

Louvain School of Management

Do Infographics in ESG Reports Signal High ESG Scores?

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Abstract:

This study examines the use of infographics in ESG reports and its potential relation with high ESG scores. With the growing importance of ESG factors in investment decision-making and corporate sustainability practices, effective communication of ESG performance is crucial. Infographics, as visual representations of data and information, have gained popularity for conveying complex information in a concise and visually appealing manner. This research shows a comprehensive analysis of ESG reports from a diverse sample of companies across industries. Through quantitative analysis and regression, the study will explore the correlation between the use of infographics and ESG score performance. The findings will contribute to the understanding of the role of infographics in ESG reporting, inform investors and stakeholders about the potential implications of infographics in evaluating ESG performance, and provide insights for companies seeking to enhance their ESG communication strategies.

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Chapter 1: Introduction

In recent years, there has been a growing emphasis on Environmental, Social, and Governance (ESG) factors in investment decision-making and corporate sustainability practices. Investors and stakeholders are increasingly interested in understanding a company's ESG performance, as it is seen as a measure of long-term financial stability and ethical business practices. As a result, companies are under pressure to provide comprehensive and transparent ESG reporting to meet the rising demand for information (Boffo & Patalano, 2020).

Effective communication of ESG performance is crucial to facilitate informed decision-making and promote sustainable investing. However, conveying complex ESG data in a manner that is easily understandable and engaging remains a challenge. In this context, infographics have emerged as a popular tool for visually presenting information and simplifying complex concepts (Oliveira, 2023).

Infographics are visual representations that combine graphics, charts, and textual elements to convey information in a visually appealing and easily digestible format. They have gained popularity across various domains, including marketing, journalism, and education, for their ability to distil complex information and enhance audience engagement. Given their potential to simplify and visualize data, infographics hold promise as a means of effectively communicating ESG performance to a wide range of stakeholders (What is an infographic ? - IGW, 2023).

The central question that arises is whether the use of infographics in ESG reports can serve as a reliable signal of high ESG scores. If infographics are found to be associated with companies that achieve higher ESG scores, it would suggest that their presence in ESG reports may indicate stronger ESG performance. Such a finding would not only have implications for investors seeking to evaluate companies' sustainability practices but also provide valuable insights for companies aiming to enhance their ESG communication strategies.

Therefore, this study aims to investigate the relationship between the presence of infographics in ESG reports and their potential indication of high ESG scores. By analysing a diverse sample of ESG reports from companies across different industries, this research will explore the correlation between the use of infographics and ESG score performance. The findings will contribute to understanding the significance of infographics in ESG reporting, shed light on the

role of visual communication in sustainability practices, and provide valuable insights for both investors and companies.

1.1 Research objectives

The primary objective of this research is to investigate the relationship between the presence of infographics in ESG reports and their potential indication of high ESG scores. To accomplish this overarching objective, the following specific research objectives will be addressed:

1. Assess the prevalence and types of infographics used in ESG reports: This objective involves analysing a diverse sample of ESG reports to determine the frequency and variety of infographics utilized in communicating ESG performance. Different types of infographics, such as charts, graphs, diagrams, and icons, will be identified and categorized.
2. Examine the correlation between infographics and ESG score performance: This objective aims to evaluate the association between the presence of infographics in ESG reports and the corresponding ESG scores of the companies. Statistical analysis will be conducted to determine whether companies with a greater number or more visually appealing infographics tend to have higher ESG scores.
3. Within the conclusion, provide recommendations for ESG reporting practices: Based on the findings and analysis, this objective involves formulating practical recommendations for companies and standard-setting organizations to enhance the use of infographics in ESG reporting. These recommendations may include guidelines for creating informative and visually appealing infographics, strategies for incorporating infographics into ESG communication, and suggestions for optimizing the balance between textual and visual elements in reports.

1.2 Scope and Limitations

It is important to acknowledge the limitations of this research. Firstly, the findings may be influenced by the sample selection process. The selection of ESG reports for analysis might introduce sample selection bias, as the availability of data or the willingness of companies to disclose their ESG information can vary. Consequently, the sample may not be fully representative of the entire population of companies or industries, potentially limiting the generalizability of the results.

