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From Pictures to Perceptions: Exploring the Strategic Use of Visuals in CSR Reports and the Impact of Regulatory Mandates

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Abstract

This thesis explores the strategic use of visuals in CSR reports, comparing companies in the EU and Switzerland. Using automated image classification and clustering, 11,455 images from sustainability reports were analyzed. The study finds that firms in environmentally or socially sensitive industries, especially those with higher CO_2 emissions per revenue, tend to use more images—often aligned with their specific challenges. This suggests that visuals are not merely illustrative but serve to shape corporate perception, potentially diverting attention from negative impacts. The introduction of the EU's Non-Financial Reporting Directive (NFRD) appears to reduce image reliance, indicating a positive regulatory effect on transparency. Overall, the findings highlight that images can be used not just to complement text, but to construct a more favorable corporate narrative. The study underscores the importance of critically assessing visual elements in CSR disclosures, as they may subtly influence stakeholders' perception beyond what is verbally communicated.

Keywords: CSR; image analysis; NFRD; greenwashing; visual communication

1. Introduction

One of the most dominant topics in today's world, both for institutions and for society in general, is the advance of global warming and its consequences (Carletion & Hsiang, 2016). Looking at the most significant contributors to this development, we find that companies and their actions emit a vast majority of the responsible global greenhouse gas emissions. The industry sector alone is responsible for 37 percent of these emissions (Worrell et al., 2009). This reality has led to a heightened focus on the environmental activities of companies and, in the shadow of this development, also on the responsible behavior of companies in general, often referred to as CSR (I use the term CSR interchangeably with ESG throughout this paper. When I mention sustainability, I also mean the realm of CSR[1]). This led to stakeholders calling for greater transparency and accountability through comprehensive reporting (Huang & Kung, 2010)

Due to this increasing pressure on companies, we have seen a sharp increase in the number of companies issuing sustainability reports (Serafeim & Amel-Zadeh, 2017; Stolowy & Paugam, 2018). The qualitative nature of CSR (compared to the more quantitative nature of financial reports) and the fact that different industries are affected differently pose challenges to the readers in extracting the meaningfulness of these reports and comparing them to other companies (Christensen et al., 2021; Serafeim & Amel-Zadeh, 2017). Some countries respond even further to this call for transparency by introducing reporting mandates, such as the EU's Non-Financial Reporting Directive (NFRD). The goal is to increase the comparability and transparency of these reports (Directive 2014/95, recital 1) and create an incentive to drive sustainability efforts (Directive 2014/95, recital 3). While re-

[1] It is important to note, though, that CSR generally refers to a company's voluntary actions to contribute positively to society and the environment, emphasizing ethical behavior and social impact. ESG, on the other hand, is a framework for assessing a company's impact in specific areas of environment, social involvement, and governance, often linked with how these are integrated into the company's operational and strategic management."

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porting can increase transparency, companies also use reports for their own interest, which can manipulate readers' perceptions (Siano et al., 2017). A theory applied to explain this is Legitimacy Theory, which argues that companies use reports to justify their actions and convey that they act according to the greater good of society (Boiral & Henri, 2017; Cho et al., 2009; Suchman, 1995). Following this, it can be reasoned that the use of, e.g., boilerplate language or the deliberate framing of reports can be used to create a positive image of the company while it does not change its behavior (Boiral, 2013; Christensen et al., 2021). The qualitative nature of CSR reports mentioned before makes falsifying claims and distinguishing between actual information even harder. While it could be argued that a mandate would solve this problem by establishing standards, it has been shown in the past that reporting mandates often increase the use of boilerplate language (Dyer et al., 2017).

Besides boilerplate language, the use of images in CSR reports is particularly interesting in this context. Visuals can be potent tools for influencing perception, as they often shift the focus towards them (Tversky, 1974), subconsciously affect one's perception (Posner et al., 1976), and do not offer quantifiable data that can be critically assessed.

This raises the question of how and why companies use images in their CSR reports. To address this, I first investigate the implementation of CSR reporting, its historical context, and the implications of introducing mandates like the NFRD. This is followed by an examination of trends in CSR reporting behaviors in general and the role of visual elements, together with their influence on stakeholder perception.

Building on this foundation, the thesis will explore which specific characteristics of companies influence their use of images in CSR reports and whether a difference emerges in the presence of reporting mandates. By comparing the European Union, with its NFRD mandate, and Switzerland, which lacks such a mandate, we will gain insights into the impact of mandates on the use of visuals within these reports. The reason behind comparing the EU with Switzerland is that those countries, apart from the mandate, face similar societal pressures and operate in a similar environment.

For stakeholders to effectively evaluate CSR Reports, it is essential to have a comprehensive understanding of the underlying motivations and contexts that drive the use of visuals within these documents. Images possess the ability to influence viewers, often on a subconscious level. They can either highlight achievements or divert attention away from unfavorable elements. It is essential to be able to identify instances where images are employed not for clarity but rather to manipulate perception.

2. CSR Reporting: Why it Matters, History and the NFRD

2.1. Increasing focus on CSR

In the corporate landscape, stakeholders play a crucial role in shaping the activities of companies, including those related to CSR. Companies are increasingly expected to operate sustainably and ethically. An example of this development is the Business Roundtable's 2019 statement on the purpose of business. Top US executives decided that a company's primary purpose is not only to serve its shareholders but also its customers, employees, suppliers, and communities (Business Roundtable, 2019). "These executives are responding to mounting pressure that a company needs to do 'good' while doing business, whether that means keeping carbon emissions low, waterways clear, or workers healthy" (Christensen et al., 2021, p. 1177). From a more general perspective, the 17 Sustainable Development Goals (SDGs), a core part of the United Nations (UN) Agenda 30, also indicate a shift in what is expected from companies by governments and society, detailing the topics a CSR initiative can or should be centered around. Even though these are not explicitly published to guideline cooperation's they suggest an attitude change and an enhanced awareness of sustainability topics from society and consequently the consumers.

That consumers are an integral part of a company's business is self-evident. However, in the realm of CSR, consumers also play the most significant role in shaping corporate actions towards CSR activities. A study from Accenture revealed that 68% of CEOs acknowledge consumers as the most influential stakeholder group concerning their sustainability agenda (followed by governments and investors) (Accenture, 2022).

The investor's focus on CSR can be seen in a study conducted by BlackRock (2020). They ascertain that there has been an increase in Assets under Management related to CSR-conforming products from 895 billion in 2015 to 1833 billion in 2020 (only up to September). They further state that for 78% of all investors surveyed, CSR is a central component of their strategy. While the most prominent reason Investors adopt sustainability investing is that it is the "right thing to do", the second and third most mentioned reasons are risk-based (BlackRock, 2020). From this, you can argue that investors recognize the pressure from society and consumers on companies, as misbehavior could negatively affect a company's business.

2.2. CSR reporting as a communications tool

To mitigate these pressures, companies use CSR reporting to convey legitimacy to their stakeholders (Cho et al., 2009). Legitimacy in this sense is defined as "a generalized perception or assumption that an entities actions are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995, p. 574), and thus serving as a critical pillar in corporate communication strategies and the maintenance of a positive corporate image. This concept can also be observed in traditional financial reporting. Davison & Warren highlight that "Annual reports are almost universally used as a means of molding corporate identity and reputation" (Davison & Warren, 2009, p. 846).

Furthermore, Erickson et al. (2011) examine how companies use reporting to strategically manage information, especially during times of crisis or when facing adverse events.

They found that reports can be used to shape stakeholder perception and reduce potential adverse reactions, thereby preserving legitimacy and a positive corporate image. Voluntary reporting can also serve as a means to decrease external costs or pressure from stakeholders, allowing companies to proactively defend and restore their image in the case of misbehavior or wrongdoing (Tate et al., 2009). In essence, CSR reporting is a strategic tool to enhance legitimacy and corporate image by demonstrating its commitment to sustainability, addressing expectations, and potentially altering perceptions of its performance and ethical stance (Boiral & Henri, 2017). From this perspective, it can be explained why companies that don't perform well still find it essential to report on CSR. By reporting, they seek to maintain trust and credibility with their stakeholders (Nielsen & Thomsen, 2018).

As mentioned in the preceding chapter, investors' growing focus on CSR can be seen as another significant factor for companies to issue CSR reports. As more capital is invested in ESG-conforming assets, these investors consequently demand information about this realm. Not being transparent by not disclosing CSR information would lead investors to neglect the company when searching for ESG-conforming investments. Hence, CSR reporting also becomes more critical from a classical shareholder perspective.

Therefore, the increase in public awareness and pressure is also reflected in the number of companies that publish CSR reports seeking to legitimize their activities. The share of companies disclosing CSR information rose between 2002 and 2015 from 10% to 80% in the EU (regarding companies from the EuroStoxx600) and from 10% to 60% in the US (regarding companies in the S&P 500) (Stolowy & Paugam, 2018). Another study found that between the early 1990s and 2016, the number of companies issuing some form of sustainability reporting increased from around 20 to almost 900 (Serafeim & Amel-Zadeh, 2017).

2.3. Differences from traditional reporting

Despite their similarity in function, traditional (financial) reporting and CSR reporting differ significantly in many aspects. In the following section, we will look at some key differences.

First and most apparent, externalities play a central role in CSR reporting. The information disclosed is not only about the company itself but also its environmental and societal impact. It could also extend outside traditional boundaries, for example, "when a firm imposes child labor restrictions on its supply chain" (Christensen et al., 2021, p. 1186).

Furthermore, the readership of CSR reports is potentially much larger than that of financial reporting. As discussed in the previous chapter, there are more stakeholders engaged in the CSR dimension of a company, making it more challenging to address all the interests of these diverse stakeholders. Moreover, some stakeholders, e.g., customers, are less experienced in reading corporate reports and use the information for different purposes than traditional investors, mainly evaluating the company's contribution and adherence to their norms and values (Christensen et al., 2021).

