Global Review of Accounting and Finance
Vol. 7. No. 1. March 2016 Issue. Pp. 144 – 164

On A New Impression Management Technique

Lorenzo Gelmini, Francesco Bavagnoli and Maurizio Comoli[x]

Materiality matrices are a relatively new tool largely developed by professional bodies to identify the economic, social and environmental issues that matter to stakeholders. Through a preliminary empirical study, this paper aims to examine whether firms use these matrices as a new impression management technique to project a more favorable image of their social and environmental performance. Our findings indicate conspicuous incidences of impression management from a high materiality convergence level to issue selection bias.

Field of Research: Sustainability Accounting, Impression Management

1. Introduction

Through a preliminary empirical study, this paper examines materiality matrices from an impression management and testing perspective to determine whether firms use such matrices as a new impression management technique. In other words, just as corporations appear to manipulate the narratives (Cho et al. 2012), visuals (Davison 2010) and graphs (Beattie and Jones 2008) in their financial reports, they may also use impression management techniques in their sustainability reports to project a more favorable image of their social and environmental performance. We investigate a sample of 23 firms to determine their use of materiality matrices and whether this leads to presenting their firms in a more favorable light.

The main motivation of our paper lies in the novelty of both the topic and the consequent research question: is the materiality matrix a new tool of impression management?

We believe that not only the field of our research is new and yet to be addressed, but that its importance is clear and increasingly relevant, as well.

In our view, in fact, the more sustainability accounting and disclosure turn into a popular mantra amongst the companies, the more strategic becomes the effort to unveil the real motivations and rationales which could lag behind.

The paper is structured as follows: the next section reviews the relevant literature, Section 3 examines the current guidelines and materiality matrix practices, Section 4 presents our study and the last section offers some conclusions.

2. Literature Review

We review some general literature on the theoretical frameworks of materiality matrices and impression management techniques as well as some specific issues of visual effects (such as

[x] Lorenzo Gelmini, Francesco Bavagnoli, Maurizio Comoli, Department of Business Studies, University of Eastern Piedmont, Italy. Corresponding Author: Lorenzo Gelmini, lorenzo.gelmini@uniupo.it

graphs) and the impression management consequences that may also apply to materiality matrices.

2.1 Theoretical Frameworks

From an academic perspective, stakeholder theory, institutional theory and legitimacy theory may all be usefully applied to the materiality matrix framework.

Stakeholder theory (Freeman, 2010) lays the foundation of the extent of stakeholder involvement, underlining the obligations companies have to their internal and external stakeholders including suppliers, employees, customers, communities and investors. According to stakeholder theory, stakeholder relationships are critical in managing an organization and should inform key decisions (Searcy and Buslovich, 2014).

Institutional theory (Scott, 2013) frames discussions on the coercitive, mimetic and normative pressures that help clarify how and what companies choose to report (Searcy and Buslovich, 2014).

Amongst debates in the broad institutional theory context, institutional isomorphism (Di Maggio and Powell, 1983) explains why organizations come to resemble one another over time as a result of such pressures.

The legitimacy theory arguments of, amongst others, Deegan (2002), Cho and Patten (2007) and Cho (2009), claim that when corporations face potential threats to their social or environmental legitimacy, they have an incentive to use communication strategies to attempt to influence the perceptions of their relevant stakeholders. More specifically, in the environmental domain, Cho and Patten (2007) present evidence suggesting that companies with worse environmental performance tend to make more extensive and potentially mitigating environmental disclosures. More recently, Cho et al. (2012) show that aside from the extent of disclosure, companies that are poor environmental performers also manipulate, at least in part, the use of the language in their environmental disclosures to apparently obfuscate their poorer performance.

2.2 Sustainability and Impression Management

Unerman et al. (2007) admit that many critics of the sustainability accounting trend see reports as little more than a public relations tool designed to “win (or maintain) the approval of those stakeholders whose continued support is crucial for the survival and profitability of the business”. The decision to issue a stand-alone sustainability report is voluntary and although organizations such as the Global Reporting Initiative (GRI) and Sustainability/UNEP offer guidelines and recommendations for disclosure, no requirements or regulations for such reporting exists, for instance, in the United States.

Merkl-Davies and Brennan (2007) argue that non-regulated disclosure increases “the opportunity for impression management”.

Godfrey et al. (2003) claim that impression management “occurs when management selects the information to display and presents that information in a manner intended to distort readers’ perceptions of corporate achievement”. Following Prakash and Rappaport (1977), Merkl-Davies et al. (2011) suggest that managers engage in impression management with the expectation that stakeholders will respond in less undesirable ways to the corporate behaviors described in

the companies' narrative documents. These authors further argue that the impression management construction can be accomplished by emphasizing positive outcomes (*enhancement*) and/or by obfuscating negative performance (*concealment*), thereby presenting an inaccurate view of organizational outcomes (*self-presentational dissimulation*).

Based on their extensive review of impression management literature, Merkl-Davies and Brennan (2007) note that one of these strategies includes visual and structural manipulation. Our view is that corporations may systematically use materiality matrices in their sustainability reports to favorably bias stakeholder perceptions of their social and environmental performance.

2.3 Graphs and Visual Mechanisms

Companies communicate using graphs and visual mechanisms (such as materiality matrices) rather than tables or narratives for six main reasons (Beattie and Jones, 2008).

First, graphs and visual mechanisms allow management to present information in a flexible way. Most of the information in annual reports is constrained by a regulatory framework such as, for example, the requirements of the Securities and Exchange Commission (SEC) and the Financial Accounting Standards Board in the US. Graphs, however, typically fall outside the regulatory remit of accounting standards. Companies therefore have discretion in summarizing, distilling and expressing the information in whichever way they choose (Beattie and Jones, 2008).

Second, graphs and visual mechanisms are eye-catching. The visual saliency of graphs is enhanced by the use of color (Leivian, 1980). In effect, graphs and visual mechanisms constitute oases of color and interest in rather formal and forbidding statutory documents. Graphs become "graphical sound bites" reflecting the wider sound bite culture of television epistemology (Beattie and Jones, 2008).

