Analysing cover page image data of CSR reports of Telecommunication companies

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***Abstract*—This paper is an exploratory study into the role cover pages of CSR reports play in stakeholder impression management. From a sample of 234 cover pages of 83 different telecommunication companies in Africa, Europe, and Asia, our study identifies meaningful trends across the three regions that indicate intentional design choices by the randomly sampled companies. Study results show strong use of humans on European companies' cover pages, suggesting "corporate humanization", a popular strategy companies use to appeal directly to consumers. In contrast, Asian companies take on a more neutral approach, using little to no humans on their cover pages, opting instead for plain or mostly abstract imagery. African companies consistently use company logos on their cover pages, compared to the other two regions, suggesting a strong need to stand out, perhaps as an effort to brand their social contributions to attract future investment.**

I. Introduction

Impression management in sustainability reporting has been a recent topic of interest in academia. Various research studies have attempted to analyse how companies leverage their non-financial reports to control how they are perceived by major stakeholders in terms of their sustainability and social responsibility. A study by Sandburg and Holmund [1] discovered that companies use different strategies aimed at shaping the impressions of stakeholders and thus influence their actions. Bansal and Kistruck [2] identified two main strategies that companies use to communicate their social responsibility: the demonstrative approach, which uses lengthy explanation through text, quantitative data, examples, and graphs, and the illustrative approach which mostly uses verbal and pictorial cues with minimal details. This paper focuses on the illustrative approach with an exploratory study of the different design choices companies make with regard to the cover pages of their CSR reports.

The study of corporate impression management in CSR reporting is important as it can often lend insight into the veracity and validity of the claims made by companies in their reporting. Studies have found that the more a company has to hide about its impact on the environment or corporate malpractice, the more imagery and subtly misleading their CSR reporting become [3]. Design or imagery choice can also tell us something about who is the main target of the CSR report. For instance, Photographic images are considered strong attention grabbers and thus used as a powerful tool for impression management [4]. Abstract images can be used to project a neutral or idealistic image of the company. García-Sánchez, and Araújo-Bernardo [5], in their paper on "Structural visual rhetoric, impression management strategies, and stakeholder engagement" posit that this can be used as a strategy to hide negative externalities that the company might be responsible for in reality.

Although there have been a number of studies on how companies leverage sustainability reporting to gain favour with their stakeholders, there has not been much focus on the divergence in design choices of CSR reports cover pages and whether these choices are deliberate and meaningful in securing positive impressions from stakeholders. The closely related studies cover the use of imagery in CSR reports [6], [7], [3] as the research is not always representative of cover page designs on CSR reports, since a lot of cover pages may be completely devoid of imagery. Furthermore, the studies do not take into account subtle details such as the use of logos on cover pages, lack thereof, or the variety of design choices across geographical regions.

This paper seeks to contribute to the current discourse on impression management in sustainability

reporting by analysing a dataset of 234 cover pages sourced from CSR reports published over a 12-year period from 2007 to 2018 with one report of 2001, by 83 companies across Africa, Europe, and Asia. The dataset that we worked on contained only Telecommunication companies that were Large or Multinational enterprises (MNE). This paper explores how their design choices for the CSR report cover pages vary across time and region.

This report comprises a methodology and material section, outlining our research approach, including how we built our dataset, the data cleaning as well as data processing in Excel and in R. The result section outlines our analysis approach and discusses our core insights. Conclusions and recommendations for further research are made in the final section.

II. Methods and Material

In this section, we provide step by step information on how we approached the problem, what were the choices made in selecting the contents of the dataset, what are the data points we collected in order to analyse the cover images, what tools and softwares were used.

A. First approach

We decided to analyse the cover images of the 3 continents which each group member belongs to, which are Africa, Asia, Europe. To first get a general understanding of the dataset, we randomly picked around 46 Cover images from the regions Africa, Asia and Europe to analyse. The smaller sample would help us to quickly go through the process of analysis and identify challenges such as filtering by industry. We took the course name "Data Visualization" literally and visually scanned through the cover pages to identify similar traits that could be used for analysis. The results are shown in Table I.

To create this table we analysed 7 categories. A more detailed description of the different categories will be given in the section II-B Data Collection.