The diversity of topics addressed by the reports is another differentiating factor. As the concepts of CSR and sustainability are not clearly defined, they include a wide range of ESG topics, actions, and policies. They also differ substantially between different industries, nations, and companies (Christensen et al., 2021). Each company might implement different solutions or approaches to address CSR-related topics. While many of these activities might result in technical or measurable outputs (like the total amount of CO2 Emissions), they cannot be measured in traditional monetary terms. Also, there are still other actions or activities that cannot be quantified at all. CSR is often seen as a strategic endeavor that prioritizes long-term advantages for a company over immediate financial gains (Benabou & Tirole, 2010); these long-term activities are often qualitative (Christensen et al., 2021). This situation makes it difficult to apply standard reporting practices like double-entry bookkeeping, resulting in a variety of different formats, making comparisons and standardization difficult (Christensen et al., 2021; Kitzmueller & Shimshack, 2012).

Due to the diversity of users and topics, a broad spectrum of interests and preferences originates internally and externally from the company. As a result, CSR reports serve a variety of functions that might differ over time, for example, when social activists target the firm or when exogenous shocks, such as a natural catastrophe, occur (Baron, 2001; Bonetti et al., 2023; Christensen et al., 2021). When targeted by a group (or when conceived to be targeted), the company might strategically use the report to (proactively) defend itself against (potential) claims.

Stemming from these differences, the key issues are the heterogeneity of the published reports and the hardly quantifiable metrics. This heterogeneity leads to difficulties in comparing companies against each other (Christensen et al., 2021), which is one of the central goals that readers, especially investors, try to accomplish when evaluating CSR reports. This is highlighted by a BlackRock study where Investors stated that the biggest challenge for them to adopt sustainable investing is the "Poor quality or availability of ESG data and analytics" (53% of respondents) and "Poor quality of sustainability investment reporting"(33% of respondents) (BlackRock, 2020). Serafeim and Amel-Zadeh (2017) also support this narrative; they point out that the biggest challenge to using ESG information is the lack of comparability. Further, they also suggest that the quantification and reliability of the reported information are major challenges.

Several developments have tried to standardize reporting practices and establish greater comparability to address this issue, mainly through the development of guidelines and reporting mandates. These are expected to improve homogeneity, at least within an industry (Christensen et al., 2021).

2.4. Homogenization approaches

As the need for detailed and homogenous CSR disclosures increases, several organizations have initiated efforts to

establish voluntary reporting standards to enhance the consistency of reports published. For example, the Sustainability Accounting Standards Board (SASB) developed "industry-specific disclosure standards across financially material environmental, social, and governance topics" (Christensen et al., 2021, p. 1177). This approach focuses more on the integration of ESG reporting into financial reporting. This standard aims to guide companies in 77 different industries, allowing them to identify, manage, and communicate sustainability information to investors. Initially developed for SEC[2] filings and tailored to these specific requirements, the guidelines are also used globally.

Similarly, the Global Reporting Initiative (GRI) aids companies in communicating their impact on critical sustainability issues by developing global standards for sustainability reporting. The difference here is that the range of topics disclosed is more extensive, as these guidelines are not restricted to only financially material information but also encompass externalities and take a more general approach to the sustainability impact of companies. It is also designed with a globally applicable usage in mind. These efforts reflect a movement towards greater uniformity within industries, as they provide frameworks that companies can follow (Christensen et al., 2021).

Some countries and regions have decided to take CSR reporting practices and their importance even further. The EU also did so with its Non-Financial Reporting Directive (NFRD), which the European Parliament passed on 15 April 2014 (Directive 2014/95). This directive mandates publicly listed companies with over 500 employees and either assets exceeding 20 million EUR or sales over 40 million EUR per year to produce non-financial (CSR) reports, starting with the fiscal year 2017. Hence, the first reports under this directive were published in 2018 (Fiechter et al., 2022). The NFRD opts for a double materiality perspective, similar to the GRI, not only considering financially material information but also externalities and how their activities affect society and the environment (Christensen et al., 2021). This encompasses policies, main risks, and outcomes concerning environmental matters, social and employee aspects, human rights, anti-corruption, and diversity on the board of directors (Fiechter et al., 2022). The goal of the directive is to increase the transparency of the reported information across all member states and sectors (Directive 2014/95, recital 1), as well as setting an incentive for companies to engage in ESG-related activities (Directive 2014/95, recital 3) as neglecting the achievement of ESG related goals would be recognized and "punished" by investors and society. Additionally, the "disclosure of non-financial information helps the measuring, monitoring, and managing of undertakings' performance and their impact on society" (Directive 2014/95, recital 3).

Despite these advancements, both guidelines and mandates leave considerable room for individual interpretation and framing. Voluntary guidelines allow companies to selectively disclose certain aspects, tailoring their reports to reflect favorable characteristics while potentially omitting less favorable ones. Similarly, even mandatory directives can only partially standardize reporting due to the inherently qualitative nature of some data and the varied quantitative assessments that different companies might use. Also, it has been shown that mandates, in general, increase the use of boilerplate language and, hence, loss of report readability (Dyer et al., 2017). This might also be true for CSR reporting and perhaps be even more prevalent as the content is, by default, more qualitative, which could blur facts and talk even more. There is also a lack of detailed EU documentation or guidance on enforcement at the country level, which can lead to inconsistencies in how these regulations are applied (Fiechter et al., 2022).

This chapter highlighted why companies report on CSR-related topics, the complexity of CSR reporting, and approaches taken to harmonize reporting practices. While guidelines and mandates push companies towards greater transparency and accountability, they also require careful consideration to ensure that reports genuinely reflect the company's impact rather than merely conforming to the letter of the law. In the following chapter, we will look at trends and determinants considering the extent and content of CSR reports and the possible effect of the NFRD before we take a closer look at the role of visuals, in particular pictures, in CSR reports. This will lay the foundation for my (picture) content analysis of ESG reports, focusing on the EU and Switzerland.

3. Trends in CSR Reporting

Building on the foundation set in the previous chapter, we will dive deeper into the practical implementation of CSR reporting and the factors that shape reporting outcomes. As we have seen, the central characteristic of these reports is the inherent heterogeneity in what companies report voluntarily. Reporting standards intend to reduce the problem, but as Christensen et al. (2021) highlight, companies' adherence to these guidelines varies significantly. This is because, apart from standards, several factors influence reporting practices and outcomes. These include managerial incentives and other institutional arrangements. This implies that reporting also follows its own agenda and aligns with the previous theoretical discussions. Also, with the introduction of mandates aimed at enhancing uniformity, there are still challenges in aligning stakeholder expectations for transparency with actual business practices. These mandates often increase boilerplate language, as observed in various regulatory contexts like the K-10 disclosures in the US. This increase in generic content can reduce the specificity and readability of reports, potentially diluting the effectiveness of these disclosures in conveying clear and actionable information and obscuring specific data behind generic descriptions (Christensen et al., 2021; Dyer et al., 2017).

Furthermore, firms tend to focus predominantly on positive achievements in their reports while failing to critically engage with negative aspects, which can mislead the reader

[2] United States Securities and Exchange Commission

about the true state of CSR performance (Boiral & Henri, 2017). Other researchers made similar findings, pointing out that CSR communication can manipulate the reader, being decoupled from actions and attempting to benefit from a sustainable image without changing the company's actual practices (Siano et al., 2017). This aligns with my theoretical foundation that Legitimacy Theory and trying to create a positive picture of the company are key drivers in CSR reporting.

3.1. Determinants and Trends of CSR Reporting

When looking at the variability in CSR reporting and exploring its patterns, several determinants can be found that influence reporting behaviors. These include company size, industry characteristics, corporate performance, and litigation risk. These factors shape companies' strategic reporting behaviors and significantly influence how firms approach their CSR disclosures.

Company Performance: Companies showing a strong ESG performance are often more transparent and tend to disclose more numerical data and actual information that provides a clear view of their sustainability initiatives. Thereby providing a positive but accurate image of their performance. Similarly, a study of the disclosure of environmentally sensitive companies in China found that companies with better environmental performance report more on environmental matters and disclose more quantitative information (He & Loftus, 2014). In contrast, companies with relatively weaker performance may rely more on qualitative statements and use the reports to strategically project a positive image, thereby obscuring the reader (García-Sánchez & Araújo-Bernardo, 2020).

Influence of Company Size: The size of a company has a significant effect on reporting practices. It is, in fact, one of the determinants that have been consistently found to have a positive influence on sustainability reporting. Larger firms tend to have higher visibility and are assessed more thoroughly by stakeholders; thus, they are incentivized to extensively cover CSR topics. Christensen et al. (2021) highlight that the breadth of the issues addressed in CSR reports directly correlates with company size, with larger firms likely facing more media exposure and stakeholder pressure. Other papers support this finding by pointing out that the size of a company is a critical internal determinant that positively influences sustainability reporting, primarily because larger companies are more visible and, hence, more thoroughly investigated (Hahn & Kühnen, 2013).

Financial performance: Some researchers also found a positive correlation between a company's profitability and environmental disclosures, specifically suggesting that more profitable companies may have more resources to allocate toward disclosing environmental information. (Gamerschlag et al., 2011)

Industry Characteristics and Litigation Risk: The industry in which a company operates and the associated risks of that industry also influence reporting behaviors. High-polluting industries (environmentally sensitive industries) report more extensively on CSR activities and information (Gamerschlag et al., 2011), possibly to mitigate potential backlash or regulatory controls. Similarly, Grougiou et al. (2016) found that companies in socially or environmentally sensitive industries – often referred to as "sin" industries – tend to report more on indicators that show socially responsible business practices. They argue that firms with significant litigation risks are more likely to use CSR reporting to build a responsible corporate image, potentially to mitigate backlash and minimize the direct or indirect costs of legal challenges. Another study found that companies in controversial sectors (here referring to socially sensitive industries) focus their reports more on community and people's achievements to enhance their legitimacy despite the negative impacts of their products or services (Byrd et al., 2017).