Third, graphs and visual mechanisms are excellent at summarizing, distilling and communicating financial information. They are particularly good at conveying information on trends, patterns and highlighting anomalies. In financial reporting, graphs and visual mechanisms can capture a company's performance by highlighting a few key performance indicators (KPIs) over time, such as sales and earnings per share (Beattie and Jones, 2008).

Fourth, graphs and visual mechanisms tap into a highly developed human cognitive skill or spatial intelligence. In essence, graphs and visual mechanisms allow spatial rather than linguistic decoding. We can therefore use "sight" (the dominant visual sense) to "see" the data more directly and clearly.

Fifth, graphs and visual mechanisms are memorable. We retain pictorial and graphic representations much better than numbers (Leivian, 1980) and such data can be readily retrieved (Beattie and Jones, 2008).

Finally, graphs and visual mechanisms are egalitarian (Beattie and Jones, 2008).
From a structural point of view, basic rectilinear coordinate graphs, such as the column graph, have four primary structural components: background, framework, specifier and labels, as in the case of materiality matrices.

The background is the pattern against which the other components are displayed. It serves no essential purpose and can be plain white, colored, patterned or include pictorial decorations,

often extending beyond the boundaries of the framework. Although this can have a neutral impact or generate interest, it can also be distracting and potentially interfere with the effective communication of the financial information from preparer to user.

The full outer framework comprises two intersecting perpendicular lines. Often all measurements are positive and so only the upper right quadrant of the potential graphic framework is shown. The axes are each marked off in equal units, with tick marks showing the scale divisions. Typically, the horizontal or x-axis represents time (shown in years from left to right), while the y-axis represents a financial variable such as sales or earnings per share. It is generally considered poor practice to use a non-zero scale or unequal divisions as this runs counter to the basic graphic convention that the specifier should vary in direct proportion to the numerical values portrayed (Tufte, 1983; Schmid, 1983). Unskilled graph/matrix readers could easily be misled by a non-zero or non-arithmetic scale if they only rely on perceptual processing and do not read and cognitively process the labels.

The key component of a column graph/matrix is the specifier, which is the graphic element used to represent quantitative information. In column graphs, the specifier is the length of the column. The width of the specifiers and the interspaces should be uniform and evenly spaced (Jarett, 1983).

Column specifiers can have a number of attributes, such as cross-hatching, color and dimensionality. The use of cross-hatching, unfilled, outline specifiers and three-dimensional specifiers is not advisable, as they can produce distortive visual effects.
Three types of labels are essential to all graphs and matrices (Schmid, 1983). First, a meaningful title should exist, generally located at the top of the graph/matrix. Second, the scale on each axis should be given an alpha label, normally to the left of the vertical axis and to the bottom of the horizontal axis. Third, numeric labels (under certain circumstances also used in matrices) are required to indicate the values of each scale, generally located close to the axis.

2.4 Conclusions

The review of the literature, mentioned above, highlights, at the best of our knowledge, a research gap, since materiality matrices have never been explicitly examined as a method of impression management.

Our paper moves from that gap and helps in disentangling the relationship (between these matrices and the impression management techniques) making also use of the well-construed body of literature regarding visual effects and graphs.

3. The GRI-G4 Sustainability Reporting Guidelines and the Materiality Matrix

As known, the fourth generation of the G4 Global Reporting Initiative (GRI) was launched in May 2013. According to GRI, “the launch marked the culmination of two years of extensive stakeholder consultation and dialogue with hundreds of experts from across the world from a wide variety of sectors, including companies, civil society, labor organizations, academia, and finance”. Moreover, “the aim of G4 is simple: to help reporters prepare sustainability reports that matter - and to make robust and purposeful sustainability reporting standard practice”.

The pivotal role of reporting material issues is confirmed in both GRI’s Sustainability Reporting Guidelines (2013) and in its Implementation Manual (2013). According to the former, “materiality is the threshold at which the sustainability subjects covered by the Guidelines - known as

'Aspects' - become sufficiently important that they should be reported. G4-based reports should cover Aspects that reflect the organization's significant economic, environmental and social impacts; or substantively influence the assessments and decisions of stakeholders. Key stakeholders - such as investors, market regulators, civil society, suppliers, employees or customers - have a vital role to play in informing an organization's materiality assessment. Taking stakeholders' views into account is central to developing a robust understanding of a company's economic, environmental and social impacts, and of how these relate to business value and resilience". The Implementation Manual includes a figure called "visual representation of prioritization of Aspects" which is referred to in the following as "the materiality matrix" and comprises an X-axis labeled "Significance of economic, environmental and social impacts" and a Y-axis labeled "Influence on stakeholder assessments and decisions".

The Manual goes further, stating that, "determining materiality for a sustainability report also includes considering economic, environmental and social impacts that cross a threshold in affecting the ability to meet the needs of the present without compromising the needs of future generations. These material Aspects often have a significant financial impact in the short term or long term on an organization. They are therefore also relevant for stakeholders who focus strictly on the financial condition of an organization. A combination of internal and external factors should be used to determine whether an Aspect is material, including factors such as the organization's overall mission and competitive strategy, concerns expressed directly by stakeholders, broader social expectations, and the organization's influence on upstream (such as supply chain) and downstream (such as customers) entities. Assessments of materiality should also take into account the basic expectations expressed in the international standards and agreements with which the organization is expected to comply. These internal and external factors should be considered when evaluating the importance of information for reflecting significant economic, environmental and social impacts, or stakeholder decision making. A range of established methodologies may be used to assess the significance of impacts. In general, 'significant impacts' refer to those that are a subject of established concern for expert communities, or that have been identified using established tools such as impact assessment methodologies or life cycle assessments. Impacts that are considered important enough to require active management or engagement by the organization are likely to be considered to be significant".

Despite the increasing interest that GRI has recently shown in materiality matrices, their use has been acknowledged as dating back to 2005 when BP released its Sustainability Report for 2004 titled "Making the right choices".

In this document, BP proposes a four-cell diagram with an X-axis labeled "Potential impact on BP's ability to deliver strategy" and a Y-axis labeled "Level of external concern" to identify potential material issues and representing a forerunner of materiality matrices.

