. Deviation		.26202	
		Minimum		.00	
		Maximum		.94	
		Range		.94	
		Interquartile Range		.39	
		Skewness		-.012	.501
		Kurtosis		-.455	.972

Table 2) Descriptives QMT across Levels of Sustainability

Quantity of Material Topics	Level of Sustainability		Statistic	Std. Error
	High	Mean	14.500	1.2993
Emissions	High	95% Confidence Interval for Mean	Lower Bound	11.790
			Upper Bound	17.210
		5% Trimmed Mean	14.873	
		Median	16.000	
		Variance	35.450	
		Std. Deviation	5.9540	
		Minimum	.0	
		Maximum	22.0	
		Range	22.0	
		Interquartile Range	9.5	
		Skewness	-.761	.501
		Kurtosis	.054	.972
	Low	Mean	12.095	1.1870
		95% Confidence Interval for Mean	Lower Bound	9.619
			Upper Bound	14.571
		5% Trimmed Mean	12.214	
		Median	13.000	
		Variance	29.590	
		Std. Deviation	5.4397	
		Minimum	.0	
		Maximum	22.0	
		Range	22.0	
		Interquartile Range	7.0	
		Skewness	-.373	.501
		Kurtosis	.174	.972

Table 3) Case Processing Summary for Descriptives QS across Levels of Sustainability

		Cases Valid		Missing		Total	
Level of Sustainability		N	Percent	N	Percent	N	Percent
Quantity of Stakeholder Groups	High Emissions	13	61.9%	8	38.1%	21	100.0%
	Low Emissions	16	76.2%	5	23.8%	21	100.0%

Table 4) Descriptives of QS across Levels of Sustainability (pages 191-192)

Level of Sustainability			Statistic	Std. Error
Quantity of Stakeholder Groups	High Emissions	Mean	7.62	.866
		95% Confidence Interval for Mean	Lower Bound	5.73
			Upper Bound	9.50
		5% Trimmed Mean	7.52	
		Median	8.00	
		Variance	9.756	
		Std. Deviation	3.124	
		Minimum	3	
		Maximum	14	
		Range	11	
		Interquartile Range	5	
		Skewness	.423	.616
		Kurtosis	-.207	1.191
	Low Emissions	Mean	6.06	.777
		95% Confidence Interval for Mean	Lower Bound	4.41
			Upper Bound	7.72
		5% Trimmed Mean	5.85	
		Median	6.50	
		Variance	9.663	
		Std. Deviation	3.108	
		Minimum	2	

	Maximum	14	
	Range	12	
	Interquartile Range	5	
	Skewness	.832	.564
	Kurtosis	1.413	1.091

Cross-tables

Table 5) Cross-table TMT & LoS

		Level of Sustainability		Total
		High Emissions	Low Emissions	
Threshold for Material Topics	None	7	14	21
	Prioritization	13	7	20
	Threshold	1	0	1
Total		21	21	42

Table 6) Cross-table MSI & LoS

		Level of Sustainability		Total
		High Emissions	Low Emissions	
Methods for Stakeholder Identification	Not disclosed	18	21	39
	Disclosed	3	0	3
Total		21	21	42

B) ANOVA: MDTS across Levels of Sustainability

A one-way ANOVA was conducted to assess differences in Materiality Disclosure Transparency Score across Levels of Sustainability. MDTS was divided into two groups: Low Emissions (Mean = 0.516, SD = 0.262) and High Emissions (Mean = 0.644, SD = 0.199). There are no outliers which was derived from visual inspection of a box plot. The data is normally distributed for each group (Shapiro-Wilk test, $p > 0.05$) and the assumption of homogeneity of variance is met as well (Levene's test, $p > 0.05$). When considering a significance level of 0.1, the Materiality Disclosure Transparency Score differs statistically significant for the different Levels of Sustainability with a small effect according to Cohen (1988), $F(1, 40) = 3.179$, $p = 0.082$, $\epsilon^2 = 0.05$.