Selective reporting and Manipulation: As indicated at the beginning of this chapter, Guidelines, like the GRI, developed to increase transparency in CSR reporting, still must be critically assessed when it comes to their application. A Study focusing on companies that received the highest rating from the GRI initiative (A or A+ rating)[3] discovered that there was still a significant underreporting of adverse events, violating GRI principles of balance, completeness, and transparency. This underreporting and the tendency to emphasize positive achievements over negative ones suggest that some firms attempt to maintain a positive corporate image rather than providing genuine transparency. Due to the inconsistencies in reported data and the qualitative nature of many GRI indicators, the challenges in the comparability of CSR reports have to be recognized even in the face of Guidelines (Boiral, 2013).

In this subchapter, we have examined the determinants influencing CSR reporting practices. Moving forward, we explore the specific impacts of reporting mandates using the NFRD as an example, exploring how they influence corporate behavior and the integrity of CSR disclosures.

3.2. Effects of a reporting mandate (NFRD)

The implementation of the NFRD has marked a significant shift in ESG reporting standards and practices in the EU, with the aim to enhance transparency and comparability across firms. There are several findings that indicate its (partly) success. A study among Spanish firms from 2013-2018, for example, found that there has been a significant increase in companies adhering to the GRI standards, indicating an improvement in transparency directly influenced by the directive. (García-Sánchez & Araújo-Bernardo, 2020)

A more detailed analysis across a broader spectrum of EU companies by Fiechter et al. (2022), studying the effects of the NFRD, noted an increase in reporting transparency beginning in 2014, the year the resolution was passed. With their

[3] Levels A+ and A are the most demanding and complete levels of use of this reporting system. For instance, Level A assumes that the sustainable development report considers each core and sector supplement indicator. Level A+ assumes, in addition, that the report is audited by a third party (GRI, 2006; Boiral and Henri, 2017, p. 5)

research focusing on the years 2011 to 2018, they highlighted that no significant increase in transparency was observable before 2013, suggesting that this effect is also attributable to the NFRD catalyzing these improvements.

The distribution of the mandate's impact was not consistent across all dimensions of CSR. Although there was a notable rise in CSR activity, as measured by the combined social and environmental scores, the effect was only statistically significant for the social score when analyzed independently (Fiechter et al., 2022). The limited impact on the environmental score could be attributed to longer implementation times and the long-range nature of environmental initiatives. Additionally, the most substantial enhancements were observed in companies categorized as "high exposure" – those with lower levels of transparency and activity prior to the mandate (lower than the median of observed countries before 2014). These firms also showed improvements in their environmental activities by 2018, indicating that the NFRD has been particularly effective in enhancing reporting and CSR practices among firms that were initially less compliant (Fiechter et al., 2022).

Additionally, the directive seems to positively affect investments into CSR infrastructure. Companies with a higher exposure prior to the NFRD engaged more in establishing an internal CSR Committee and launching social initiatives, often followed by an increase in the ESG Score (Fiechter et al., 2022).

Despite these positive changes, they acknowledge that there is no detailed EU documentation or guidance on the enforcement of these standards at the country level, which could impact the consistency and effectiveness of the NFRD's implementation across member states (Fiechter et al., 2022).

3.3. Preliminary Reflections on the Role of the Visuals in ESG Reports

While the NFRD has improved transparency in CSR reporting, the usage of pictures was not included in the analysis. However, the use of images is interesting. Studies highlighted that pictures in the context of CSR reports could be used for greenwashing (Chong et al., 2019) by overshadowing less favorable environmental or social impacts, potentially leading stakeholders to misinterpret a company's actual practices and performances.

Moreover, other studies discuss how boilerplate language, which increases in the face of mandates, can be used for greenwashing in CSR reports (Christensen et al., 2021). While they do not specifically mention visuals, images can amplify this effect, and if noninformative, could be seen as a type of boilerplate itself. Visuals can emphasize positive aspects or downplay negative ones, subtly shaping stakeholder perceptions and potentially enhancing the impact of boilerplate content.

In addition, when it comes to greenwashing, it has been shown that passive greenwashing, in contrast to active greenwashing[4], is perceived as less severe and induces smaller negative effects. In addition, communications compared to action greenwashing has been identified to have a smaller negative effect in the scope of passive greenwashing. Thus, passive greenwashing through communications has been found to be the least severe form of greenwashing (Gatti et al., 2021). The usage of pictures is most likely to be attributed to that category and is perhaps even more subtle, making it important to understand the effects and intentions with which pictures are used.

We preliminarily highlighted the role visuals might play in CSR reporting, indicating that while they may enhance the clarity of reports, they could also be used to create a favorable (false) image. The next chapter will discuss the psychological and communicative effects of visuals, examining how they influence perception. Following that, we will review existing research on the uses of visuals in CSR reports to establish a foundation for my analysis.

4. The Significance of Visuals in Perception

4.1. Impact of Visuals on Perception and Cognition

The human brain processes visuals in evolutionarily older areas of the brain (Harper, 2002), indicating their importance in shaping our perception and cognition. We also pay more attention to visuals than we do to text (Tversky, 1974) - often at a subconscious level where their subtle influences bias our perception without explicit awareness (Posner et al., 1976). In general, visuals help in memorizing and have a more powerful place in memory (Vasue & Howe, 1989), but when we process and focus on too many visuals, it can potentially lead to cognitive "overloading" and, thus, distract from key information (Tversky, 1974).

Visuals can play a crucial role in forming aesthetic appeal, which in turn influences how individuals perceive information. Research has demonstrated that aesthetics have the power to generate a positive impression, making them highly valuable in the realm of corporate communication (Legendre et al., 2020). A study conducted by Townsend and Shu (2010), provides evidence of this phenomenon. In the study, investors were tasked with evaluating the value of a fictitious company based on its annual report, with the level of aesthetic elements (such as the quantity, size, and color of pictures/images) varying across different groups. They observed that aesthetics impacted the judgment of investors about the company to the same extent as financial metrics, revealing that even experienced stakeholders can be influenced by the design choices of annual reports. Another interesting observation is that when investors have been made aware that aesthetics could influence their valuation[5], the effect diminishes (Townsend & Shu, 2010), strengthening the argument that the influence of visuals is often subconscious.

[4] Active greenwashing refers to companies intentionally creating false information, while passive greenwashing refers to covering up information (Gatti et al., 2021)

[5] By asking the investors beforehand how much they think that asthetics influence their decsison together with other factors like profitability etc.

These findings are crucial for understanding how companies might leverage photographs to enhance their corporate image.

4.2. Strategic Role of Visuals in Corporate Narrative Construction

There are two primary purposes that visuals can serve in reporting. On the one hand, they can enhance written information by visually representing "reality" (describe). On the other hand, they have the power to create and convey their own message (construct) (Davison, 2015). Visuals can construct complex narratives, which are vital in shaping an organization's identity and influencing how stakeholders perceive it (Preston et al., 1996). However, because visuals have the capacity to create and manipulate reality, it is important to approach them critically.

Davison (2010) discusses an example of the complex messages transported through images in the context of Business portraits. They serve to provide a human face to the organization, thereby establishing a connection with the company and increasing investor confidence and customer loyalty. They are also used to "brand" the top executives and, therefore, the company as reliable, competent, and ethical (Davison, 2010). Repeating a theme throughout a document enhances the ability of visuals to construct. As they become more familiar, recognition and retention are increased, favoring the perception of the company (and their practices, depending on the theme) (Davison, 2008).

Due to their potent ability, the use of visuals is not without concerns. Cho et al. (2009) express that visuals could potentially mislead stakeholders by overshadowing or distracting from the actual content. Their study showed that adding pictures to a text-only representation on corporate websites leads to a significant increase in perceived social responsibility without altering the actual information being represented. This change in perception, achieved solely by adding pictures, could give rise to potential greenwashing. This effect of pictures can likely also be extended to communication via CSR reports. With this, we now continue by looking at what has already been found out about the usage of pictures in ESG reports.

5. Insights into the Use of Visuals in CSR Reports

The previous chapters give reasons to believe that visuals are not only integrated into CSR reports for aesthetic or explanatory reasons but also serve a crucial role in the preparation of reports (Invernizzi et al., 2022). Over the last few years, there has been an increase in the number of pictures used in CSR reports (Chong et al., 2019). Despite these developments, this area has only been touched upon by a few studies (Davison, 2015).

5.1. Strategic Use of Visual Content in CSR Reports

From the viewpoint of legitimacy theory, organizations use CSR reports to strengthen their public image and market position. Images seem to be a central part of this strategy. Rämö (2011) highlights that photographs in CSR reports serve to support the narrative of responsibility and ethical behavior, showcasing the commitment to societal values and integrity. Similarly, Invernizzi et al. (2022) conclude that these images paint a picture of competence and achievement in the economic and CSR realm.

This attempt to portray competence and achievement leads to a significant bias towards predominantly using positive images and creating an idealized view of the company, downplaying negative effects (Boiral, 2013) and, as indicated in the previous chapters, could mislead the reader about the actual company's performance. Particularly striking is that the images almost occupy the same amount of space as the textual content in CSR disclosures (Boiral, 2013). This bias of visuals and the large space they occupy can distance the report from actual sustainability performance, potentially enhancing the company's image at the expense of transparency. Furthermore, it has been observed that less sustainability-driven companies additionally use generic, non-specific images, symbolically aligning themselves with sustainability themes and enhancing their image. This approach can be seen as a form of greenwashing, as the portrayed and actual sustainability performance and attitude don't align (Hrasky, 2012).