Along the same lines, AccountAbility observed in its "Materiality Report" for 2006 an emerging commonality in the use of matrices, stating that, "these [matrices] were variations on the familiar matrix plots used in risk analysis, but with scales representing societal and business significance. Issues were systematically assigned to numerical or descriptive scales and then plotted graphically to show where they lay in relation to prioritization criteria".

In 2011, Fronesys (consultancy firm) issued a comprehensive and detailed report of the materiality matrices of 31 companies, offering insights on how this management tool could be improved. In detail, the most salient include the need for companies to disclose the underlying processes and scoring mechanisms used to create the matrix, to increase the level of detail in

how they assess the impact of issues and to review the results against peers in order to avoid inexplicable anomalies.

Finally, Eccles, Krzus and Ribot (2014) examine the current practice of materiality matrix construction and use in terms of five key aspects: stakeholder identification and engagement, dimension definition and label, issue identification and description, issue scoring and interactivity.

We move from the work of Eccles et al. (2014) and through our empirical investigation attempt to shed light on impression management practices that could be exploited via the materiality matrix.

4. Methodology, Research Questions and Results

Our sample comprises all companies included in the GRI dataset "Sustainability Disclosure Database" (last accessed 1 December 2015) that simultaneously:

a) are Incorporated in Europe;
b) are Large companies;
c) follow the G4 Guidelines;
d) operate in the financial industry (according to the GRI wording, they develop "financial services");
e) released their report in 2015 (for reasons of incontrovertible language interpretations, we only selected reports published either in English or in our mother tongue).

Point a) was chosen for comparability reasons, so as to exclude companies incorporated in countries well ahead in the field of sustainability accounting (South Africa and Australia, for instance), while point b) includes the largest companies, which - *ceteris paribus* - are expected to produce well-prepared financial and non-financial reports.

As a preliminary field of study, our paper deals with the financial industry, according to point d) above, since this plays a pivotal role in the current European economy and yet, rather surprisingly, is not widely considered in accounting research on issues of sustainability, despite the paramount relevance of financial institutions with reference to environmental and social issues.

Our sample, taking into account points a) to e) above, comprises 23 companies.
The methodology of our paper is mainly descriptive, since we have looked in the notes of the reports a the presence/absence of a number of research question and (sub) questions.

Our research question seeks to identify in our sample of financial institutions the current practice of using materiality matrices and the possible exploitation of these matrices as a new impression management technique.

In more detail, moving from the work of Eccles et al. (2014), we develop the following research (sub)questions:

1) *Stakeholder identification*: Are the specific stakeholders identified when developing the materiality matrix?
2) *Stakeholder engagement*: What engagement methods are adopted? To what extent do the companies pursue this engagement?

3) *Issue identification*: Which issues are included in the materiality matrix?
4) *Issue description*: How are the different issues described in terms of color and size?
5) *Dimension definition*: How have the X-axis and Y-axis been labeled? Do they relate to the current or the future state? If so, is there an explicit time dimension?
6) *Issue scoring*: Are the items measured? If so, is there a numeric approach (e.g., 1 to 5) or a word label definition (e.g., low, medium and high)?
7) *Use of the matrix*: Is the degree to which the company uses the stakeholder engagement and resource commitment matrix mentioned?
8) *Issue Coherence Level*: How are the same issues scored by different companies?
9) *Materiality Convergence*: Do the issues among companies and stakeholders converge in terms of the importance of a given issue?
10) *Selection bias*: Are there any impression management mechanisms in selecting items to be disclosed in the materiality matrix?
11) *Explicit approval*: Is there formal approval of the materiality matrix?

4.1 Stakeholder Identification

Of the companies under survey, 22 (or 95.65% of the sample) do not state in detail the specific stakeholders considered when developing the materiality matrix and identify only a generic list of influential groups such as, for example, customers, suppliers, employees, investors, shareholders, partners, environment, communities and so forth.

As a single notable exception, one company dedicates a specific section (called “The Stakeholder Map”) to disentangling some of the above-listed generic categories. For instance, the grouping is as follows:

- Partners in 7 subsections (network partners, staff partners, young partners, senior partners, partners with explicit accountability roles, top management, unions).
- Customers in 9 subsections (private and family, financially vulnerable private and family, small and medium sized companies, large companies, start ups, trade associations, consumers associations, public authorities and public companies, not for profit companies).
- Shareholders in 5 categories (small investors, foundations, socially responsible investors, institutional investors, investor associations).
- Suppliers in 4 categories (large suppliers, small and medium suppliers, commercial partners, sub-contracting suppliers).
- Environment in 3 categories (environmental associations, future generations, scientific communities).
- Communities in 4 categories (associations representing the main interests of the community, authorities, national and international public institutions, media).

However, categorizing stakeholders under more detailed labels may engender uncertainties (e.g., placing a certain stakeholder under one or another label; understanding with clarity the meaning of some labels that may be emphatic, rhetoric and generic themselves: consider, for instance, the label “associations representing the main interests of the community”). A precise identification of stakeholders is a quintessential constituent of an effective materiality matrix, since materiality itself is only productive and useful if able to capture the firm’s specific and relevant actors.

4.2 Stakeholder Engagement

The 23 companies together declared adopting 86 stakeholder engagement measures with an average 3.74. The median, maximum, minimum and standard deviations are 4, 7, 1 and 1.92 respectively. The most recurring frequency is 3 in 5 companies, while 2 companies do not disclose any stakeholder engagement measure. The specific measures used and their frequency are presented in Table 1 below.

Table 1: Specific stakeholder engagement measures

Methods	**Frequency**	**%**
Management review	19	22.09
Survey and questionnaires	16	18.60
Guidelines (general or specific)	10	11.63
Meetings/workshops/focus groups	10	11.63
External consultancy	6	6.98
Social media	6	6.98
Benchmark and peers	4	4.65
CSR trends in the industry	3	3.49
General internal documentation	3	3.49
Internal CSR Manager	3	3.49
Press	3	3.49
Inquiry of all company staff	2	2.33
Customer satisfaction assessment	1	1.15
Total	*86*	*100*

Analyzing this table from an internal/external perspective, the measures can be suitable aggregated into (i) exclusively internal (i.e., no interaction with external sources), (ii) exclusively external (i.e., no interaction with the specific internal features of the company) and (iii) mixed measures, as shown in Table 2.