Finally, the assessment of infographics in ESG reports involves a certain degree of subjectivity. Different researchers may have varying interpretations of what constitutes an effective or visually appealing infographic. This subjectivity may introduce potential bias into the analysis and could affect the consistency and comparability of the results. To address this limitation, clear criteria and guidelines will be established to guide the assessment process and minimize the impact of subjectivity. It is important to be aware of these limitations when interpreting the findings of the study and to consider them as opportunities for future research to address and overcome these limitations.

Chapter 2: Literature Review

2.1 ESG Reporting and Scores

Environmental, Social, and Governance (ESG) reporting has gained significant traction as companies recognize the importance of sustainability and responsible business practices. ESG reporting serves as a means for companies to disclose their environmental, social, and governance performance, allowing stakeholders to evaluate their sustainability efforts and compare them with industry peers.

Moreover, on June 21, 2022, the Council and the European Parliament reached a provisional agreement on the Corporate Sustainability Reporting Directive (CSRD) (European Commission, 2021, Proposal for a Directive) to amend the Non-financial Reporting Directive (Directive 2014/95/EU, known as NFRD) and integrate into the European Union's sustainable finance strategy.

ESG reports provide a comprehensive overview of a company's sustainability initiatives, policies, targets, and performance indicators. They typically cover a wide range of environmental aspects, including energy consumption, carbon emissions, water usage, waste management, and biodiversity preservation. Social aspects encompass areas such as employee well-being, human rights, labour practices, community engagement, and product safety. Governance aspects cover topics like board structure, executive compensation, transparency, anti-corruption measures, and shareholder rights.

These reports play a crucial role in enhancing transparency and accountability. They provide stakeholders, including investors, employees, customers, and communities, with valuable

information to make informed decisions and hold companies accountable for their environmental and social impact (Arvidsson & Dumay, 2021).

ESG scores are used to assess a company's sustainability performance and compare it to peers within its industry. These scores are often assigned by rating agencies, research firms, or ESG data providers. While different rating agencies have their methodologies and criteria, they generally evaluate a company based on a set of specific ESG factors. These factors can include environmental metrics (e.g., carbon emissions intensity, water usage efficiency), social metrics (e.g., employee turnover, diversity, and inclusion), and governance metrics (e.g., board composition, executive compensation structure) (Patwary, n. d.).

The methodology used to calculate ESG scores can vary among rating agencies, resulting in different scoring frameworks and weightings assigned to different factors. Some rating agencies adopt a quantitative approach, relying heavily on metrics and standardized data, while others incorporate qualitative assessments based on company disclosures and ESG practices. The goal of ESG scores is to provide a holistic assessment of a company's sustainability performance, enabling stakeholders to evaluate its ESG practices and progress over time (Liu et al., 2023). Investors and asset managers often rely on ESG scores to inform their investment decisions, incorporating sustainability considerations into their portfolios. ESG integration is increasingly recognized as a valuable tool for risk management, long-term value creation, and aligning investments with environmental and social goals (Samuel, 2023).

In summary, ESG reporting, and scores play a critical role in promoting transparency, accountability, and sustainability practices within companies. These reports provide stakeholders with valuable information to assess a company's environmental, social, and governance performance, while ESG scores offer a standardized metric for comparing companies' sustainability efforts and informing investment decisions.

2.2 Infographics in ESG Reports

Infographics, as visual representations of data, have gained prominence in various domains, including ESG reporting. Infographics offer a compelling way to present complex information in a visually appealing and easily digestible format. They condense large amounts of data, trends, and key insights into graphical elements, enhancing the accessibility and comprehension of information. In the context of ESG reports, infographics can be used to showcase

environmental progress, highlight social impact initiatives, and illustrate governance structures. The utilization of infographics in ESG reports aims to improve stakeholder engagement, enhance transparency, and facilitate communication of sustainability efforts (Traboco and al., 2022).

Infographics have become increasingly prevalent in various domains, including ESG reporting. In the context of ESG reports, infographics serve as visual representations of data and information, presenting complex sustainability-related concepts in a clear and easily digestible format. They condense large amounts of information, trends, and key insights into graphical elements, enhancing the accessibility and comprehension of ESG data for stakeholders. The use of infographics in ESG reports offers several potential benefits. Firstly, infographics can improve the readability and engagement of ESG reports. By presenting data visually, infographics can effectively communicate key sustainability information to a diverse audience, including those who may not have a deep understanding of the technical aspects of ESG reporting. Infographics can simplify complex concepts, making them more accessible and engaging for stakeholders, thereby increasing their understanding and interest in sustainability matters.