Table 1) Tests of Normality: MDTS across Levels of Sustainability

		Shapiro-Wilk			
Level of Sustainability		Statistic	Statistic	df	Sig.
MDTS	High Emissions	.132	.961	21	.547
	Low Emissions	.097	.964	21	.604

Histograms, Q-Q Plots and Box Plot

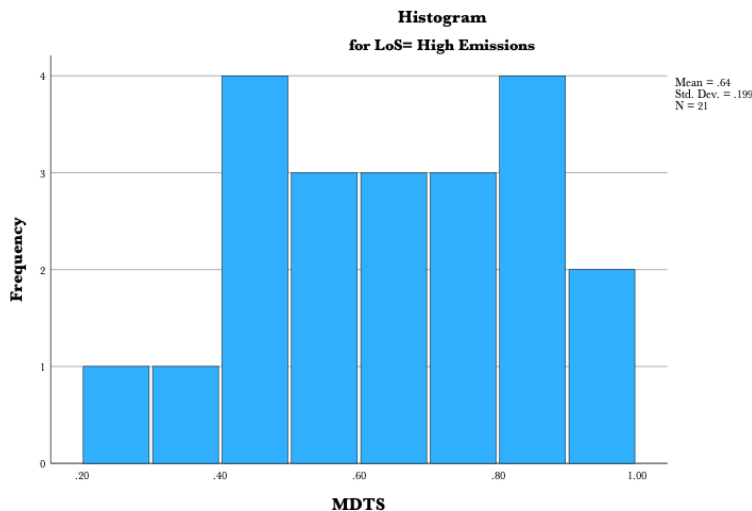


Figure 1: Histogram of MDTS for High Emissions

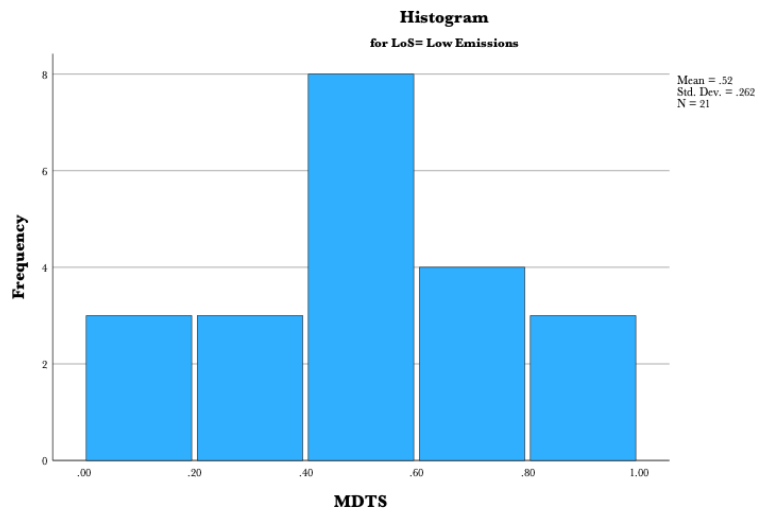


Figure 2: Histogram of MDTs for Low Emissions

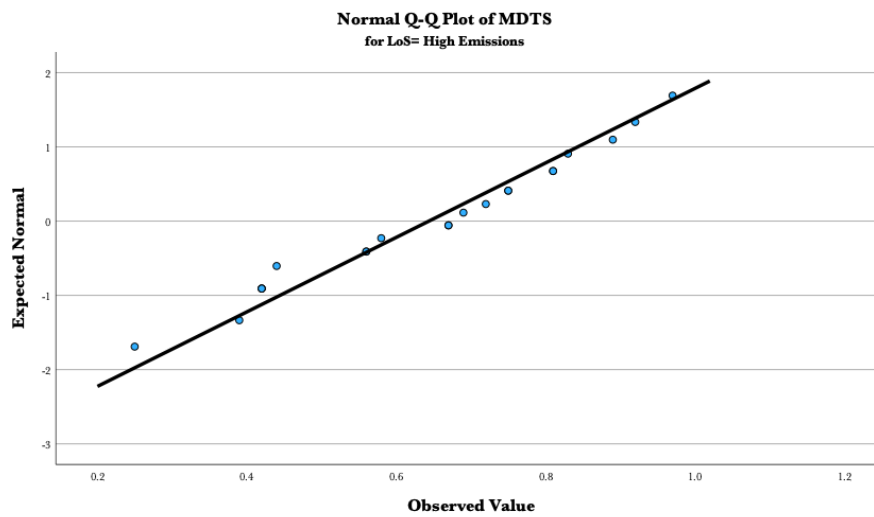


Figure 3: Normal Q-Q Plot of MDTs for High Emissions