1) Language of the text contained in the image
2) What colors the image contained
3) How busy the the image appeared to be
4) How many humans were depicted
5) How much nature was depicted
6) Whether the image contained a Photo or a Graphic
7) Color of the background

	Europe	Asia	Africa
Number of Reports	15	18	13
Text English	10	10	12
Text Other Language	5	6	1
No text	0	2	0
Contains Red	4	5	3
Contains Green	5	6	7
Contains Blue	7	7	7
Busy None	0	8	1
Busy Some	9	10	8
Busy Very	6	0	4
Humans Many	8	3	4
Humans One	3	2	1
No Humans	4	13	7
Nature Yes	6	5	3
Nature No	9	13	10
Contains Photo	13	8	9
Contains Graphic	1	8	4
Contains Neither	1	2	0
White Background	4	7	5
Colored Background	11	11	8

TABLE I: A first look at the data. The numbers represent the amount of reports that fit the category. The categories are not mutually exclusive: a cover image might contain red and green colour.

The first analysis with Recommended Charts from Excel showed that there were already noticeable differences between each region. Asian cover images are a lot less busy. European cover images show a lot of humans and African cover images almost always contain English text. Since we already found noticeable differences in our small dataset, we decided that this approach was worth pursuing.

B. Data Collection

Learning from our past experiences, we decided to merge the categories "What colors the image contained" and "Colour of the background", since they were conceptually too similar. Instead we opted for to include a new column *Logo* that measures whether the logo of the company is shown in the report. In contrast to our first approach, we decided to gather the data for each picture individually. This would give us more data to work with in the same amount of time.

The full rundown of the categories is shown in Table II

For creating the dataset we had the following reports available:

Category	Type	Description
background	String	The colour of the background.
humans	Integer	The amount of humans shown. A drawing of a human also counts. All numbers greater 1 are estimates given the time constraints.
nature	Boolean	Whether the image contained a photo or other depiction of nature. A picture of the blue sky or a globe counts as nature.
language	String	The language of the text in the graphic. We differentiate between "English" and "Other" (non-English) language
photo	Boolean	Whether the image contained a photograph.
busy	String	How busy the image appears to be. We differentiate between "Very" busy Somewhat busy and "Not" busy. An example of busyness can be found in Figure 1
logo	Boolean	Whether the image contained a logo of the company.
graphic	Boolean	Whether the image contained a graphic that is not a photograph, for example some squares.

TABLE II: Descriptions of the categories used for the final dataset.

1) 47093 Reports across all sectors according to *GRIexcel.rds*.
2) 1540 of 47093 Reports were from the Telecommunications Sector according to *GRIexcel.rds*.
3) 847 of the 1540 Reports existed in the shared One Drive provided to us.
4) 627 of the 847 Reports had a PDF-File that was not corrupted.

We have decided to go with the number of files we would be able to analyse in exactly one hour. From the 627 Non-Corrupted reports we were able to collect all the data points manually from 234 reports. We created an initial version of the dataset in an Excel sheet continent wise, combined it and loaded into a data frame in R. To illustrate our approach we provide the first three entries of the data frame in Table III.

C. Data cleaning

We have performed some data cleaning operations to get the integrity in data and maintain a standard set of values to the fields, which we felt would help us in plotting. They included:

- Transforming Strings like "Yes", "No" into Boolean

Continent	Europe	Europe	Europe
pdf_name	A1_2015.pdf	A1_2017.pdf	BTGroup_2014.pdf
background	Blue	Blue	White
humans	0	1	0
nature	Yes	Yes	No
language	No	No	Yes
photo	Yes	Yes	No
busy	Some	Some	No
logo	Yes	Yes	Yes
graphic	No	No	No

TABLE III: First three entries of our data frame which consists of 234 entries. At this stage the data has not been cleaned yet. The leftmost column represents the categories that we analysed.

- Transforming all Strings to lowercase
- Unifying different writing conventions, e.g. "some" "somewhat busy" and "s" all get transformed to "Somewhat busy"

This cleaned dataset was later combined with the Metadata contained in *GRIexcel.rds*. We had to make some manipulations in few file names like removing special characters replacing extra spaces to make the pdf names in sync and created the complete dataset with new data points merged to it.

III. Results

Keeping in line with Tufte's principle of consistency, we want to show data variation, not design variation [8]. To archieve this, we took our dataset and narrowed it down to answer the following three questions:

1) How many humans are shown?
2) How busy is the image?
3) Does the image contain a logo?

Figure 1 shows the examples of the different categories to give a better introduction to our workflow.

On the topic of consistency, the colors have been chosen in a way that red always presents less and blue represents more of a thing which is hopefully intuitive. Selecting different transparency or alpha values would be another option but those were harder to identify given the size of our figures so we opted for the colors instead. To show the differences between region, we used faceting. We also included a timeline grouping reports by Publication year on the x-Axis to see if we can find meaningful developments how the Companies changed their attitude over time.