Secondly, infographics can help highlight important trends, patterns, and correlations within the data presented in ESG reports. By utilizing visual elements such as charts, graphs, and icons, infographics can draw attention to key performance indicators and demonstrate progress or areas for improvement in a company's sustainability efforts. They can present data in a concise and visually appealing manner, making it easier for stakeholders to grasp the significance of the information being conveyed. Furthermore, infographics can aid in storytelling and narrative-building within ESG reports. By combining visuals with concise and impactful messaging, infographics can effectively convey a company's sustainability journey, initiatives, and achievements. They can help companies showcase their commitment to sustainability and responsible business practices, fostering trust and transparency with stakeholders. However, it is essential to note that the effectiveness of infographics in ESG reports relies on their design and content. Well-designed infographics should strike a balance between aesthetics and clarity, ensuring that the visual elements enhance understanding without sacrificing accuracy or reliability of the information presented. Additionally, the choice of relevant data and the contextualization of the information within the broader ESG report is crucial to ensure that

infographics provide a comprehensive and accurate representation of a company's sustainability performance.

While infographics offer potential advantages in ESG reporting, their impact on ESG scores remains a subject of debate. While some argue that the presence of infographics can enhance stakeholder engagement and understanding, potentially influencing the perception of a company's sustainability efforts, others contend that the presence or quantity of infographics alone may not significantly impact the underlying ESG performance, or the scoring methodologies employed by rating agencies (Anantharaman and al., 2020). The influence of infographics on ESG scores needs to be considered within the broader context of data accuracy, transparency, completeness, and the actual sustainability practices and performance of the company.

In conclusion, infographics have gained popularity in ESG reporting to enhance the accessibility, readability, and engagement of sustainability information. They have the potential to simplify complex concepts, highlight trends, and effectively communicate a company's sustainability journey. However, the impact of infographics on ESG scores should be considered in conjunction with other factors that influence the evaluation of a company's sustainability performance. Well-designed and appropriately contextualized infographics can contribute to stakeholder understanding and appreciation of a company's sustainability efforts and progress.

2.3 Previous Research on Infographics and ESG Scores

Previous research on the relationship between infographics in ESG reports and ESG scores is relatively limited, as this specific focus is a relatively emerging area of study. However, there have been studies examining the broader topic of ESG reporting and the use of visual communication in sustainability reporting. These studies provide valuable insights into related areas that can inform and support this research.

While previous research has explored the use of visual communication and its impact on stakeholder perceptions, there is a need for more specific studies focusing on the relationship between infographics in ESG reports and ESG scores. This research can build upon and contribute to the existing literature by investigating the potential link between infographics and high ESG scores, providing empirical evidence and insights in this emerging field.

Chapter 3: Sample, Data Collection and Methodology

3.1 Sample and Data Collection:

The overall purpose is to better understand the link between Infographics and ESG score. Our job is to investigate the evolution of infographics and empirically answer a specific question, which is the relation between infographics in ESG reports and ESG performance.

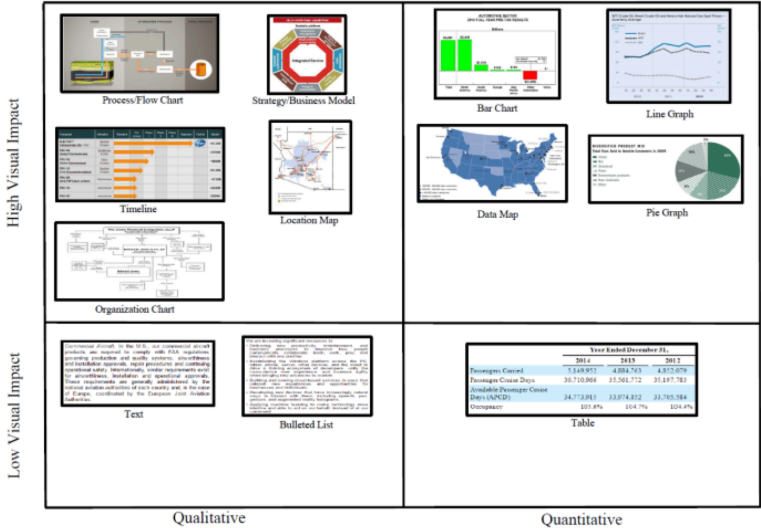
To answer this question, we need to conduct empirical analyses, based on data. The study is based on a sample of 1667 Environmental, Social, and Governance (ESG) reports. These reports were obtained from a reputable database/company that collects and publishes ESG information from various organizations. The selection of ESG reports for inclusion in the study was based on predefined criteria, which considered factors such as data availability, completeness, and relevance to the research question. There has been no selection based on the industry or the size of the company, which give to the data a very global perspective. The data collection period for the ESG reports extended from the 31 of January 2007 to the 30 of September 2020, encompassing a comprehensive range of recent ESG disclosures.