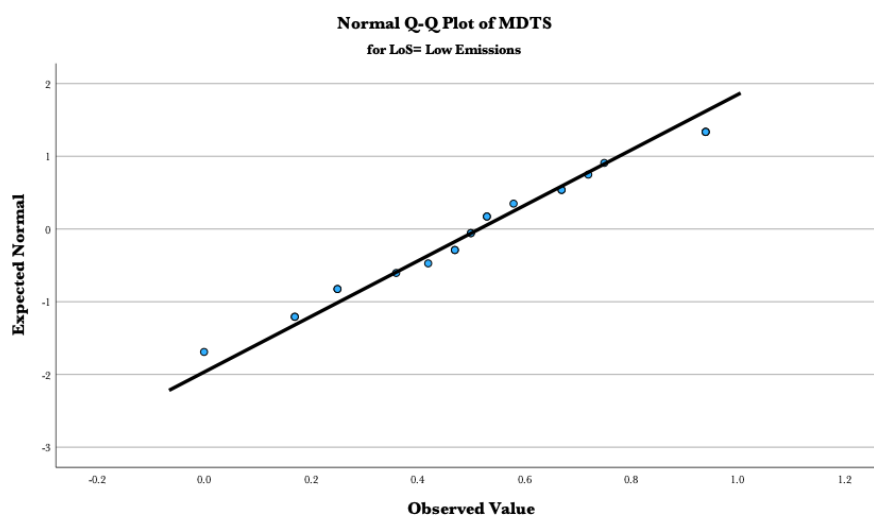


Figure 4: Normal Q-Q Plot of MTS for Low Emissions

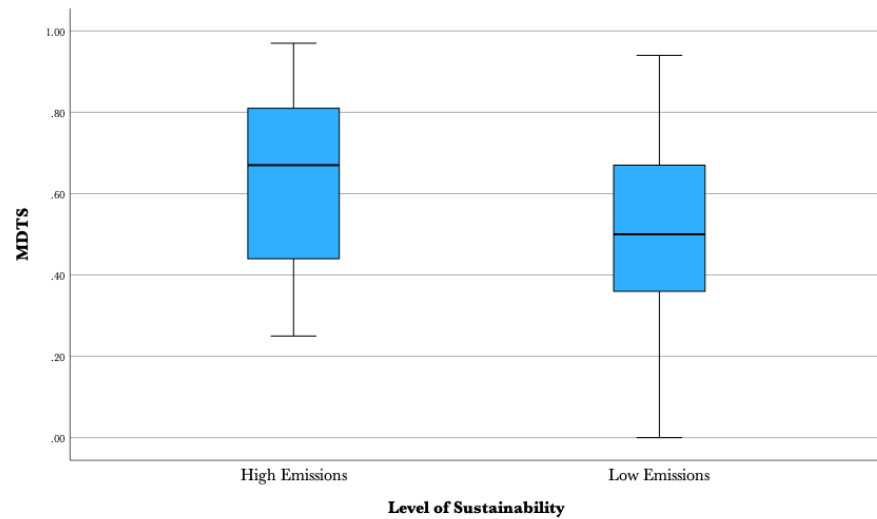


Figure 5: Box Plot of MDTs across Levels of Sustainability

Table 2) Descriptives MDTs across Levels of Sustainability

MDTS

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Low Emissions	21	.5157	.26202	.05718	.3964	.6350	.00	.94
High Emissions	21	.6438	.19931	.04349	.5531	.7345	.25	.97
Total	42	.5798	.23889	.03686	.5053	.6542	.00	.97