Table 2: Aggregation of stakeholder engagement measures

Methods	Frequency	%
(i) Exclusively internal measures		
Management review	19	22.09
General internal documentation	3	3.49
Internal CSR Manager	3	3.49
Inquiry of all company staff	2	2.33
Sub-total	*27*	*31.39*
(ii) Exclusively external measures		
Guidelines (general or specific)	10	11.63
External consultancy	6	6.98
Social media	6	6.98
Benchmark and peers	4	4.65
Industry CSR trends	3	3.49
Press	3	3.49
Sub-total	*32*	*37.22*
(iii) Mixed measures		
Survey and questionnaires	16	18.60
Meetings/workshops/focus groups	10	11.63
Customer satisfaction assessment	1	1.15
Sub-total	*27*	*31.39*
Total	*86*	*100*

The results in Tables 1 and 2 highlight the pervasive consistency of a wide range of stakeholder engagement measures.

Interestingly, on further breaking down the results of Table 2, all the companies in the sample disclosing at least one stakeholder engagement indicator use internal measures (i.e., 21 companies), 15 companies use external measures and 16 companies use mixed measures. Thus, the percentage of adoption of measures are respectively 100%, 71.43% and 76.19%.

Companies that declared using external/mixed/internal measures on average use respectively 2.13, 1.69 and 1.29 measures. In this sense, we could suggest that companies adopting “non exclusively internal” measures (i.e., external or mixed), adopt more measures than companies making use of internal measures.

11 companies (over 50% that disclose at least one stakeholder engagement measure) make use of all three categories of measures.

Among the possible explanations of these results, we could argue that (i) the materiality process and the stakeholder engagement procedure mostly constitute an internal process and thus all the companies apply the internal measures to assess these issues, and (ii) when present, the companies tend to adopt a combination of external/mixed measures above internal measures in percentage terms.

Table 3 shows the depth of stakeholder engagement that the companies pursue.

Table 3: Depth of stakeholder engagement

Depth	Frequency	%
Not explicit	11	47.83
Good	5	21.74
Above good	7	30.43
	23	100

While almost half the companies (11) in our sample limit the depiction of stakeholder engagement to the list of measures employed to achieve it, the other 12 companies describe the process itself in more detail: indeed, they do not restrict disclosure to simply the measure but offer additional information.

In particular, we identify two different types of descriptions (good and above good disclosure), with the following results:

a) With reference to “good descriptions”: 3 companies explicitly declare ranking the stakeholder engagement measures, 1 company starts from a long list of potential issues and reduces this to a sensible number using stakeholder engagement, 1 company first groups the stakeholder engagement measures and then ranks these according to their relative importance.
b) With reference to the “above good” description: 3 companies clearly link the stakeholder, stakeholder engagement and materiality processes; 2 companies describe their rigorous process of stakeholder engagement (one via a consultancy and one via a detailed three-phase process). To ensure parity and comparability, 1 company makes use of a survey where the questions are designed to mimic those asked in the internal interviews, 1 company describes the specific departments involved and analyses the relevance of each issue according to each stakeholder.

A detailed description of the stakeholder engagement process adopted is helpful since merely depicting the measures used does not enable readers to fully capture the true attitude of the company compared to a comprehensive assessment of the needs of the different types of stakeholders.

At the same time, since not all stakeholders are equally relevant to the companies, the actual technicalities in terms of grouping and ranking different stakeholder needs and the choice of specific departments involved in the process play an important role in understanding the approach followed.

4.3 Issue Identification

All the companies in the sample began their identification of material issues with at least 5 items. However, in terms of declaring the specific “working issues” (i.e., issues considered relevant for both the materiality matrix and the company’s activities/strategies/operations), 20 companies specifically lists such issues, while the remaining 3 limited the analysis to the general set of possible items, without specifying the actual number of items usede. The results are presented in Table 4.

Table 4: Issue identification

	Issues "in general"	Working Issues
Min	5	5
Max	54	27
Average	20.35	13
Median	15	13
Standard Deviation	11.45	6.50

If the average and median working issues are acceptable in terms of the number of issues themselves (13), the maximum number of issues (27) and their standard deviation (6.50) are truly impressive and would seem to imply in the actual day-to-day operations, a certain impression management practice, since it is effectively difficult to conceive the simultaneous management of 27 issues.

That said, 468 general issues are identified (386 for the 20 companies with a declared set of working issues) and 260 working issues.

12 companies out of 20 (60%) include as working issues the overall set of issues initially considered (i.e., 100% issue convergence) with an average value of 78.93%.

This element is difficult to assess univocally, as it could be interpreted as both an impression management technique (since these companies boast managing all the items originally included in the analysis) and a sincere approach towards materiality, since, *a contrario,* the companies directly move from a "tailored-for-stakeholders" list of issues and try to remain in line with the original schedule of their stakeholders' *desiderata.*

4.4 Issue Description

14 companies use a materiality matrix (almost 61% of the sample), whereas out of the remaining nine companies, 7 present data with a double-entry table, 1 uses narratives and 1 limits disclosure to a list of material issues.

Out of the 14 companies adopting the materiality matrix, 10 use the visual saliency of colors while the remaining 4 do not (71.43% and 28.57% respectively).
In detail, all 10 companies that use colors in their matrices adopt them to explicitly differentiate the issues and are sometimes mixed with other visual differentiation mechanisms (e.g., size and form of labels).

4.5 Dimension Definition

Table 5 contains the specific denominations of the X-axis and Y-axis for each of the 14 companies making use of a materiality matrix.