ESG scores used in the analysis were sourced from a recognized provider of ESG ratings and assessments. We used the MSCI ESG ratings, which aims to measure the company management of financially relevant ESG risks and opportunities. ESG rating agencies are organizations that analyse the company's environmental, social and governance policies to determine its durability. Investors use the work of these ESG rating agencies to see how attractive a company is from a sustainability perspective, which allows them to make investment decisions (ESG ratings, n.d.).

To capture the presence of infographics in each ESG report, a manual data collection process was employed. The infographics were categorized into different types, including location maps, process charts, strategy/business models, timelines, organization charts, bar charts, line graphs, data maps, pie charts, lack, sum, number of tables.

The manual data collection process involved students of the UCLouvain who meticulously reviewed each ESG report to identify and document the various types of infographics used. Researchers were trained to recognize different infographic formats, such as location maps, process charts, strategy/business models, timelines, organization charts, bar charts, line graphs,

data maps, pie charts, lack, sum, number of tables (Annex 1). This training was based on the image below which comes from the research on Elements of the scientific article “Data visualization and infographics in 10-K filing” (Christensen and al., 2020).



In the table below, we can better understand the magnitude of the data manual collection process. This table is presenting the minimum, maximum and mean of the data collected from our sample in the 1667 ESG report manually analysed.

Table 1: Summary of indicators observed in the sample of ESG Reports

Indicators	Min	Max	Mean
ESG_SCORE_VAR	0,00	10,00	5,297
INFOGRAPHIC_VAR	0,00	1,00	0,9751
Sum	0,00	213,00	27,78
LOCATION_MAP	0,00	16,00	1,05
PROCESS_CHARTS	0,00	13,00	1,391
STRATEGY_MODELS	0,00	16,00	1,867
TIMELINES	0,00	19,00	1,756
ORGANIZATION_CHARTS	0,00	86,00	4,159
BAR_CHARTS	0,00	63,00	5,902
LINE_GRAPH	0,00	15,00	2,043
DATA_MAP	0,00	72,00	2,635
PIE_CHART	0,00	434,00	23,9

3.2 Methodology:

For the purpose of this research, as we are describing the relationship between the ESG score and the infographics, a multiple linear regression model was employed. The regression analysis

aimed to quantify the relationship between the presence of infographics in ESG reports and the corresponding ESG scores of companies.

Regression Model:

$$\begin{aligned}
 ESG_SCORE_VAR = & \beta_0 + \beta_1 \cdot INFOGRAPHIC_VAR + \beta_2 \cdot Sum + \beta_3 \cdot \\
 & LOCATION_MAP + \beta_4 \cdot PROCESS_CHARTS + \beta_5 \cdot STRATEGY_MODELS + \beta_6 \cdot \\
 & TIMELINES + \beta_7 \cdot ORGANIZATION_CHARTS + \beta_8 \cdot BAR_CHART + \beta_9 \cdot \\
 & LINE_GRAPH + \beta_{10} \cdot DATA_MAP + \beta_{11} \cdot PIE_CHART + \beta_{12} \cdot YEAR + \beta_{13} \cdot Lack + \\
 & \beta_{14} \cdot Nbrtables + \beta_{15} \cdot SIZE + \sum_{i=1}^n \beta_{16} industry_dummies
 \end{aligned}$$

Table 2: Variable definition

Dependent Variables

ESG_SCORE_VAR: *Dependent variable "ESG_SCORE_VAR" represents the Environmental, Social, and Governance (ESG) score of companies.*