Table 3) Tests of Homogeneity of Variances MDTs

		Levene Statistic	df1	df2	Sig.
MDTS	Based on Mean	.670	1	40	.418
	Based on Median	.740	1	40	.395
	Based on Median and with adjusted df	.740	1	35.302	.395
	Based on trimmed mean	.696	1	40	.409

Table 4) ANOVA: MDTs across Levels of Sustainability

MDTS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.172	1	.172	3.179	.082
Within Groups	2.168	40	.054		
Total	2.340	41			

Table 5) ANOVA: MDTs across Levels of Sustainability Effect Sizes^{a,b}

		Point Estimate	95% Confidence Interval	
			Lower	Upper
MDTS	Eta-squared	.074	.000	.253
	Epsilon-squared	.050	-.025	.234
	Omega-squared Fixed-effect	.049	-.024	.230
	Omega-squared Random-effect	.049	-.024	.230

a. Eta-squared and Epsilon-squared are estimated based on the fixed-effect model.

b. Negative but less biased estimates are retained, not rounded to zero.

C) Mann-Whitney-U-Test: Process to determine Material Topics, List of Material Topics, Management of Material Topics, Quantity of Material Topics as well as Quantity of Stakeholder Groups across Levels of Sustainability

For no variable the assumptions for ANOVA like normality for each group were met as shown by conducting Shapiro-Wilk Tests and visual inspection of Histograms and Q-Q Plots. Also, outliers have been identified for QMT which was derived from Box Plots. Therefore, non-parametric tests are conducted.

A Mann-Whitney-U-Test was calculated to determine whether there are differences in List of Material Topics across LoS. The distributions do not differ between groups, Kolmogorov-Smirnov $p > 0.05$. When considering a significance level of 0.1, there is a statistically significant difference in LMT between Low Emissions and High Emissions, $U = 158.00$, $Z = -1.670$, $p = 0.095$.

A Mann-Whitney-U-Test was calculated to determine whether there are differences in Process to determine Material Topics across Level of Sustainability. The distributions do not differ between groups, Kolmogorov-Smirnov $p > 0.05$. There is no statistically significant difference in PMT between groups, $U = 203.00$, $Z = -0.457$, $p = 0.648$.

A Mann-Whitney-U-Test was calculated to determine whether there are differences in Management of Material Topics across LoS. The distributions do not differ between groups, Kolmogorov-Smirnov $p > 0.05$. There is no statistically significant difference in MMT between groups, $U = 178.50$, $Z = -1.075$, $p = 0.282$.

A Mann-Whitney-U-Test was calculated to determine whether there are differences in Quantity of Material Topics across LoS. The distributions do not differ between groups, Kolmogorov-Smirnov $p > 0.05$. There is no statistically significant difference in QMT between both groups, $U = 163.00$, $Z = -1.450$, $p = 0.147$.

A Mann-Whitney-U-Test was calculated to determine whether there are differences in Quantity of Stakeholder Groups across LoS. The distributions do not differ between groups, Kolmogorov-Smirnov $p > 0.05$. There is no statistically significant difference in QS between both groups, $U = 69.00$, $Z = -1.546$, $p = 0.122$.