Table 5: X-axis and Y-axis denomination

X-axis	***Y-axis***
Degree of importance for the company	Degree of importance for the stakeholders
Significance of economic, social and environmental issues for the company	Significance of economic, social and environmental issues for the stakeholders
Significance of economic, environmental and social impact	Influence on stakeholder assessments and decisions
Business impact	Societal interest
Importance to business	Importance to stakeholders
Importance of impacts to the company	Importance to stakeholders
Impact on the company	Significance for stakeholders
Impact on stakeholders (*reverse*)	Impact on strategies (*reverse*)
Increasing impact for the company	Increasing impact for stakeholders
Importance to business development	Importance to stakeholders
Importance to business	Importance to stakeholders
Company influence and control	Impact on stakeholders
Company approach	Importance to stakeholders
Impact of the GRI aspect on operations of the company	Impact of company's operations on the GRI aspect

According to Table 5:

- Use of the X-axis as the "company axis" and the Y-axis as the "stakeholders axis" is almost universal (all companies with a single exception that reversed the axes).
- Even if the concept underlying the X-axis is fairly univocal, only 2 companies use the exactly identical label ("importance to business").Misunderstanding the meaning of the X-axis, one company re-labeled it as "Company influence and control".
- The concept behind the Y-axis is more categorical when compared to the X-axis, since 4 companies use exactly the same label ("importance to stakeholders") and none misinterprets the axis.
- For both axes, the companies apparently consider "impact" and "importance" as synonymous, which are not the same (the first being effectively actual and the second only potentially actual).
- Companies tend to adapt the wording of the X-axis to the wording of the Y-axis and vice versa. Consider, for instance, the words "importance" and "impact" which are simultaneously used for both axes.
- The time framing, which is a key element of properly understanding the axes, is almost completed neglected, since only 1 company explicitly labels the axes taking into consideration the time effect (preceding the axes labels with the term "increasing") and 2 companies discuss, even if only in the narratives below their matrices, the evolution of the materiality matrices and the labels over time.

4.6 Issue Scoring

Only 7 companies disclosing a materiality matrix (50%) measure the relative importance of issues, 4 using words (low, medium or high) and 3 using specific numeric scales.

In the latter case, rather interestingly, only 1 company makes use of the traditional "1-5" segregation of items (comparable to the verbal ranking: 1-low, 3-medium and 5-high), while the

other two adopt different scales (for instance, from 3 to 7), which in one case is different for the two axes and originates from the internal scoring that is not available to readers.

The scarcity of disclosure in measuring the issues (with either words or numbers) is a severe limitation of the matrices, as they depict phenomena without describing the underlying process.

4.7 Use of the Matrix

All the companies in the sample mentioned the degree to which they use their matrices, even if their disclosure is extremely erratic in terms of the depth of the information provided.

Indeed, some companies carefully detail the effects of the materiality matrix (and some explicitly label a specific paragraph, e.g., "what the materiality matrix tells us") whilst others limit their information to a short informal mention of the areas affected by the matrix.

Leaving aside the information dimension and the 2 companies that use a specific paragraph to describe the use of the matrix, Table 6 identifies the use of the matrix cited by the other 21 companies (some declaring more than a single use).

Table 6: Use of the materiality matrix

Use	**Frequency**	**%**
Planning and strategy		
Strategy	4	16
Risks and opportunities	3	12
Achieving primary objectives	2	8
Future targets	1	4
Sub-total	*10*	*40*
Business		
Operations	6	24
Corporate and business activities/actions/conduct	4	16
Consumption of resources	1	4
Sub-total	*11*	*44*
Disclosure and communication		
Disclosure	3	12
Stakeholder engagement	1	4
Sub-total	*4*	*16*
Total	*25*	*100*

Hence, according to Table 6, the matrix is primarily used for the daily running of business operations and conduct, measuring resources and, secondly, planning and strategy. Interestingly, the matrix is rarely used for disclosure and communication.

Table 6 brings to light some perplexities when interpreted through the impression management lens, since the matrix should primarily be a disclosure and communication tool, while the process of identifying the material issues and positioning these in the matrix should be first a strategic mechanism and thereafter a helpful element for daily business.

Since the results of Table 6 are in the opposite direction with respect to the above, it could be argued that the information provided should be assessed as an impression management

technique to which the matrix itself, and not the mechanism to depict the matrix, is a tool for planning and managing the company's business, which is conceptually ambiguous.

4.8 Issue Coherence Level

Table 7 distributes the issues according to their specific environmental, social and financial areas. Taking into account all 468 issues mentioned immediately after Table 4 (i.e., relevant and not relevant) and since one company declares considering 54 issues but discloses only 10, the issues considered equal 424.

Table 7: Composition of issues by general categories

	Issues	%	Min	Max	Average	Median	Std dev.
Environmental	59	13.92	0	8	2.57	2	2.08
Social	168	39.62	0	19	7.30	7	4.38
Financial	127	29.95	0	16	5.52	4	3.85
Mixed	70	16.51	0	7	3.04	3	1.90
Total	*424*	*100*					

On average, the materiality matrix discloses 18 issues, of which 2/3 pertain to environmental themes, 7 to social items, 5/6 are financials and 3 are mixed (for instance, transparency). This shows a significant standard deviation (especially in the case of environmental topics with a standard deviation close to the average value) and thus the general representation of Table 7 could lead to misleading results when only considering the average and median data.

Moreover, the number of specific labels of issues is significantly high and fairly dispersed along the sample. Indeed, for the 424 issues, we counted over 350 specific labels: in other words, on average, a specific denomination occurred in the sample no more than 1.21 times. Thus, moving to the 267 relevant materiality matrix issues (also see Table 8), we aggregate the issues based of both their lexical and logical adjacency, for instance, "training" and "training and development of skills", "remuneration policy" and "remuneration and bonuses", and so forth.

In doing so, our aim is to garner a view of the level of coherence amongst the "general issues" in the 14 materiality matrices (rather than single issues that vary excessively in the sample).

The results are mixed, indeed:

a) The companies rated some general issues with a rather similar X-axis and Y-axis score, for instance, anticorruption, economic performance, business ethics, all resulting in "high-high" rates.
b) The companies rated some other general issues with largely different results, for instance, employee engagement is rated "high-low" by some companies and "medium-medium" by others, human rights is even rated at opposite ends of the matrix (from "high-high" to "low-low").

Hence, due to the high variance between different items (and potentially without sufficient benefit), the issue coherence level has not be articulated in this paper.

These findings require further investigation, as we would expect a consistent rating of issues since the companies are involved in similar businesses and the stakeholder needs should thus not vary dramatically amongst these companies.