Explanatory Variables

INFOGRAPHIC_VAR: *Variable represents the presence or absence of infographics in ESG reports. It is a binary variable.*

Sum: *Variable represents the total count of infographics used in ESG report of companies. Specifically, it is the sum of various types of infographics, including "Location Map," "Process Charts," "Strategy Models," "Timelines," "Organization Charts," "Bar Charts," "Line Graphs," "Data Maps," and "Pie Charts."*

LOCATION_MAP: *Variable represents the number of "Location Map" infographics found in the ESG report of companies.*

PROCESS_CHARTS: *Variable represents the number of "Process Charts" infographics found in the ESG report of companies*

STRATEGY_MODELS: *Variable represents the number of "Strategy Models" infographics found in the ESG report of companies*

TIMELINES: *Variable represents the number of "Timelines" infographics found in the ESG report of companies*

ORGANIZATION_CHARTS: *Variable represents the number of "Organization Charts" infographics found in the ESG report of companies*

BAR_CHART: *Variable represents the number of "Bar Charts" infographics found in the ESG report of companies*

LINE_GRAPH: *Variable represents the number of "Line Graphs" infographics found in the ESG report of companies.*

DATA_MAP: *Variable represents the number of "Data Maps" infographics found in the ESG report of companies.*

PIE_CHART:	<i>Variable represents the number of "Pie Charts" infographics found in the ESG report of companies.</i>
YEAR:	<i>Variable represents the year of the ESG report.</i>
Lack:	<i>Variable represents the number of images, logos, graphics that make the document more aesthetically appealing.</i>
Nbrtables:	<i>Variable represents the number of tables present in a single ESG report.</i>
SIZE:	<i>Variable likely represents a company's size.</i>
industry_dummies:	<i>Variables represent different industries or sectors.</i>
$\beta_0, \beta_1, \beta_2, \dots, \beta_{16}$	<i>Coefficients represent the estimated regression coefficients for each respective variable.</i>

The dependent variable in the regression model is the "ESG_score," representing the Environmental, Social, and Governance performance of each company. The ESG scores were obtained from a reputable provider of ESG ratings and assessments (MSCI).

The regression model above includes several independent variables, each representing different aspects of the ESG reports. One of the main variables of interest is INFOGRAPHIC_VAR, which indicates whether an infographic is present in the ESG report or not. This variable takes on two possible values: 0 and 1. A value of 0 indicates that there are no infographics included in the ESG report, while a value of 1 indicates that infographics are present in the report. The purpose of including INFOGRAPHIC_VAR in the regression model is to investigate whether the presence of infographics in ESG reports has any relationship with the ESG scores assigned to companies. We aim to assess whether companies that use infographics in their ESG reports tend to have higher ESG scores compared to those that do not use infographics. A positive coefficient for INFOGRAPHIC_VAR in the regression output would indicate that the presence of infographics is associated with higher ESG scores, while a negative coefficient would imply the opposite.

Additionally, we have included other independent variables to control for various factors that may also influence ESG scores. These include variables like Sum, which is a numerical summation variable. Each visual element, such as "LOCATION_MAP," "PROCESS_CHART," and others, is treated as a separate component, and their respective counts are summed to obtain the total "Sum" value. By including "Sum" as an independent variable in the regression model, we seek to assess whether companies that use a greater number of visual elements in their ESG reports tend to have higher ESG scores compared to those that

use fewer visual elements. A positive coefficient for "Sum" in the regression output would suggest that the overall use of visual elements is associated with higher ESG scores, while a negative coefficient would imply the opposite.

We also added the different types of infographics such as LOCATION_MAP, PROCESS_CHARTS, STRATEGY_MODELS, TIMELINES, ORGANIZATION_CHARTS, BAR_CHART, LINE_GRAPH, DATA_MAP, and PIE_CHART. By incorporating these infographic variables, we gain a comprehensive understanding of how different types of infographics impact ESG scores. The coefficients of these infographic variables give us which types of infographics have a significant influence on ESG scores. Positive and statistically significant coefficients would indicate that specific infographics are associated with higher ESG scores.