(a) No humans not busy (b) One human somewhat busy (c) >1 human very busy

Fig. 1: Three different cover images to show their differences.

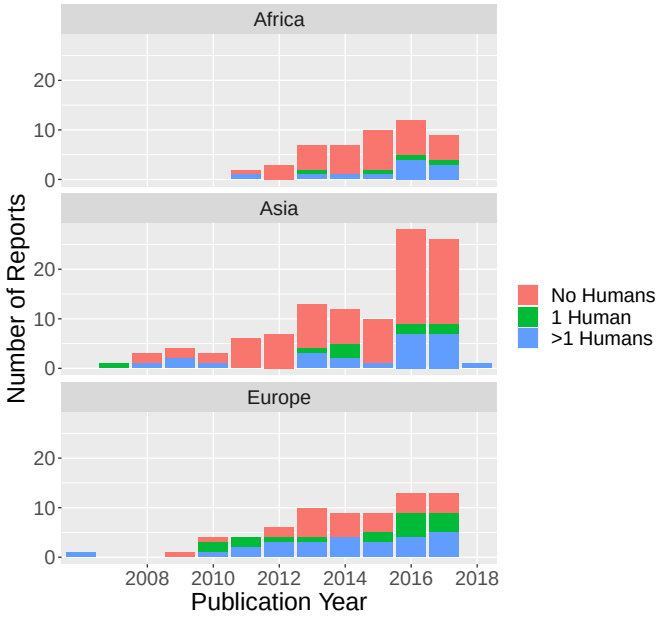

Fig. 2: Categorizing the Reports by the number of humans on the cover image over time. There is a division in the three Regions: Africa, Asia and Europe.

The size of plots has also been adjusted so each subplot is close to the golden ratio. We tried the width-height ratio proposed by our lecturer Arend Hintse of $\frac{7.5}{3}$. With three subplot, it should be therefore close to $\frac{7.5}{9}$. Since some of the width is lost describing the legend, we opted for a ratio of $\frac{7.5}{7}$ instead. The plots are also maximizing the Data-Density according to Tufte by making the graphic as small as possible while still maintaining legibility by increasing font size. There is an argument for a smaller font size, but since it is a report for our grandmothers we wanted to make sure they can read it as well.

A. *Humans*

We are interested in how many humans are shown within each region and whether the design choice has been changed over time. The result of analysis can be found in Figure 2.

At first glance we can see that Asia has a surprising amount of cover images that depict no humans. This is consistent with what we found during our data gathering. Cover mages from Asian telecommunication companies are mostly really simple and sometimes are even just text on a white background. On comparison African companies contain a moderate amount of humans and European companies depict humans often.

We separated the categories for ”1 human” and ”more than 1 human”, since we assumed that there would be many cover images containing just 1 human. We assumed we would see a lot of pictures that contain exactly one scientist or engineer, to show how innovative the company is. We found that those pictures were used rarely in Africa and Asia and only Europe has used those more frequently.

Given that our dataset is quite small, we could not find any major changes over time that could not be explained by random variation. It appears that regions are quite consistent with the amount of humans presented.

B. *Busyness*

We denote *Busyness* as how busy the image appears to be. During our initial analysis we noticed that European and African cover images were very busy and Asian cover images a lot less busy. To put this feeling into data we categorized the images according to three categories ”Not busy”, ”Somewhat busy” and ”Very busy”. Representative pictures of these categories can be found in Figure 1.

We can see that Africa appears to be the region with very busy or at least somewhat busy cover images. Asia on the other hand has a highest amount of not busy cover images. This again stems from the great amount of ”cover images” that are just some text in front of a white background.

A noticeable difference between Busyness (Figure 3) and number of humans (Figure 2) is that pictures can be busy even without humans depicted.