Aside from future studies on this point, we could argue as a preliminary response that companies develop materiality matrices with different weights allocated to their stakeholders and, thus, the difference in the issue coherence level could depend on the relative weight of each stakeholder. Moreover, companies may define concepts that are similar only in their definition (i.e., formally) but which could substantially differ in their practical interpretation.

4.9 Materiality Convergence

To determine the convergence of issues between companies and stakeholders, we classify each given issue under its reciprocal position according to the X-axis (first position) and Y-axis (second position) in a generic nine-square matrix, with three different clusters:

a) Total convergence: low-low importance, medium-medium importance, high-high importance (3 squares).
b) Medium convergence: low-medium importance, medium-low importance, medium-high importance, high-medium importance (4 squares).
c) No convergence: low-high importance, high-low importance (2 squares).

The results are shown in Table 8. The list of issues is slightly longer than indicated in the paragraph below Table 4 (i.e., 267 vs. 260 issues), since one company included 7 more issues in its matrix than the "working issues" indicated in Table 4. We therefore also include these in Table 8.

Table 8: Materiality convergence level

	Frequency	***%***
Total convergence		
Low-low	36	13.48
Medium-medium	54	20.22
High-high	120	44.94
Sub-total	*210*	*78.64*
Medium convergence		
Low-medium	4	1.50
Medium-low	9	3.37
Medium-high	15	5.62
High-medium	10	3.75
Sub-total	*38*	*14.24*
No convergence		
Low-high	8	3.00
High-low	11	4.12
Sub-total	*19*	*7.12*
Total	*267*	*100.00*

The minimum, maximum and median convergence data are respectively 40%, 94.12% and 76.13%, with a standard deviation of 18.08%.

Therefore, the level of materiality convergence is extremely high (78.64% of all issues in the matrix in Table 8 are rated with the same level of importance by the companies and stakeholders) while the absence of convergence is fairly low (7.12%, less than 1/10 of total convergence and less than half the median convergence).

We suspect that this widespread and relevant measure of materiality convergence rests on an impression management practice. Indeed, the absence of convergence is small and in any case with the high-low option (that is, an issue is important for the company but not for stakeholders) above the low-high option (the reverse).

At the same time, some of the best performing companies in terms of narratives (for instance, description of stakeholder engagement and use of the materiality matrix) performed poorly with regard to the materiality convergence level.

For instance, Ing Group has an index of less than 67% (over 15% less than the average), but nevertheless offers a detailed picture of the use of the matrix with a dedicated paragraph.

Similarly, RBS Group has a very poor index (41%, over 47% less than the average), but proposes a specific link between materiality and a very detailed set of stakeholder engagement activities.

Moreover, RBS declares in its matrix that “employee engagement” is a non-relevant (i.e., “low”) issue for stakeholders but a significant (i.e., “high”) issue for the company. This item, far from being simply an “odd” outlier, would seem to conversely indicate a company that has developed a high ranking amongst its key stakeholders, placing employees below other stakeholders (correctly or incorrectly, of course), thus weighting and ranking the different aspirations and issues of the generic “stakeholder axis” in an articulated Y-axis.

All in all, some doubts arise in relation to the symmetric “win-win” line of the materiality matrix (i.e., issues mainly placed in the low-low, medium-medium, high-high positions), since this may impress readers in terms of the company’s positive and effective sustainability practices, while a more comprehensive analysis could lead to different conclusions (some companies with a poor symmetric line disclose their approach to sustainability and materiality matrix fairly well).

4.10 Selection Bias

Table 9 reports for each axis of the matrices the number of issues placed in a “low”, “medium” or “high” position.

Table 9: Placement of issues on the axes of the materiality matrix

	X-axis	*%*	*Y-axis*	*%*
Low	48	17.98	56	20.97
Medium	78	29.21	68	25.47
High	141	52.81	143	53.56
Total	*267*	*100*	*267*	*100*

According to Table 9, over half the issues are considered relevant (i.e., in the “high” area) by the companies as well as their stakeholders. The percentage is highly linked and of course related to the strong level of materiality convergence previously mentioned.

At the same time, the number of issues rated as scarcely relevant (i.e., the “low” area) is significantly lower for companies than for stakeholders (the difference is almost 17%). Thus, the number of issues placed in the “medium relevance” area is higher for companies than for their stakeholders.

In other words, companies on average deem the issues have a higher level of relevance and significance than their stakeholders.

Once again, we suggest as a possible explanation that companies adopt impression management mechanisms, especially in terms of selection bias, since they choose to disclose items that on average are rated on a higher level than the level chosen by stakeholders.

4.11 Explicit Approval

Only 9 companies (39.13%) of the total 23 companies explicitly mention in their reports that the materiality matrix was approved by an internal body or company department.

Although we searched for approval only in the specific portion of the report describing the materiality matrix, and thus would not want to suggest that approval is not stated in any other section of the reports, the fact that this relevant information is scarcely present confirms that from a strictly formal point of view, sustainability (and, even more so, integrated) reports still have a long way to go.

Indeed, the formal steps for the official release of these documents should be more clearly disclosed so that readers become aware of the company's level of commitment to sustainability and materiality matrices (approval of the matrix by an internal sustainability department is clearly different from direct approval from the board of directors).

This confirms our research question about the use of materiality matrices as a new potential venue of impression management.

5. Conclusions

In this study, through a sample of G4 reports released by financial companies in 2015, we analyze whether materiality matrices are used as an impression management technique.

The main results of our work (in particular, the generic definition of relevant stakeholders, the combination of measures for stakeholder engagement activities, the scarcity of measures in materiality matrices and anomalies in the coherence level) lead us to conclude that materiality matrices practices are still in their infancy.

Moreover, conspicuous incidences of impression management are already visible from the high materiality convergence level to issue selection bias.

In this sense, our paper contributes to the advancement of knowledge in the field of sustainability accounting/integrated reporting and disclosure, since it confirms the use of materiality matrices as a new and potential area of impression management.

The significance of our results and their implications are closely related to the increasing impact of sustainability and integrated reporting for (especially) larger companies: these reports could be biased as financials could be, so they have to be carefully wielded.