Furthermore, we also added "Size" as an independent variable in the regression model. We aim to account for the influence of company size on the relationship between ESG scores and infographics. Larger companies often have more extensive resources, budgets, and capabilities to engage in sustainability initiatives and disclose ESG-related information. As a result, their ESG scores might be influenced by factors other than the presence of infographics. By controlling for company size, we can better isolate the specific impact of infographics on ESG scores. This helps us determine whether the use of infographics is an independent and significant factor in influencing higher ESG scores, irrespective of company size.

The inclusion of "Industry" as categorical variables, "industry dummies", allows us to account for sector-specific variations in ESG scores and infographics. Different industries face distinct environmental and social challenges, and their sustainability practices can vary significantly. For example, companies in the technology sector might emphasize their efforts in reducing carbon emissions, while companies in the healthcare sector might prioritize issues related to employee well-being. By controlling for industry, we can assess whether the presence of infographics contributes to higher ESG scores across diverse sectors. Furthermore, this enables us to identify specific industries where infographics might be particularly effective in signalling strong ESG performance.

Finally, "Year" serves as a proxy for temporal trends and changes in sustainability reporting practices. Including "Year" in the regression allows us to examine whether the relationship between infographics and ESG scores has evolved over time. Sustainability reporting standards

and stakeholder expectations have evolved over the years, leading companies to adopt more sophisticated ways of communicating their ESG efforts, such as through infographics. By analysing the impact of "Year" on ESG scores and the significance of infographics in different years, we can better understand whether infographics have become increasingly important in signalling high ESG performance over time.

Incorporating "Size," "Industry," and "Year" in the regression model helps us disentangle the complex relationship between ESG scores and the presence of infographics in sustainability reports. By controlling for potential confounding factors, we can better isolate the specific contribution of infographics in influencing ESG scores. This comprehensive analysis helps provide a clearer picture of the effectiveness of infographics in communicating sustainability efforts and their association with higher ESG performance, regardless of company size, industry, and changes in reporting practices over time.

The coefficients (β) associated with each independent variable will help us understand the strength and direction of their impact on the ESG score. A positive coefficient would suggest that an increase in the corresponding variable is associated with higher ESG scores. Conversely, a negative coefficient would imply a negative relationship, where an increase in the variable is linked to lower ESG scores.

During the analysis, we will assess the significance of each coefficient using p-values ($\Pr(>|t|)$). A p-value less than 0.05 is generally considered statistically significant, indicating that the variable has a meaningful impact on the ESG score. Through this regression analysis, we hope to gain insights into the relationship between infographics and ESG scores. However, it is essential to remember that the regression model can provide valuable associations but cannot establish causation between variables. The results may also be influenced by other unobserved or omitted factors not included in the model.

Chapter 4: Results

Table 3: Results of the Regression

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-139,4749	66,7906	-2,0882	0,0375
INFOGRAPHIC_VAR	0,9477	0,3753	2,5252	0,0120
Sum	-0,0242	0,1408	-0,1722	0,8634
LOCATION_MAP	0,0015	0,1640	0,0093	0,9926
PROCESS_CHARTS	0,2277	0,1587	1,4346	0,1523
STRATEGY_MODELS	0,0292	0,1714	0,1704	0,8648
TIMELINES	0,1167	0,1506	0,7750	0,4388
ORGANIZATION_CHARTS	-0,0761	0,1568	-0,4854	0,6277
BAR_CHART	0,0399	0,1415	0,2816	0,7784
LINE_GRAPH	-0,0467	0,1457	-0,3203	0,7489
DATA_MAP	0,1957	0,2037	0,9608	0,3373
PIE_CHART	0,0294	0,1324	0,2218	0,8246
YEAR	0,0715	0,0332	2,1569	0,0317
Lack	-0,0025	0,0029	-0,8414	0,4007
Nbrtables	0,0089	0,0083	1,0751	0,2830
SIZE	0,0000	0,0000	-2,2796	0,0232
industry_dummiesIndustry_1	-2,8880	0,6168	-4,6820	0,0000
industry_dummiesIndustry_2	-1,0022	0,5197	-1,9282	0,0546
industry_dummiesIndustry_3	-0,3642	0,4593	-0,7930	0,4283
industry_dummiesIndustry_4	-1,6990	0,7772	-2,1860	0,0295
industry_dummiesIndustry_5	-0,8970	0,5069	-1,7696	0,0776
industry_dummiesIndustry_6	1,0198	0,6699	1,5223	0,1288
industry_dummiesIndustry_7	-1,0627	0,7090	-1,4988	0,1348
industry_dummiesIndustry_8	-0,1727	2,0333	-0,0849	0,9324
industry_dummiesIndustry_9	NA	NA	NA	NA
industry_dummiesIndustry_10	-1,1226	0,6246	-1,7973	0,0731
industry_dummiesIndustry_11	0,3348	0,4945	0,6771	0,4988
industry_dummiesIndustry_12	-0,4236	0,8547	-0,4957	0,6204
industry_dummiesIndustry_13	-0,2276	0,7241	-0,3143	0,7535
industry_dummiesIndustry_14	0,0928	0,5367	0,1729	0,8628
industry_dummiesIndustry_15	NA	NA	NA	NA
Multiple R-squared	0.2334			
Adjusted R-squared	0.1743			