5.2. Analysis of Visuals in CSR Reports

Regarding the content of the pictures being used, the social dimension is the most frequently depicted, followed by the environmental. Notably, Invernizzi et al. (2022) found that on average, 2.38 photos per report depict an environmental theme and 7.47 a social one. Another finding from their study is that regarding readability and perceived legitimacy, the optimal number of pictures per page is about one per page.

Another study focuses on the size and color of the pictures being used while differentiating between standardized (report on all GRI indicators) and non-standardized (do not report on all GRI indicators) reports. Less standardized reports tend to use larger, more colorful, and overall, more images, potentially compensating for the lack of substantive information (García-Sánchez & Araújo-Bernardo, 2020), further complementing the viewpoint that companies use images strategically to form impressions.

Following an industry-specific focus, Chong et al. (2019) find that companies from "sensitive" industries in New Zealand, such as energy, mining and construction, property, agriculture, fishing, and transport, use more pictures depicting an environmental theme, again possibly to enhance the perception of their environmental performance and to address stakeholder expectations.

Together with the preceding chapters, these insights highlight the importance of understanding what factors determine companies' use of images and the rationale behind this behavior.

In the following, I will concretize the research question and look at the data used for the analysis, the methodology

applied, and the research design before evaluating the results.

6. Methodology and Data

6.1. Data Collection

For the analysis, I gathered two types of data. One is the information about the pictures in CSR reports, which I will call "primary data" in the following, and the other is supplementary data encompassing company-specific metrics on a yearly basis (e,g., about the industry, financial metrics, ESG-related information, and company characteristics), this will be called "secondary data".

The companies I have initially considered include all companies from the STOXX Europe 600 (EU companies) that were part of the index in all years between 2011 and 2020, and all companies from the index SMI Expanded (Swiss companies)

To gather the primary data in a format suited for analysis, I used the Google Cloud Vision AI (Google, 2024) to first detect each picture from the reports and then automatically create a list of labels (in most cases consisting of 10 unique labels) that describe its contents. The information gathered was then stored on a "company-year-picture level". What is to be noted is that I only considered sustainability reports published separately from the annual financial report to be able to distinguish between financial and ESG information clearly and automatically.

The secondary data was retrieved from the LSEG Workspace (former Refinitiv), comprising a broad range of metrics for my desired financial and ESG dimensions. I further enriched this (secondary) data by adding dummy variables indicating whether a company operates in an environmentally or socially sensitive industry and is operating close to its customers. This classification was done at the industry level (ICB Codes). Industries considered environmentally sensitive were chosen based on the classification of Branco and Rodrigues (2008) but adjusted to the ICB Codes and adjusted to include airlines. They encompass the following: Airlines, Construction and Material, Oil, Gas and Coal, Electricity, Gas, Water, and Multi utilities, and Basic Materials. Similar socially sensitive industries are based on the classification from Brammer and Millington (2005), again adjusted to the ICB Codes, and encompass Pharmaceuticals, Tobacco, Alcohol and Soft drinks, Defense, and Basic Materials. Industries operating close to their customers are again based on the classification used by Branco (Branco & Rodrigues, 2008), adjusted to the ICB Code classification, and additionally considering media, they encompass Telecommunications, Consumer Products and services, Media, Retailers, Consumer Staples, Electricity, Gas, Water, and Multi utilities.

A complete overview of the considered metrics, their explanation, and their availability can be found in Appendix A.

6.2. Picture Classification

I propose a unique approach that is different from manual content analysis, as I first leverage the Cloud Vision AI (Google, 2024) to automatically detect and describe the images and then use a Natural Language Processing (NLP) model to embed these descriptions in a vector space suitable for clustering methods, which are then applied. This approach enabled me to analyze a total of 11.455 pictures.

The list of labels describing each picture for every company every year, created by the Cloud Vision AI, constitutes the basis for my picture classification approach. I treated this list as a sentence for the NLP to be able to capture the semantic meaning of each label in the context in which it is being used. The model that was opted for is MPnet, which is built upon the architecture of BERT and published in cooperation with Microsoft Research. I chose this model as it effectively addresses BERT's limitations in handling token dependencies and position information, leading to significantly improved performance on a variety of language understanding tasks (Song et al., 2020). Using MPnet, I created word embeddings for each Label List; after some tryouts, I identified that a reduction in the dimensionality was necessary to better capture the semantic similarities between the embedded Lists. Here, I identified that a Principal Component Analysis (PCA) reduction (Wang, 2019) of 0,7 delivered the best results in reducing the high dimensionality while keeping enough information to properly distinguish their semantic meanings.

To create clusters based on these embeddings, I used k-means clustering. To find the right number of clusters, I followed two steps. In the first step, I used the Elbow Method (Humaira & Rasyidah, 2018) to define the range where the optimal number of clusters lies. The analysis showed that the inflection point is between 5 and 30. In the next step, I only considered this range, so I looked at the Silhouette Score and Davies Bouldin Score (Yilmaz et al., 2007) for each k in that specified range as a measurement for cluster quality. I identified the three clusters with the best results based on these measurement scores and further assessed them through sample testing. After this assessment, I opted for 15 initial clusters[6]. The sample testing gave insights into further manual adjustments that could be made via the consolidation of clusters and reallocation through keywords. The consolidation took place after the reallocation and can be seen in Figure 1, together with the initial and final clusters and their respective names. The reallocation was done in three steps.

First, I created a new Cluster containing images showing renewable energy generation. I identified that if a label in the label list contains the words "wind" or "solar" while not being in the defined exclusion list[7], it can be allocated to this new category.

In the next step, I identified 4 clusters (2, 8, 9, 13) containing images depicting modes of transportation that belong to Cluster 9. Here, I also identified a list of keywords[8] and an exclusion list[9] where if a label contains a word in the keyword

[6] Silhouette Score: 0,162; Davis Bouldin Score: 1,865

[7] Exclusion List for Renewable Energies: ['window', 'windshield', 'windbreaker', 'windscreen', 'wind instrument', 'wind wave' ,'wind']

[8] Keywords Transportation: ['boat', 'transport', 'air', 'ship', 'rail', 'rolling stock', 'naval']

[9] Exclusion List Transportation: ['boats and boating–equipment and sup-

list and is not in the exclusion list, the label gets reallocated. The rest of Clusters 8 and 9 were kept, and Clusters 2 and 13 were further refined.

Cluster 2 now only had a few pictures left depicting nature, so I allocated the rest of the Cluster to the Cluster for nature images (Cluster 4). Similar to the approach applied to Cluster 2, I also used a keyword-based filtering process for Cluster 13. Specifically, if the label list contained one of the keywords 'urban design', 'city', or 'skyscraper', the respective images were allocated to the cluster depicting urban design. The remaining images in Cluster 13 were then reallocated to Cluster 4, which contains images of nature.

Following this and the consolidation, I further summarized the clusters into three categories: Environmental, Social, and Corporate Excellence. This final consolidation can be seen in Figure 1.

6.3. Company Matching

I opted for a direct mapping approach to create comparable groups between the EU and Switzerland. In a first step, I filtered out companies that reported (published a separate sustainability report) less than four times between the years 2014 and 2020. In the next step, I performed a full join on all companies from the EU and Switzerland that fulfilled the criteria based on their two-digit ICB (Industry Classification Benchmark) Codes. This allows companies to be matched to more than one counterpart from another region.

Following this, I filtered these matches based on their percentage difference in revenue. Only matches with a difference smaller than 20 percent were kept, and the companies that resulted from these matches were defined as my sample. Table 1 shows the number of companies reporting in each year between 2013 and 2020, differentiated by region and in total. Appendix B shows the distribution of the companies between the two-digit ICB Code names, also differentiated by region and total.

7. Analysis and Results

7.1. Research Question and Design of the Study

In my analysis, I want to explore the amount and type of pictures companies use in their CSR Reports, whether there are determinants that influence this decision, and test whether I can see a difference between the usage in the EU and Switzerland, potentially due to the introduction of the NFRD.

I follow an exploratory approach in my analysis, but I expect to see several things based on the literature. Companies that are either in a sensitive industry or have a comparably worse ESG performance might increase the number of pictures being used to create a positive image of the company by directing attention more to the pictures and not the actual information. Similarly, I expect companies to use a higher ratio of picture themes in areas where they might face the most attention, either through their industry sensitivity or poor sustainability performance. Lastly, as the introduction of the NFRD led to increased reporting transparency (Fiechter et al., 2022), I expect to see the same regarding picture usage. I define Transparency in this setting as a decrease in the number of images being used.

I will structure my analysis in two separate parts. In the first part, I don't consider the region (EU and Swiss) where a company is listed. I utilize the whole dataset to analyze the determinants of picture usage in ESG reporting via descriptive statistics and regression models. In the second part, I examine the differences between the two regions to determine the treatment effects of introducing a reporting mandate (NFRD). Here, I will start with an overview using descriptive statistics and graphs. Then, I will test whether these findings are significant using statistical tests and a difference-in-difference regression approach, outlined in detail in the analysis. When a variable I use is inside the expression "log(...)", I use the natural logarithm of this variable for the analysis.