That being said, the results of our paper are still preliminary, due to a number of important limitations: the small number of reports examined (in terms of both the sample and the time-series) and the current methodology should be fostered with a more robust research for the future.

In this sense, fruitful streams of future research could expand our preliminary results using both time-series matrices and different industries.

Another avenue would be to apply the legitimacy approach, for instance, verifying if companies that perform poorly with regard to sustainability issues present matrices to elicit, *ceteris paribus*, more favorable stakeholder perceptions.

References

AccountAbility, 2006, 'The Materiality Report', available at http://www.accountability.org/images/content/0/8/088/The%20Materiality%20Report.pdf

Adams, CA 2002, 'Internal organisational factors influencing corporate social and ethical reporting: beyond current theorising', *Accounting, Auditing and Accountability Journal*, vol. 15, no. 2, pp. 223-250

Adams, CA and Frost, G 2008, 'Integrating sustainability reporting into management practices', *Accounting Forum*, vol. 32, no. 4, pp. 288-302

Arnstein, SR 1969, 'A ladder of citizen participation', *American Institute of Planners Journal*, vol. 35, no. 4, p. 216-224

Beattie, V and Jones, MJ 2000, 'Changing Graph Use in Corporate Annual Reports: A Time Series Analysis', *Contemporary Accounting Research*, vol. 17, no. 2, pp. 213-226

Beattie, V and Jones, MJ 2001, 'A six-country comparison of the use of graphs in annual reports', *International Journal of Accounting*, vol. 36, no. 2, pp. 195-222

Beattie, V and Jones, MJ 2002, 'Measurement Distortion of Graphs in Corporate Reports: An Experimental Study', *Accounting Auditing and Accountability Journal*, vol. 15, no. 4, pp. 546-564

Beattie, V and Jones, MJ 2008, 'Corporate reporting using graphs: A review and synthesis', *Journal of Accounting Literature*, vol. 27, pp. 71-110

Bebbington, KJ, Gray, R and Larrinaga, C 2000, 'Environmental and social accounting in Europe', *European Accounting Review*, vol. 9, no. 1, pp. 3-6

Black Sun and The International Integrated Reporting Council, 'Realizing the benefits: the impact of Integrated Reporting', 2014, available at http://integratedreporting.org/wp-content/uploads/2014/09/IIRC.Black_.Sun_.Research.IR_.Impact.Single.pages.18.9.14.pdf

Boiral, O 2013, 'Sustainability reports as simulacra? A counter account of A and A+ reports', *Accounting, Auditing and Accountability Journal*, vol. 27, no. 7, pp. 1036-1071

Cho, CH and Patten, DM 2007, 'The role of environmental disclosures as tools of legitimacy: A research note', *Accounting, Organizations and Society*, vol. 32, no. 7/8, pp. 639-647

Cho, CH 2009, 'Legitimation strategies used in response to environmental disaster: A French case study of TotalS.A.'s Erika and AZF incidents', *European Accounting Review*, vol. 18, no. 1, pp. 33-62

Cho, CH, Michelon, G and Patten, D 2012, 'Impression Management in Sustainability Reports: An Empirical Investigation of the Use of Graphs', *Accounting and the Public Interest*, vol. 12, pp. 16-37

Churet, C and Eccles, RG 2014, 'Integrated Reporting, Quality of Management, and Financial Performance', *Journal of Applied Corporate Finance*, vol.. 26, no. 1, pp. 8-16

Clarkson, MBE 1995, 'A stakeholder framework for analyzing and evaluating corporate social performance', *Academy of Management Journal*, vol. 20, no. 1, pp. 92-117

Davison, J 2010, '[In]visible [in]tangibles: Visual portraits of the business elite', *Accounting, Organizations and Society*, vol. 35, no. 2, pp. 165-183

Deegan, C 2002, 'The legitimizing effect of social and environmental disclosures: A theoretical foundation', *Accounting, Auditing and Accountability Journal*, vol. 15, no. 3, pp. 282-311

Deloitte, 2012, 'Does Materiality Matter? Should the Principle of Materiality be applied more consistently to non-financial reporting?', available at www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/us_scc_materialitydebate_032712.pdf

Di Maggio, PJ and Powell, WW 1983, 'The Iron Cage revisited: institutional isomorphism and collective rationality in organizational fields', *American Sociological Review*, vol. 48, no. 2, pp. 147-160

Ditlevsen, MG, Nielsen, AE and Thomsen, C 2013, 'Corporate Reporting: An Integrated Approach to Legitimacy Claims', *Journal of Modern Accounting and Auditing*, vol. 9, no. 12, pp. 1637-1643

Eccles, RG and Krzus, MP 2010, *One report. Integrated reporting for sustainable strategy*, John Wiley and Sons, New Jersey

Eccles, RG, Krzus, MP, Rogers, J and Serafeim, G 2012, 'The need for sector-specific materiality and sustainability reporting standards' *Journal of Applied Corporate Finance*, vol. 24, no. 2, pp. 8-14

Eccles, RG, Krzus, MP and Ribot, S 2014, *The Integrated Reporting Movement*, John Wiley and Sons, New Jersey

Edgley, C 2013, 'A genealogy of accounting materiality', *Critical Perspectives on Accounting*, vol. 25, no. 3, pp. 255-271

Farneti, F, Guthrie, J and Siboni, B 2011, *Social and Sustainability Reporting in Italian Local Governments. What Is Not Reported?*, *Social Accounting and Public Management. Accountability for the Common Good*, Routledge, New York

Faux, J 2012, 'Environmental event materiality and decision making', *Managerial Auditing Journal*, vol. 27, no. 3, pp. 284-298

Freeman, RE et alii 2010, *Stakeholder Theory: the state of the art*, Cambridge University Press, Cambridge

Friedman, AL and Miles, S 2006, *Stakeholders: Theory and Practice*, Oxford University Press, Oxford

Fronesys, 2011, 'Materiality Determination: Analyzing Who, What and How', partially available at http://www.fronesys.com/Reports/Determining-Materiality-white-paper-from-Fronesys.pdf

Global Reporting Initiative, 2013, 'Sustainability Reporting Guidelines', available at https://www.globalreporting.org/resourcelibrary/main-features-of-g4.pdf