The analysis aims to investigate the relationship between the infographics in ESG reports and the resulting ESG scores. The findings reveal intriguing patterns that shed light on the potential impact of infographics on ESG performance.

Overall, the presence of infographics in ESG reports demonstrated a significant positive association with ESG scores (Estimate = 0.948, p-value = 0.012), meaning companies that incorporate infographics tend to achieve higher ESG scores compared to those that do not utilize visual representations in their reports. This highlights the potential value of infographics in enhancing the accessibility and clarity of complex sustainability data. However, a deeper analysis of individual types of infographics revealed more nuanced results. Surprisingly, several types of infographics, including "LOCATION_MAP", "PROCESS_CHARTS", "STRATEGY_MODELS", "TIMELINES", "ORGANIZATION_CHARTS", "BAR_CHART", "LINE_GRAPH", "DATA_MAP", and "PIE_CHART", did not show statistically significant effects on ESG scores. This means that the presence of a single type of infographic is not enough to guarantee an impact on a company's overall ESG performance.

Based on the results, the coefficient of "Sum" is -0.0242 with a standard error of 0.1408. The t-value is -0.1722, and the p-value is 0.8634, which is not statistically significant. This means that the total count of infographics in ESG reports does not have a significant impact on ESG scores in the analysed dataset.

In contrast, the variable "YEAR" demonstrated a significant positive relationship with ESG scores (Estimate = 0.072, p-value = 0.032). This indicates that over the years, companies have been increasingly focusing on ESG-related practices, leading to improvements in their ESG scores.

Moreover, the size of the company, represented by the variable "SIZE," exhibited a significant negative effect on ESG scores (Estimate = -0.00000, p-value = 0.023). This implies that larger companies tend to have slightly lower ESG scores compared to their smaller counterparts. The reasons behind this finding warrant further investigation, as they may indicate different approaches to sustainability practices in organizations of varying sizes.

Additionally, the influence of industry-specific factors (Annex 2) on ESG scores was explored. Notably, "industry_dummiesIndustry_1", Chemicals Industry, had a highly significant negative impact on ESG scores (Estimate = -2.888, p-value < 0.001), indicating that companies in this

industry tend to exhibit substantially lower ESG scores compared to others. On the other hand, "industry_dummiesIndustry_4", Extractive Industry, also demonstrated a significant negative effect on ESG scores (Estimate = -1.699, p-value = 0.030), suggesting lower ESG performance for companies in this sector.

Chapter 5: Conclusion

This report successfully achieved its three main objectives: assessing the prevalence and types of infographics used in ESG reports, examining the correlation between infographics and ESG score performance, and as part of this conclusion provide recommendations for ESG reporting practices.

The first objective involved analysing a diverse sample of ESG reports to determine the frequency and variety of infographics utilized in communicating ESG performance. Through this analysis, it was evident that infographics are commonly employed by companies as a means of presenting complex sustainability information. The identified infographics encompassed various types, including charts, graphs, diagrams, and icons, showcasing the versatility and creative approaches adopted by companies to effectively convey ESG-related data.

Regarding the second objective, the research sought to evaluate the association between the presence of infographics in ESG reports and the corresponding ESG scores of the companies. The statistical analysis revealed a significant positive correlation (Estimate = 0.948, p-value = 0.012) between the two variables. This means that companies that incorporated infographics tended to achieve higher ESG scores compared to those that did not utilize visual representations in their reports. This finding highlights the potential value of infographics in enhancing the accessibility and understanding of complex sustainability information, ultimately leading to better ESG performance.