7.2. Determinants of Picture Usage in CSR Reports

7.2.1. Analysis of Photographs by Page Count

I start my analysis by looking at the average number of pictures being used. In Table 2 we see that companies on average use 0.506 pictures per report, while companies in the EU (0.576) tend to use more pictures than companies in Switzerland (0.400), thus giving me reason to believe that region is a first determinant of picture usage. Differentiating the usage by year, shown in Figure 2, shows that the difference between the regions remained roughly constant until 2017-2018. From this point onwards, Swiss companies seem to have closed this gap, which will later be explored in section 7.3.

To test whether the region is a significant determinant and find further ones, I used a backward elimination (linear) regression approach. I started with a linear regression including all variables[10] that might influence "Photograph by Page Count". I stepwise eliminated variables showing the highest P-Values, which increased the adjusted R-squared when left out until no further increase in the adjusted R-squared was possible without eliminating potentially significant variables. Ultimately, I ensured that all sensitivity indicators (ENV_Sensitive, S_Sensitive, E_X_S) were in the model when at least one was considered after the final elimination to ensure I captured their dependencies. The result of the final regression can be seen in Table 3. Here, we find three significant variables. As indicated in Figure 2, we see that the

plies', 'mode of transport', 'transport hub', 'pipeline transport', 'long hair', 'public transport', 'chair', 'hair', 'window', 'stair', 'stairs', 'dairy']

[10] These include: Log(Revenue_MEUR), Log(Employees), Log(ESG_Score), Log(GRI_Reporting_Score), Log(CO2_Emissions_Rev), ROA, Avg_Board_Ten, Log(Total Assets_MEUR), CSR Audit, ENV_Sensitive, S_Sensitive, E_X_S, ENV_Controversies, ENV_Initiative, EU, Customer_Proximity, CSR_Infrastructure, ESG_Controversies_Score

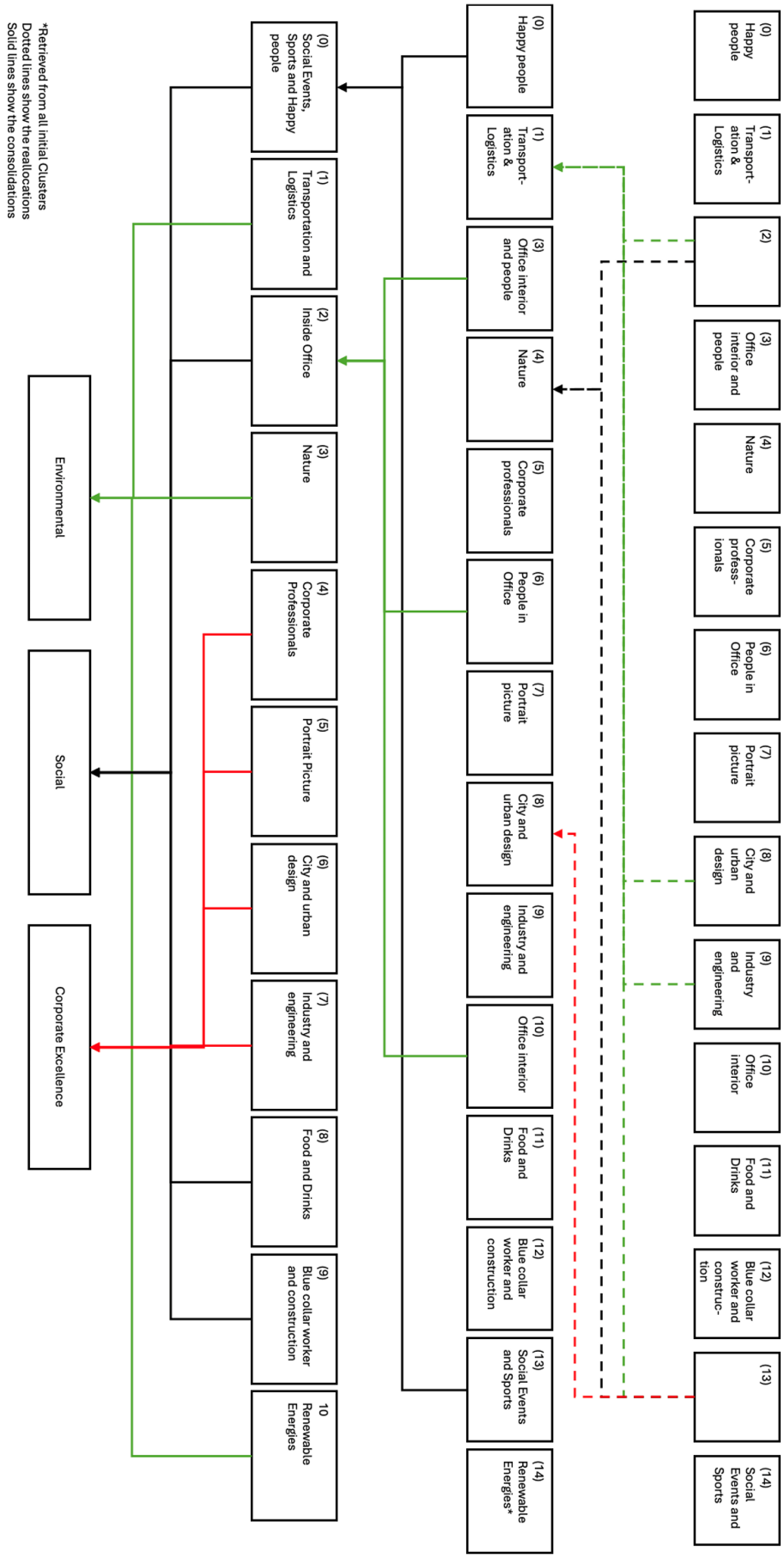

Figure 1: Overview of Reallocation and Consolidation of Picture Categories (Source: Own Illustration)

Table 1: Number of Companies considered in the sample (Each year and in Total)

Region	2013	2014	2015	2016	2017	2018	2019	2020
EU	31	33	31	35	36	35	35	32
Swiss	10	15	19	20	25	29	32	29
Total	41	48	50	55	61	64	67	61

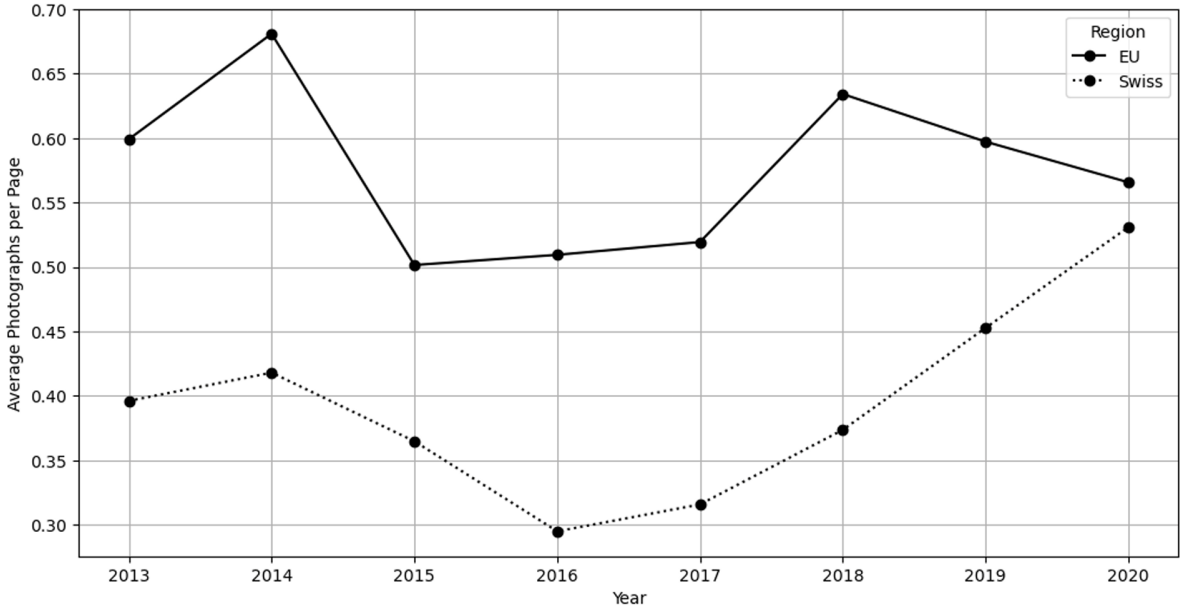

Figure 2: Pictures per Report (Differentiated by Region and Year) (Source: Own Illustration)

Table 2: Photograph by Page Count (Differentiated by Region)

EU	Swiss	Total
0.576	0.400	0.506

region influences the number of pictures, namely that companies in the EU use more images, shown by the variable EU (beta: 0.105; P-value: 0.022). In addition, we find two further significant variables. The extent to which a company discloses GRI indicators, meaning a broader and more extensive coverage of CSR topics, has a negative effect on the number of pictures being used (beta: -0.14; P-value: 0.000), a one percent change in the "GRI_Reporting_Score" decreases the number of pictures being used by 0.14. The third significant variable is the CO2 intensity ("Log(CO2_Emissions_Rev)"), measuring the amount of CO2 (in Tn's) emitted for every million in revenue. Here, we see a positive influence (beta: 0.09; P-Value: 0.000), meaning that a one percent increase in the CO2 emitted for the same revenue increases the number of pictures used by 0.09.

7.2.2. Analysis of Picture Contents

Switching the focus to the content of the pictures, I first investigated the distribution of the three picture categories derived in 6.3 (Environmental, Social, and Corporate Excellence), by region and in Total, which can be seen in Table 4. I calculated the final averages by averaging the individual averages of each category for each report. Here, we see no apparent difference between the regions, and the dominant theme is the social dimension (with almost half of the pictures), followed by Corporate Excellence and, lastly, Environmental themes. In line with the analysis in 7.2.1, I followed a backward elimination approach to find variables that influence the distribution of picture categories within a report. I conducted three separate (linear) regressions with the percentage of each picture category as the dependent variable. For each regression, I again started with all variables[11], which I assumed to potentially influence the distribution of picture categories.