Global Reporting Initiative, 2013, 'Implementation Manual', available at https://www.globalreporting.org/resourcelibrary/GRIG4-Part2-Implementation-Manual.pdf

Godfrey, J, Mather, P and Ramsay, A 2003, 'Earnings and Impression Management in Financial Reports: The Case of CEO Changes', *Abacus*, vol. 39, no. 1, pp. 95-123

Gray, R and Bebbington, KJ 2000, 'Environmental accounting, managerialism and sustainability: Is the planet safe in the hands of business and accounting?', *Advances in Environmental Accounting & Management*, vol. 1, pp. 1-44

Guthrie, J and Abeysekera, I 2006, 'Content Analysis of Social, Environmental Reporting: What is new?', *Journal of Human Resource Costing and Accounting*, vol. 10, no. 2, pp.114-126

Humphrey, C, O'Dwyer, B and Unerman, J 2014, 'The rise of Integrated Reporting', available at http://www00.unibg.it/dati/corsi/90010/67195-PROF_UNERMAN_SEMINAR_%20INTEGRATED%20REPORTING.pdf

Jarett, IM 1983, *Computer Graphics and Reporting Financial Data*. John Wiley, New York

KPMG, 2010, 'Integrated reporting: Closing the loop of strategy', available at http://www.kpmg.com/UA/en/IssuesAndInsights/ArticlesPublications/Documents/Integrated-Reporting.pdf

Leivian, GM 1980, 'How to communicate financial data more efficiently', *Management Accounting*, vol. 61, no. 1, pp. 31-34

Lydenberg, S 2012, 'On materiality and sustainability: The Value of Disclosure in the Capital Markets', Initiative for Responsible Investment, Hauser Center for Non-profit Organizations at Harvard University

Lydenberg, S, Rogers, J and Wood, D 2012, 'From transparency to performance. Industry-based sustainability reporting on key issues', Hauser Center for Non-profit Organizations at Harvard University

Manetti, G 2011, 'The Quality of Stakeholder Engagement in Sustainability Reporting: Empirical Evidence and Critical Points', *Corporate Social Responsibility and Environmental Management*, vol. 18, no. 2, pp. 110-122

Mason, C and Simmons, J 2014, 'Embedding Corporate Social Responsibility in Corporate Governance: A Stakeholder Systems Approach', *Journal of Business Ethics*, vol. 119, no. 1, pp. 77-86

Merkl-Davies, DM and Brennan, NM 2007, 'Discretionary disclosure strategies in corporate narratives: incremental information or impression management?', *Journal of Accounting Literature*, vol. 27, pp. 116-196

Merkl-Davies, DM, Brennan, NM and McLeay, SJ 2011, 'Impression management and retrospective sense making in corporate narratives: A social psychology perspective', *Accounting, Auditing and Accountability Journal*, vol. 24, no. 3, pp. 315-344

Messier, WF Jr, Martinov-Bennie, N and Eilifsen, A 2005, 'A Review and Integration of Empirical Research on Materiality: Two Decades Later', *Auditing: A Journal of Practice & Theory*, vol. 24, no. 2, pp. 153-187

Mio, C and Fasan, M 2013, 'Materiality from financial towards non-financial reporting', working paper series Università Cà Foscari

Mitchell, RK, Agle, BR and Wood, DJ 1997, 'Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts', *The Academy of Management Review*, vol. 22, no. 4, pp. 853-886

Moroney, R and Trotman, KT 2013, 'Differences in auditors' materiality assessments when auditing financial and non-financial reports', UNSW Australian School of Business Research Paper

O'Dwyer, B 2011, 'The case of sustainability assurance: constructing a new assurance service', *Contemporary Accounting Research*, vol. 28, no. 4, pp. 1230-1266

Prakash, P and Rappaport, A 1977, 'Information inductance and its significance for accounting', *Accounting, Organizations and Society*, vol. 2, no. 1, pp. 29-38

Rodrigue, M, Cho, C and Laine, M 2015, 'Volume and Tone of Environmental Disclosure: A Comparative Analysis of a Corporation and its Stakeholders', *Social and Environmental Accountability Journal*, vol. 35, no. 1, pp. 1-16

Savitz, A 2014, *The triple-bottom line. How Today's Best–Run Companies Are Achieving Economic, Social and Environmental Success – and How You Can Too*, John Wiley and Sons, New York

Schmid, CF 1983, *Statistical Graphics: Design Principles and Practices*, John Wiley/Interscience

Scott, WR 2008, *Institutions and Organizations*, SAGE Publications, Thousand Oaks, California

Searcy, C and Buslovich, R 2014, 'Corporate Perspectives on the Development and Use of Sustainability Reports', *Journal of Business Ethics*, vol. 121, no. 2, pp. 149-169

Songini, L and Pistoni, A 2015, *Accounting and Control for Sustainability*, Emerald Group Publishing Limited, 2015

Suchman, MC 1995, 'Managing legitimacy: Strategic and institutional approaches', Academy of Management Review, vol. 20, no. 3, pp. 571-610

Sulkowski, AJ and Waddock, S 2014, *Beyond Sustainability Reporting: Integrated Reporting is Practiced, Required & More Would Be Better*, available at http://dx.doi.org/10.2139/ssrn.2456328

Tufte, ER 1983, *The Visual Display of Quantitative Information*, Graphic Press, Cheshire

Tuttle, B, Coller, M and Plumlee, R 2002, 'The Effect of Misstatements on Decisions of Financial Statement Users: An Experimental Investigation of Auditor Materiality Thresholds', *Auditing: A Journal of Practice and Theory*, vol. 21, no. 1, pp. 11-27

Unerman, J, Bebbington, J and O'Dwyer, B 2007, 'Introduction to sustainability accounting and accountability', in *Sustainability Accounting and Accountability*, edited by Unerman J., Bebbington J. and O'Dwyer B., Routledge, New York

Unerman, J and Zappettini, F 2014, 'Incorporating materiality considerations into analyses of absence from sustainability reporting, *Social and Environmental Accountability Journal*, vol. 34, no. 3, pp. 172-186