However, an interesting and somewhat unexpected finding emerged from the analysis of the sum of infographics used in ESG reports. Despite the prevalence and variety of infographics found in the reports, the total number of infographics, or the "Sum" as represented in the regression model, demonstrated no significant influence on the ESG scores (Estimate = -0.024, p-value = 0.8634). This intriguing result suggests that while the presence of infographics overall positively affects ESG performance, the sheer quantity of infographics does not directly impact the scores. Overusing infographics without strategic intent or contextual relevance might not

serve the intended purpose and could dilute the impact of visual representations on stakeholders' understanding.

The positive correlation observed between infographics and ESG scores emphasizes the importance of data visualization in ESG reporting. Infographics play a vital role in bridging the gap between technical sustainability data and stakeholder comprehension. By presenting ESG-related achievements, goals, and initiatives in a visually appealing and digestible manner, companies can effectively engage a broader audience of stakeholders, including investors, customers, employees, and communities. The clear and impactful presentation of ESG information through infographics contributes to greater transparency, credibility, and trust in the reporting process.

Lastly, the third objective entailed formulating practical recommendations for companies and standard-setting organizations to enhance the use of infographics in ESG reporting. These recommendations consider the benefits of infographics in improving stakeholder communication and understanding.

One of the key suggestions is to adopt guidelines for creating informative and visually appealing infographics. Companies should focus on presenting essential ESG data in a concise and engaging manner by prioritizing the quality and relevance of infographics over their quantity. Instead of inundating the report with numerous infographics, focus on carefully selecting those that effectively convey the most critical ESG information. Ensure that each infographic serves a clear purpose and adds value to the overall understanding of the company's sustainability performance.

Additionally, strategies for incorporating infographics into ESG communication should be implemented, ensuring that infographics are thoughtfully integrated into the overall reporting structure. This may involve strategically placing infographics in relevant sections of the report to enhance the narrative and draw attention to key insights.

Moreover, it is important to optimize the balance between textual and visual elements in reports to create a comprehensive and cohesive story. Infographics should complement the textual content by providing visual context and enhancing the audience's comprehension of the ESG

performance data. Standard-setting organizations can also play a role in promoting best practices by encouraging the use of infographics in their reporting frameworks and guidelines.

In conclusion, the findings of this thesis underscore the significance of infographics in ESG reporting. Infographics serve as valuable tools for companies to effectively communicate their sustainability initiatives and progress. The positive correlation between infographics and higher ESG scores highlights their potential to make sustainability information more accessible and comprehensible to stakeholders. While the sum of infographics may not directly impact ESG scores, the overall presence of infographics positively influences ESG performance, making them an asset in ESG reporting efforts.

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Annex

Annex 1: Description of Guidelines to gather the Data manually

Location maps	Inform investors about the location of significant company assets or operations, such as buildings or trucking routes.
Process/flow charts	Inform investors about significant processes, such as the flow of their data, the process to extract/create their products or offer their services, and scientific/chemical processes.
Strategy/business models	Inform investors about how the company operates, competes in its defined markets, and creates value for its stakeholders.
Timelines	Inform investors of the milestones and progress for specific projects or events.
Organization charts	Inform investors of how the company and its management team is organized.
Bar Chart	Visualizes data using rectangular bars of varying lengths to compare different categories or display changes over time.
Line Graph	Shows data as data points connected by lines, ideal for illustrating trends or changes over time.
Data Map	Represents data spatially on a map using colours or symbols to analyse geographical patterns.
Pie Chart	Displays data in a circular graph divided into slices, indicating proportions of a whole or the distribution of different categories.
The number of tables	The sum of the types above
Lack of content	Graphics, logos, icons and other contentless miscellaneous images. Also, graphics that make the document more aesthetically appealing: product images, executive pictures, stock pictures, other people's pictures.

Annex 2: Industries

Industry 1	Chemicals
Industry 2	Computers
Industry 3	Durable manufacturers
Industry 4	Extractive industries
Industry 5	Financial institutions
Industry 6	Food
Industry 7	Insurance and real estate
Industry 8	Mining and Construction
Industry 9	Others
Industry 10	Pharmaceuticals
Industry 11	Retail
Industry 12	Services
Industry 13	Textiles, printing and publishing
Industry 14	Transportation
Industry 15	Utilities