Table 1) Tests of Normality PMT, LMT, MMT MDTs across Levels of Sustainability

		Shapiro-Wilk		
	Level of Sustainability	Statistic	df	Sig.
Process to determine Material Topics	High Emissions	.797	21	<.001
	Low Emissions	.908	21	.050
List of Material Topics	High Emissions	.817	21	.001
	Low Emissions	.845	21	.003
Management of Material Topics	High Emissions	.839	21	.003
	Low Emissions	.770	21	<.001

Table 2) Tests of Normality QMS across Levels of Sustainability

		Shapiro-Wilk		
	Level of Sustainability	Statistic	df	Sig.
Quantity of Material Topics	High Emissions	.937	21	.189
	Low Emissions	.978	21	.898

Table 3) Tests of Normality QS across Levels of Sustainability

		Shapiro-Wilk		
	Level of Sustainability	Statistic	df	Sig.
Quantity of Stakeholder Groups	High Emissions	.960	13	.757
	Low Emissions	.895	16	.067

Histograms, Q-Q Plots and Box Plot

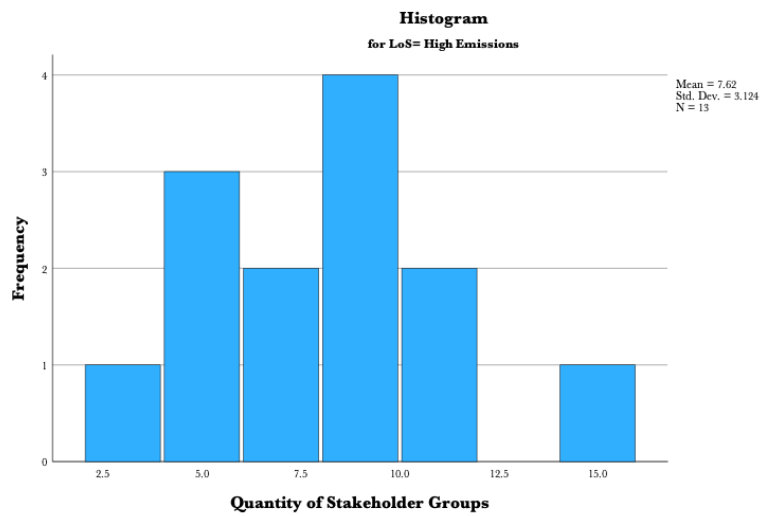


Figure 1: Histogram of QS for High Emissions

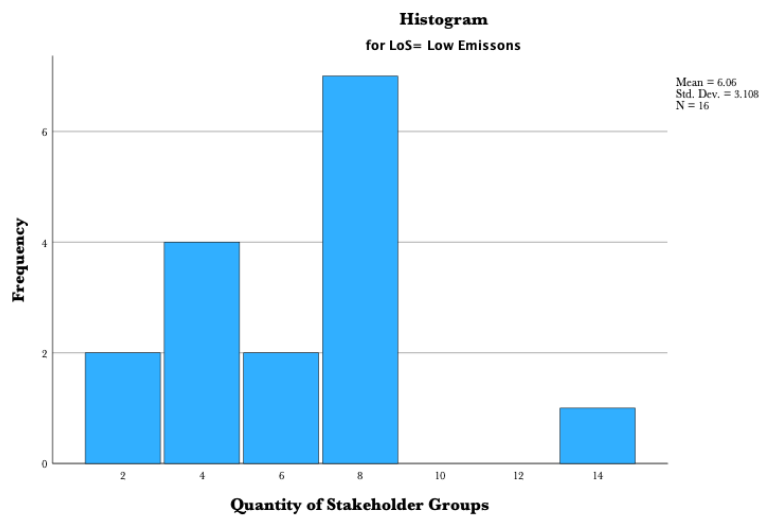


Figure 2: Histogram of QS for Low Emissions