[11] These include: Log(Revenue_MEUR), Log(Employees), Log(ESG_Score), Log(GRI_Reporting_Score), Log(CO2_Emissions_Rev), ROA, Avg_Board_Ten, Log(Total Assets_MEUR), CSR Audit, ENV_Sensitive, S_Sensitive, E_X_S, ENV_Controversies, ENV_Initiative, EU, Customer_Proximity, CSR_Infrastructure, ESG_Controversies_Score, E_Score, S_Score

Table 3: Regression on Photograph by Page Count

Variable	Photograph by Page Count		
	Coefficient	Std.	VIF†
Intercept	0.4514	(0.061)	427.65
CSR Audit	-0.0398	(0.074)	1.58
EU	0.1050*	(0.045)	3.10
Customer_Proximity	0.0686	(0.053)	1.18
Env_Sensitive	0.0033	(0.098)	1.27
S_Sensitive	0.1601	(0.139)	1.90
E_X_S[1]	-0.1200	(0.171)	2.57
Log(ESG_Score)	0.0375	(0.022)	1.35
Log(GRI_Reporting_Score)	-0.1412***	(0.029)	1.14
Log(CO2_Emissions_Rev)	0.0879***	(0.021)	1.55
ROA	0.0129	(0.020)	1.06
Adjusted R^2		0.186	

*** p < .001 , ** p < .01 , * p < .05

†Variance Inflation Factor (VIF): I included the VIF to test for Correlation of independent variables

Notes: N = 317 company-year observations, F-statistic 11.02, Std = Standard deviation of Intercepts, Robust standard error were used, all continuous variables have been standardized before the regression

Table 4: Picture Categories by Region and in Total

Region	Environmental	Social	Corporate Excellence
EU	21,89%	44,51%	33,60%
Swiss	21,64%	43,59%	34,77%
Total	21,80%	44,17%	34,03%

I eliminated all highly insignificant variables stepwise when increasing the adjusted R-squared by being left out. Apart from ensuring that all sensitivity indicators are considered when one of them is in the final regression, I also adjusted the final regressions to include the same variables for each regression for better comparability by adding them back into the regression when significant for another regression. Again, I tested for multicollinearity by calculating the VIF scores, which can be seen in Appendix C. The results of these regressions can be seen in Table 5. Here, we see several significant variables and interplays between the categories. Starting with a simple effect, we see that companies taking environmental initiatives ("ENV_Initiative") tend to use more environmental-themed pictures (beta: 0.05; P-value: 0.032). Next, we see that Revenue (beta: 0.07; P-value: 0.006) has a positive effect, and the number of Employees (beta: -0.060; P-value: 0.016) has an adverse impact on the number of environmental pictures being used. Another variable significant for only one category is the ESG Score in the Social category. Here, we see that a higher ESG Score is indicative of higher usage of pictures with a social theme (beta: 0.06; P-value: 0.019). We also see that socially sensitive industries ("S_Sensitive") tend to use fewer pictures depicting environmental themes (beta: -0.11; P-value: 0.018). While the variable is insignificant for the other picture categories, it could be reasoned that these companies use a higher percentage in another category. Looking at the coefficients, these presumably use more socially related pictures (0.001 vs. 0.096), but this effect cannot be statistically verified. Now, the focus is switched to the variables significant for both Environmental and Corporate excellence. We see that the CO2 intensity of revenue generation ("Log(CO2_Emissions_Rev")) is significant and increases the percentage of Environmental pictures (beta: 0.05; P-value: 0.000) while decreasing the percentage of pictures used from the Corporate Excellence category (beta: -0.06; P-value: 0.000). A similar effect can be seen for companies being both environmentally and socially sensitive ("E_X_S"). For these companies, we also see an increase in the percentage of environmental pictures (beta: 0.276; P-value: 0.001) and a decrease in the percentage of pictures depicting Corporate Excellence (beta: -0.236; P-value: 0.032). Interestingly, the single variable of being environmentally sensitive ("ENV_Sensitive") has the contrary effect, decreasing the Environmental pictures (beta:

Table 5: Regression on Picture Contents

Variable	Environmental		Corporate Excellence		Social	
	Coefficient	Std.	Coefficient	Std.	Coefficient	Std.
Intercept	0.246	(0.030)	0.354	(0.042)	0.410	(0.044)
CSR Audit	0.023	(0.036)	0.014	(0.043)	0.009	(0.045)
ENV_Sensitive	-0.118***	(0.027)	0.185***	(0.051)	-0.067	(0.048)
S_Sensitive	-0.106*	(0.045)	0.001	(0.072)	0.096	(0.075)
Customer_Proximity	-0.021	(0.033)	-0.018**	(0.032)	0.129***	(0.035)
E_X_S	0.276**	(0.082)	-0.236*	(0.110)	-0.040	(0.108)
ENV_Initiative	0.053*	(0.025)	-0.024	(0.024)	-0.029	(0.027)
Log(Revenue_MEUR)	0.075**	(0.027)	-0.036	(0.026)	-0.038	(0.029)
Log(Employees)	-0.060*	(0.025)	0.022	(0.026)	0.038	(0.027)
Log(ESG_Score)	-0.030	(0.025)	-0.031	(0.026)	0.061*	(0.026)
E_Score	0.016	(0.020)	0.031	(0.024)	-0.047	(0.024)
S_Score	-0.017	(0.020)	0.036	(0.022)	-0.019	(0.022)
ROA	-0.008	(0.010)	-0.007	(0.012)	0.015	(0.012)
Avg_Board_Ten	-0.014	(0.010)	0.018	(0.013)	-0.004	(0.013)
Log(CO2_Emissions_Rev)	0.054***	(0.014)	-0.058***	(0.014)	0.003	(0.014)
Adjusted R^2	0.105		0.108		0.096	

*** p < .001 , ** p < .01 , * p < .05

Notes: N = 342 company-year observations, Std = Standard deviation of Intercepts, Robust standard error were used, all continuous variables have been standardized before the regression

-0.118; P-value: 0.000) while increasing the Corporate Excellence pictures (beta: 0.184; P-value: 0.000). Lastly, we see a significant effect for the closeness of a company to its customers ("Customer_Proximity"). For this variable, we see a comparably strong and positive effect on the percentage of Social pictures being used (beta: 0.129; P-value: 0.000) and a smaller negative effect on Corporate Excellence pictures (beta: -0.018; P-value: 0.001).

7.3. Comparison of Picture Usage between EU and Switzerland

To analyze the difference between the EU and Switzerland, we first look at the number of pictures used per report page ("Photograph by Page Count"). In Figure 2, we saw that EU companies generally use more pictures per report page over the whole period. Still, we see that during the last periods (2017-2020), this difference becomes smaller, giving me reason to believe that around the time of the introduction of the NFRD, a change is happening in this regard. To better visualize this potential effect, I index the lines. Initially assuming that the effect starts either right after it was passed (2015 – indexed in 2014; chart can be seen in Appendix D) or in the first year the NFRD applies (2017 - indexed in 2016; chart can be seen in Appendix E), I didn't find unusual changes after the indexed year. However, indexing the 2018 values shows us two interesting things, which can be seen in Figure 3. First, after the year 2018, the change in the number of images used per report page was positive for Switzerland while negative for the EU. Second, we see that before 2018, the trend of the number of pictures used per report page was almost parallel for both regions. This initial (almost) parallel trend with a clear change happening in 2018 indicates that there might be a treatment effect, induced by the introduction of the NFRD, on the number of pictures being used. Figure 4 further differentiates into sensitive and non-sensitive companies (either environmentally or socially sensitive). This graph indicates that this effect (both the positive trend for Swiss companies and the negative trend for EU companies) might be stronger for socially or environmentally sensitive companies. After verifying the parallel trend assumption, I used a two-stage difference in difference regression approach to test for these effects. The validation was conducted using the approach outlined by Riveros-Gavilanes (2023). These regression results can be found in Appendix F. In the first stage (Model 1), I created three binary variables: Treatment, indicating whether the company at some time received the Treatment (EU Companies), Post indicating whether the observation was before (<2019 – "0") or after (>=2019 – "1") the supposed Treatment, and their interaction "Treat_X_Post" indicating whether the company is treated (EU) and observed after the supposed treatment year, my main variable of interest. In the second stage (Model