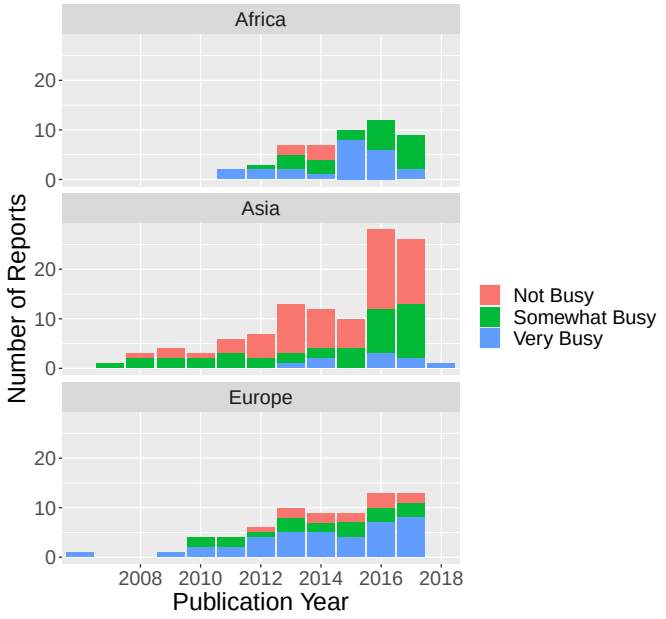

Fig. 3: Categorizing the Reports by how busy the cover image appears to be. There is a division in the three Regions: Africa, Asia and Europe.

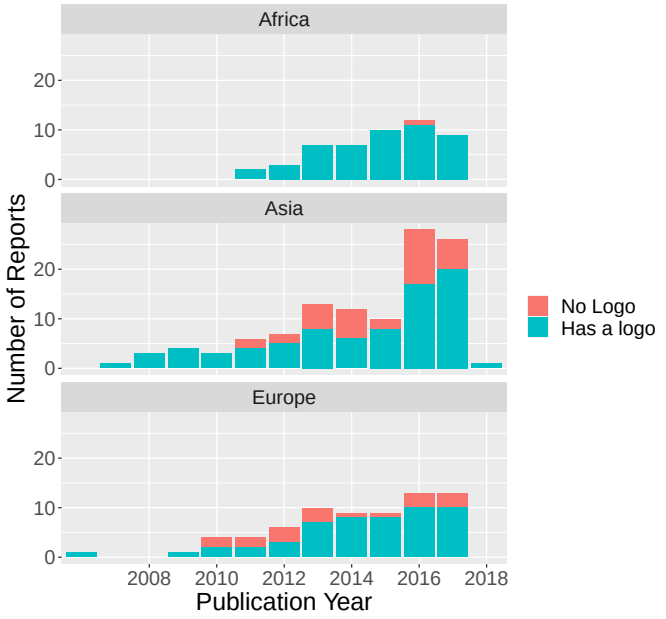

Fig. 4: Categorizing the Reports whether or not they contain a logo of the company. There is a division in the three Regions: Africa, Asia and Europe.

Examples include graphical depiction of nature or other graphics. We can see that there is a greater number of ”Somewhat Busy” cover images than images that contain just 1 human.

There seems to be no major change in busyness over time between the three continents.

C. Logo

Logos are a graphical representation or a symbol of a company name. We can assume that most companies want to print their Logo on the CSR-Report to stand out. To analyse the usage of logos, we marked the cover image by whether or not it contains a logo. The result is shown in Figure 4.

As expected, companies generally care about putting a logo on their cover image. In Africa there was only one company in out of our dataset of 50 companies that did not contain a logo. The majority of Asian cover images contains a logo although the percentage is lower than of European and African cover images. Europe is between Asia and Africa regarding Logo use. We notice an outlier in 2016 where a bigger percentage of Asian companies did to not use a logo. Excluding that the logo usage has been consistent for all three continents over the years.

IV. Conclusion

From our study, it is possible to build a contextual image of CSR reporting across a variety of geographical regions with an in-depth analysis of the cover pages. It is indeed, of interest, to note the strongly opposite strategies that European and Asian companies take with regards to featuring humans on their CSR reports cover pages. This is potentially a consequence of European companies having to answer to their consumers, engaging in ”corporate humanisation”. In contrast Asian companies tend to prioritize foreign markets and governmental regulations thus can get away or even benefit from a neutral approach in their CSR cover page design. It is also important to note that neutral imagery in sustainability reporting can be considered a red flag as it may be an attempt to conceal actual negative externalities generated by the company. A very noticeable trend for African companies is that all except one CSR report showed their logo, which suggest a strong need to stand out. Perhaps this is an effort to brand their social contributions to attract future investment.

Although much more insights can be drawn from studying CSR report cover pages, our study was limited in the small size of our sample, the geographical regions chosen for analysis, the criteria

used for analysis as well as the technology and tools used. Further studies can be done by expanding on any of the above elements.

A stronger body of research would make it easier to answer questions like, who is the intended audience for these reports? What do cover pages say about a company's CSR strategy? Or how does socioeconomic and geopolitical context inform sustainability reporting?

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