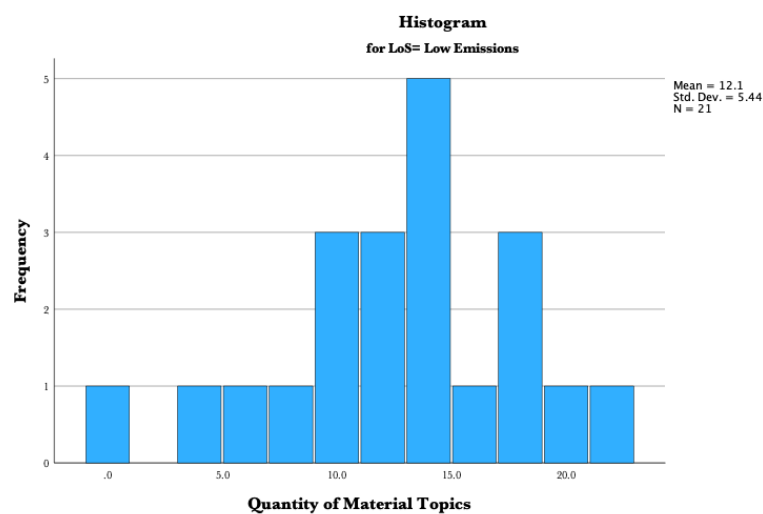


Figure 3: Histogram of QMT for Low Emissions

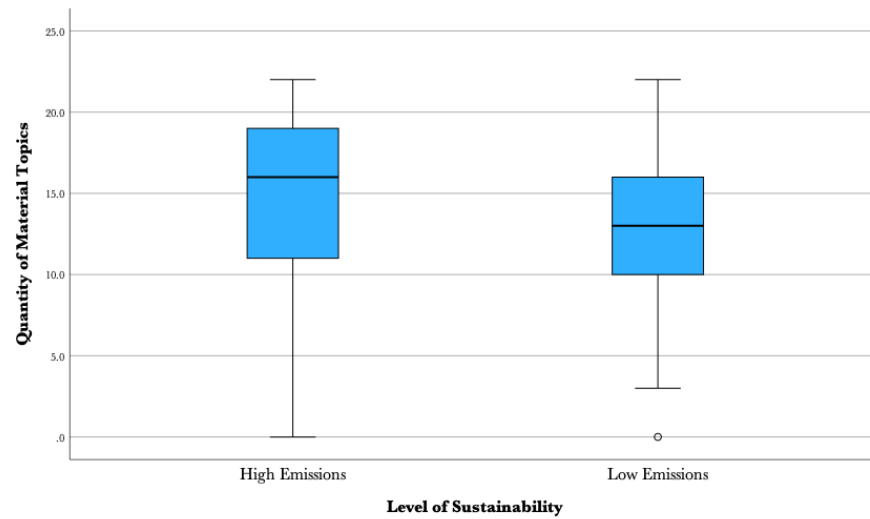


Figure 4: Box Plot of QMT across Levels of Sustainability

Table 4) Distribution Testing PMT, LMT & MMT across Levels of Sustainability

		Zscore(PMT) Process to determine Material Topics	Zscore(LMT) List of Material Topics	Zscore(MMT) Management of Material Topics
Most Extreme Differences	Absolute	.286	.286	.190
	Positive	.095	.238	.190
	Negative	-.286	-.286	-.190
Kolmogorov-Smirnov Z		.926	.926	.617
Asymp. Sig. (2-tailed)		.358	.358	.841

Grouping Variable: Level of Sustainability

Table 5) Ranks PMT, LMT & MMT across Levels of Sustainability

	Level of Sustainability	N	Mean Rank	Sum of Ranks
Process to determine Material Topics	Low Emissions	21	20.67	434.00
	High Emissions	21	22.33	469.00
	Total	42		
List of Material Topics	Low Emissions	21	18.52	389.00
	High Emissions	21	24.48	514.00
	Total	42		
Management of Material Topics	Low Emissions	21	19.50	409.50
	High Emissions	21	23.50	493.50
	Total	42		