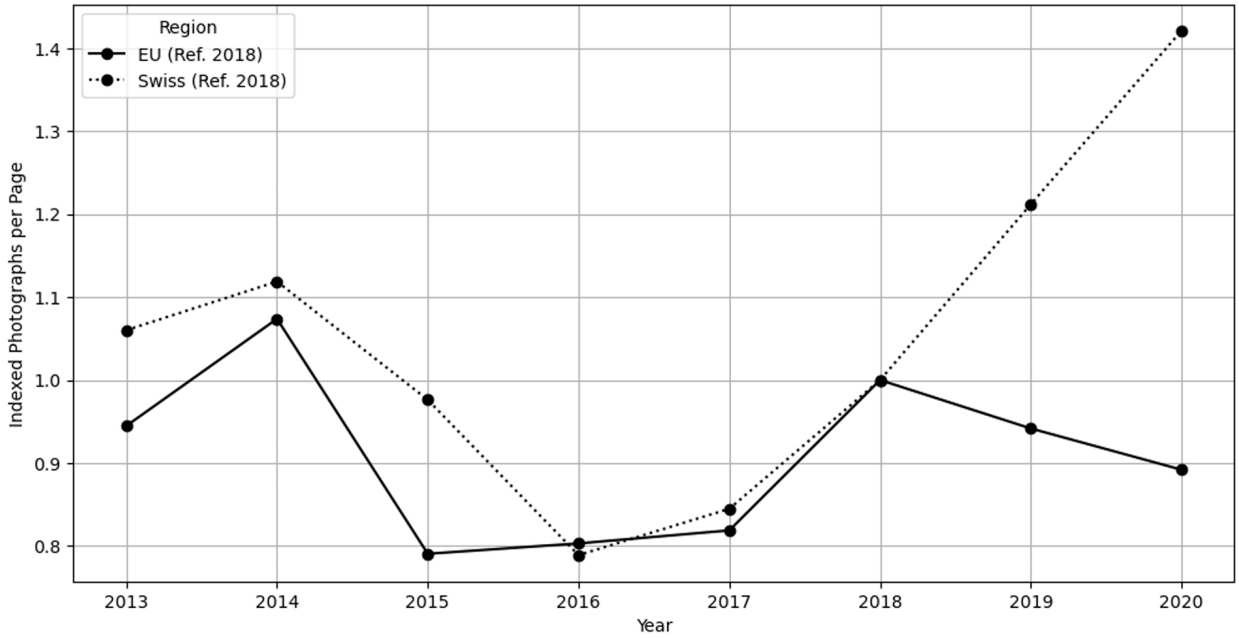

Figure 3: Pictures per Report Page in the EU and Switzerland (Indexed in 2018) (Source: Own Illustration)

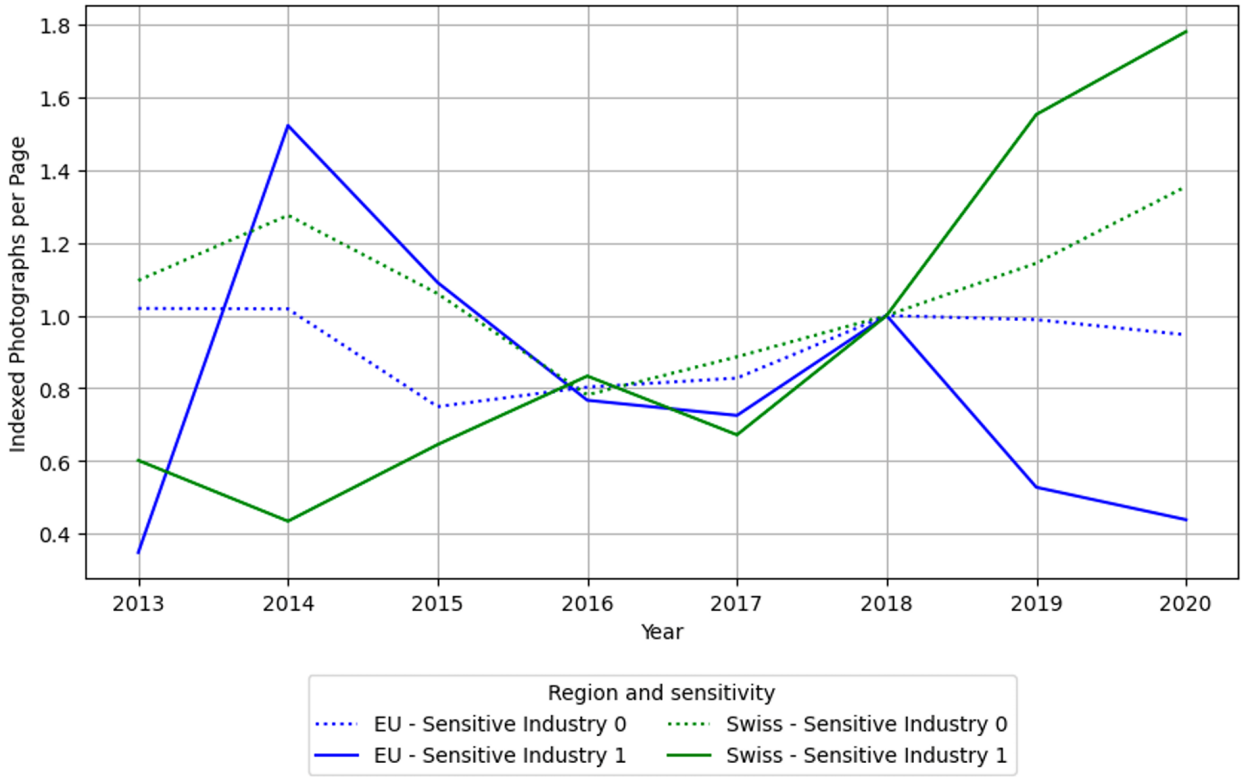

Figure 4: Pictures per Report Page separated by Industry sensitivity (Indexed in 2018) (Source: Own Illustration)

2), I further added the variable “Any_Sensitivity,” indicating whether the company is either environmentally or socially sensitive and its interaction with all the previous variables. In this setup, my main variables of interest are “Treat_X_Post” and the triple interaction term “Treat_X_Post_X_Sensitivity”.

Beginning with Model 1, my primary variable of interest, "Treat_X_Post," shows a negative effect (beta: -0.185) on “Photograph by Page Count”. This suggests that post-2018, assuming a parallel trend in the absence of the treatment, EU companies used fewer images than anticipated. While

Table 6: Difference in Difference Regression on Photograph by Page Count

Variable	Model 1			Model 2		
	Coefficient	Std.	P-Value†	Coefficient	Std.	P-Value†
Intercept	0.294	(0.049)	[0.000]	0.328	(0.053)	[0.000]
Treatment	0.272***	(0.054)	[0.000]	0.226***	(0.060)	[0.000]
Post	0.192**	(0.068)	[0.011]	0.151*	(0.076)	[0.062]
Treat_X_Post	-0.185*	(0.090)	[0.056]	-0.106	(0.098)	[0.299]
Any_Sensitive				-0.193	(0.105)	[0.002]
Treat_X_Sensitive				0.222	(0.139)	[0.116]
Post_X_Sensitive				0.188	(0.168)	[0.426]
Treat_X_Post_X_Sensitive				-0.563*	(0.260)	[0.064]
Adjusted R^2		0.070			0.077	

*** p < .001, ** p < .01, * p < .05 (when using non robust standard errors)
†P-values when using robust standard errors
Notes: N = 407 company-year observations, Std = Standard deviation of Intercepts, all continuous variables have been standardized before the regression

this effect is statistically significant at conventional P-value thresholds (0.039), it becomes marginally non-significant (P-value: 0.056) when adjusted for robust standard errors. I additionally used robust standard errors as testing the model indicated potential heteroscedasticity. Consequently, I cannot definitively dismiss the null hypothesis of no treatment effect, though the evidence strongly hints at a potential effect. In Model 2, "Treat_X_Post" represents the impact on non-sensitive EU companies and shows no significant effect under any P-value conditions. However, the triple interaction term, "Treat_X_Post_Sensitive," which measures the impact on sensitive industries within the EU compared to Switzerland, initially appears significant at standard P-value thresholds (0.031) but, again, is marginally non-significant (P-value: 0.064) with robust standard errors. Despite being unable to reject the null hypotheses in both models, I observe strong evidence of a treatment effect, particularly concentrated among sensitive companies.

Table 7: Difference of the number of pictures per report page between 2018 and 2020

	Sensitive Companies	**Non-Sensitive Companies**	**Total**
EU	- 0.424	- 0.033	- 0.069
Swiss	+ 0.265	+ 0.135	+ 0.157

To quantify this effect in descriptive terms, Table 7 shows the average "Photograph by Page Count" difference between 2018 and 2020 in the EU and Switzerland, further differentiated by sensitivity. Here, we see the largest difference between the EU and Switzerland in Sensitive companies. While companies in the EU, on average, reduced the number of pictures per report by 0.42, the companies in Switzerland increased the number of pictures used by 0.27, resulting in a change in their difference of 0.69. Comparing this to the averages over the whole period for each region depicted in Table 2 (0.576 for the EU and 0.400 for Switzerland), this descriptive approach indicates that the magnitude of the potential Treatment effect is considerable on an absolute level.

8. Discussion and Limitations

8.1. Discussion

In this section, I relate my findings to the theoretical framework discussed earlier and offer potential explanations for results that are not directly supported or contradicted by existing theory. To recap, I expected to see companies in sensitive industries or with comparably lower ESG performance using pictures more frequently, possibly creating a more favorable image by redirecting attention away from less positive information. Further, I anticipated that companies would use a higher ratio of pictures depicting a theme from the area where they face greater scrutiny or have poor sustainability performance. Finally, knowing that the introduction of the NFRD increased reporting transparency, I expected to see a corresponding decrease in the use of pictures, interpreting increased transparency as reduced reliance on images.

8.1.1. Frequency of Picture Usage in CSR Reports

My analysis indicates three variables that influence the frequency of image usage. While broader characteristics such as ESG scores or industry sensitivity (like initially expected) did not directly correlate with the frequency of images being used, significant effects were found for CO2 Emissions per revenue. This might suggest that concrete and measurable performance metrics influence image use rather than general sensitivity or ESG performance, possibly due to their direct

disclosure and visibility in CSR reports. CO2 emissions are central in CSR reporting and are easily understandable even by less experienced readers. Firms with higher CO2 intensity than their peers seem to employ more images, potentially creating a positive public image and diverting attention from less favorable disclosure.