Table 6) Mann-Whitney-U-Test: PMT, LMT & MMT across Levels of Sustainability

Test Statistics^a

	Process to determine Material Topics	List of Material Topics	Management of Material Topics
Mann-Whitney U	203.000	158.000	178.500
Wilcoxon W	434.000	389.000	409.500
Z	-.457	-1.670	-1.075
Asymp. Sig. (2-tailed)	.648	.095	.282

a. Grouping Variable: Level of Sustainability

Table 7) Frequencies for Distribution Testing: ZScore of QS across Levels of Sustainability

Frequencies

Level of Sustainability		
Zscore(QuantityofStakeholderGroup s) Quantity of Stakeholder Groups	Low Emissions	N
	High Emissions	
	Total	
		16
		13
		29

Table 8) Distribution Testing of QS across Levels of Sustainability

Test Statistics^a

		Zscore(QuantityofSta keholderGroups) Quantity of Stakeholder Groups
Most Extreme Differences	Absolute	.168
	Positive	.168
	Negative	-.144
Kolmogorov-Smirnov Z		.451
Asymp. Sig. (2-tailed)		.987

a. Grouping Variable: Level of Sustainability

Table 9) Ranks of QS across Levels of Sustainability

Ranks

	Level of Sustainability N		Mean Rank	Sum of Ranks
Quantity of Stakeholder Groups	Low Emissions	16	12.81	205.00
	High Emissions	13	17.69	230.00
	Total	29		

Table 10) Mann-Whitney-U-Test: QS across Levels of Sustainability

Test Statistics^a

	Quantity of Stakeholder Groups
Mann-Whitney U	69.000
Wilcoxon W	205.000
Z	-1.546
Asymp. Sig. (2-tailed)	.122

a. Grouping Variable: Level of Sustainability

Table 11) Frequencies for Distribution Testing: ZScore of QMT across Levels of Sustainability

Frequencies

	Level of Sustainability N	
Zscore(QuantityofMaterialTopics)	Low Emissions	21
Quantity of Material Topics	High Emissions	21
	Total	42

Table 12) Distribution Testing of QMT across Levels of Sustainability

Test Statistics^a

		Zscore(QuantityofMaterialTopics)	Quantity of Material Topics
Most Extreme Differences	Absolute	.190	
	Positive	.190	
	Negative	-.095	
Kolmogorov-Smirnov Z		.617	
Asymp. Sig. (2-tailed)		.841	

a. Grouping Variable: Level of Sustainability

Table 13) Ranks of QMT across Levels of Sustainability

Ranks

		Level of Sustainability	N	Mean Rank	Sum of Ranks
Quantity of Material Topics	Low Emissions		21	18.76	394.00
	High Emissions		21	24.24	509.00
	Total		42		

Table 14) Mann-Whitney-U-Test: QMT across Levels of Sustainability

Test Statistics^a

	Quantity of Material Topics
Mann-Whitney U	163.000
Wilcoxon W	394.000
Z	-1.450
Asymp. Sig. (2-tailed)	.147

a. Grouping Variable: Level of Sustainability

Appendix 13 – Comparison of Results with Machado, Dias and Fonseca (2021)

In the study conducted by Machado, Dias, and Fonseca (2021), several indicators focused on general stakeholder engagement and one particular disclosure that is not included in the latest GRI Standard, which was the basis for the Materiality Disclosure Transparency Score. Consequently, these specific indicators were not assessed in our study, precluding a direct comparison of all indicators.

Table 1) Comparison of Results with Machado, Dias and Fonseca (2021)

MATERIALITY-RELATED INDICATORS from Machado, Dias and Fonseca (2021)	DRIVING QUESTIONS OF THE CONTENT ANALYSIS from Machado, Dias and Fonseca (2021)	PERCENTAGE OF REPORTS WITH EXPLICIT CONTENT from Machado, Dias and Fonseca (2021)	MDTS DISCLOSURE/ COMPONENT	PERCENTAGE OF REPORTS WITH SCORE > 0.5
102-46	Explained the process for defining the report content and the topic/aspect boundaries?	53.6%	PMT	52.4%
102-47	Listed material topics?	95%	LMT1	76.2%