Moreover, companies disclosing more extensively on CSR topics (indicated by a higher GRI Reporting Score) use fewer images. This suggests that more transparent firms that provide extensive, comparable (quantitative) information might rely less on visuals to communicate their narrative. Conversely, firms with less substantive reporting might employ visuals more strategically to enhance perceived transparency, compensating for a lack of actual information being disclosed, similar to the findings of García-Sánchez and Araújo-Bernardo (2020). These observations align with my discussion about the rationale of CSR reporting (Legitimacy Theory) and that companies might use framing and impression management to enhance perceived legitimacy and that visuals might be seen as a potent tool to overshadow less favorable aspects (e.g., (Boiral, 2013; Cho et al., 2009; Posner et al., 1976; Siano et al., 2017; Suchman, 1995)).

I observed the region to be another factor determining the frequency of picture usage. While companies in the EU tend to use more images over the whole period (for reasons I cannot directly derive from my discussions), I showed that the regulatory environment a company operates in might significantly affect and change companies' decisions on picture usage. My Difference in Difference (DiD) analysis, while slightly insignificant using robust standard errors (P-values: 0.056 / 0.064), provides a reasonable basis to believe that the Non-Financial Reporting Directive (NFRD) has a negative impact on the number of pictures used in CSR reports[12]. This finding could be explained by previous literature and my results. Fiechter et al. (2022) showed that the NFRD increases reporting transparency, and my analysis indicated a decrease in picture usage through increased reporting transparency (represented by adherence to GRI guidelines -also a crucial factor for transparency used in Fiechter's research). Together, this might explain, in part, the observed effect. The impact of the NFRD on picture usage was more pronounced in sensitive industries. This greater effect can potentially be attributed to the increased scrutiny these companies face (Gamerschlag et al., 2011), which likely intensified with the NFRD, pushing these companies towards more precise reporting.

8.1.2. Determinants of Picture Content

In my analysis, I observe that the social dimension dominates the visual content in CSR reports, with almost half of all pictures depicting this theme being in line with further research (Invernizzi et al., 2022). This might be because images depicting people create a sense of closeness. In general, relatedness and connections towards the company are essential to keeping stakeholder trust, reflecting companies' intentions to align themselves with social responsibilities. (Davison, 2010)

My findings indicate several factors that could influence picture category distribution across reports. Notably, the social dimension appears quite stable, with only the closeness of operations to customers ("Customer_Proximity") and ESG score showing a relationship with the use of social images, both being positive. It seems that companies closer to their customers might use visuals to emphasize their community involvement and social contributions. The positive association with ESG score is not straightforward. Still, it might suggest that companies with better ESG performance could be using more social images, possibly due to the rather generic content of these images and a reduced need to distinguish themselves through specialized visuals.

Interestingly, companies identified as socially sensitive do not significantly influence the use of social-themed pictures as initially expected. However, these companies show a reduced use of environmental pictures, which indicates a shift in visual focus. Although I can't definitively conclude that these companies are increasing their use of social images, the coefficients for Corporate Excellence and Social are both positive. Social is significantly higher, hinting that these companies could favor social imagery more.

Environmental images are more frequently used by companies actively engaged in environmental initiatives. This finding aligns with the dual capacity idea of visuals (Davison, 2015) and, in this case, serves a representational purpose, in contrast to a constructive purpose that I have observed so far.

Companies with a higher CO2 intensity of revenue ("log(CO2_Emissions_Rev)") tend to use more environmental pictures and fewer Corporate Excellence ones, possibly as a strategic move to portray themselves as environmentally responsible despite their larger environmental impact.

I observe contrasting patterns for companies sensitive to social and environmental issues (E_X_S) and those only environmentally sensitive (ENV). Environmentally sensitive firms seem to utilize more Corporate Excellence images, perhaps indicating their capability to address environmental challenges. This choice might be made because certain industries cannot clearly show direct environmental benefits due to their operational nature; instead, they demonstrate competency in managing such challenges and addressing inherent industry issues. Explaining the effect of companies being sensitive in both dimensions (Using more environmental and less Corporate Excellence pictures) is more complex, as theoretically, the same line of reasoning could apply to them. Inspecting the types of companies in my sample that fall into this category, I see that these operate in basic materials (e.g., mining and metal fabrication). Again, given the inherent limitations of their industries, these companies face structural constraints that prevent substantial changes through innovation alone. The processes they rely on are largely fixed, and meaningful improvements in their environmental impact often rely on broader advancements in

[12] While the treatment effect would be expected either after 2014 (the year the NFRD was passed) or 2016 (the reports for 2017 were the first to fall under the directive) I found the effect after 2018. While there is no definite explanation for this, I assume that this might be due to gradual adaption effects and feedback adjustments.

high-density green energy, which is beyond their direct control. In this context, portraying themselves as pioneers of environmental innovation may not be seen as authentic due to the nature of their operations. Consequently, these firms might opt for generic environmental images in their CSR reports, possibly to create a perception of environmental awareness. This strategy could be seen as attempting to align with societal expectations and convey a commitment to environmental goals, even when operational changes are limited.

Again, contrary to what I expected, I see no correlation between ESG performance (or the different single scores) and the type of pictures used.

8.2. Limitations

Several factors reduce the generalizability of the results: the sampled data, the (classification) methodology, and the research design (in addition to no previous similar study). Attention must be paid to these limitations as they are crucial when classifying the results obtained. In the following, I will discuss these limitations and provide suggestions on how future research might deal with them.

8.2.1. Gathered Sample

In creating my sample, I introduced a selection bias by only considering companies that produce separate CSR reports. The decision to publish a separate report could have already affected the reporting behaviors I am studying through regression analyses and might, in turn, be influenced by some of the characteristics or variables under consideration in my study. Further, the direct matching approach might not lead to optimal sample groups since it only matches industry and revenue; other important factors could have been ignored. Moreover, the composition of these groups changes every year, especially in the years before 2016, when fewer companies either did not report at all or issued integrated reports. In addition, my secondary data has missing observations, which further limits the sample size for some regressions. For future studies, including integrated reports from a larger initial sample and using PSM for group creation could be beneficial. Ensuring a consistent dataset that includes the same companies each year would also be an advantage if the sample size is sufficient.

8.2.2. Picture Classification

My unique approach to content analysis allowed for the analysis of a significant number of pictures with comparable low effort, but it has limitations. I cannot apply typical error tests without manually classifying pictures and thus lack a benchmark for "correct" classification. This leads to uncertainty regarding the accuracy of the formed clusters. The technical evaluations, like the Silhouette Score, indicated rather low values (0.162), with the score ranging from -1 to 1, and 1 being the best score, suggesting that clustering was technically weak. While it does not necessarily mean the classification was ineffective, as it is reasonable that, e.g., a picture depicting an office scene would be quite similar to pictures depicting a corporate professional, the process could, nevertheless, benefit from a deeper analysis of the words that most strongly influence the embeddings and cluster formations. First, inspecting a subset of the pictures and identifying whether the current importance of single labels accurately captures the differences that are of interest, or if other labels are better suited. Second, adjusting the weights of single labels to meet the requirements could lead to more accurate clusters. This could replace the manual adjustments I have done after the initial clustering, reducing the possibility of manual errors. Additionally, I only considered picture content without addressing attributes like color and size or the depiction of emotions (e.g., García-Sánchez and Araújo-Bernardo, 2020; Invernizzi et al., 2022), which could enhance category differentiation when added as another layer. As the Google Vision API can also analyze a picture's color composition, this could be integrated with an automated approach.

8.2.3. Research Design

My regressions could only capture a small portion of the dataset variability, signaled by low values of R-squared (< 0.2). While this may be due to intrinsic variability in the outcome variables, it could also arise from excluding some important variables not considered during the analysis due to limited research in this area. The backward elimination method also has limitations. Although it offers a systematic way of selecting variables for the model, it might have missed out on some combinations that could explain outcomes more effectively. Future studies are recommended to delve into different sets of variables along with their interactions to either confirm the persistence of the observed effects or reveal new explanatory ones. Moreover, I used only a normal linear model without considering time and unit fixed effects when running regressions on the number of pictures and picture content. This could be included in a panel regression in future studies, ideally with more evenly distributed observations over the years.

9. Conclusion and Indication for Future Research

Only a few studies have examined the use of photographs in CSR reports so far; with my study, I contribute to this field by exploring determinants regarding the amount and type of pictures used. I have done so by using a semi-automated classification approach, through which I could utilize a comparably large set of pictures and regression models.

In the paper, I analyzed why images are employed in CSR Reports, the different purposes they can serve, and what factors might influence the decision on how many and what type of pictures are used. The central theme of the research question was whether visuals are used strategically to construct a positive image of a company, potentially independent of its actual performance.

I found that industry sensitivity and measurable indicators, such as CO2 emissions per revenue, affect the amount

and content of pictures used in CSR reports. These findings suggest that images are constructive elements in impression management, overshadowing or mitigating adverse impacts and industry flaws. However, in some cases, they could also serve as descriptive elements, e.g., when companies engaged in environmental initiatives tend to use more environmental pictures.

Further, I also assessed the impact of the Non-Financial Reporting Directive (NFRD) on using visuals in CSR reports. I discovered that the NFRD has a moderating effect, reducing the number of pictures used, which might enhance the transparency of these reports and potentially lead them to focus more on the actual disclosure of relevant information.

Given my findings, I suggest that Stakeholders must be conscious of the possibility that companies strategically use images in CSR reports. Employed as impression management techniques, they typically show an idealized image of the organization. Understanding this aspect is crucial, as the influence of visuals on perception is often subconscious, and being aware of it can assist in mitigating these subconscious effects.

Further research in this area could address the limitations of this study and test whether these results hold for different samples or explore different variables and combinations that may affect the use of images. It would also be beneficial to examine the impact of the NFRD on the content of visuals in CSR reports. Furthermore, as in this paper, I only investigated the patterns influencing the usage of images, it would also be interesting to study whether and to what extent the amount and content of pictures influence the valuation of a company's ESG performance and perception of sustainability efforts.

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