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FAC004 **Impression management and the use of graphs in integrated reports of the South African mining sector**

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ABSTRACT:

Impression management in narrative disclosures is well documented. Less is known regarding visual disclosures, specifically the use of graphs in ESG disclosure and impression management in these graphs. This research analyses the use of graphs in ESG disclosure and impression management in these graphs in the integrated reports of South African mining companies between 2010 and 2013. The results suggest that companies do make use of graphs as a visual disclosure strategy in integrated reports. Regarding impression management and graphs, there was an overwhelming portrayal of favourable rather than unfavourable graphs through graphs selected for disclosure. Companies therefore appear to use graphs in ESG disclosure as an important communication tool in integrated reports to manage the company's corporate image with stakeholders regarding ESG matters.

Key words: Graphs; ESG disclosure; Impression management; Integrated reporting

1. INTRODUCTION

Impression management in corporate reporting can be defined as management acting out of self-interest by exercising discretion in which information to display and presenting that information in such a way as to distort the readers' perception of corporate achievements (Neu, 1991; Neu *et al.*, 1998; Stanton *et al.*, 2004). According to the agency theory, management is driven by self-interest and will act out of self-interest unless agency costs are minimised and management is restricted from acting in such a manner (Jensen and Meckling, 1976; Lambert, 2001; Deegan, 2009). A number of disclosure strategies is used by management to achieve this self-interest goal (Adelberg, 1979; Courtis 1995; Neu, 1991; Deegan and Rankin, 1996; Neu *et al.*, 1998; Stanton *et al.*, 2004; Clatworthy and Jones, 2006; Brennan *et al.*, 2009; Higgins and Walker, 2012; Tregidga *et al.*, 2014). One such strategy is the manipulation of the formats used to present visual disclosures, also known as presentation management (Beattie and Jones, 2000). This type of strategy places emphasis on positive performance and underplays negative performance (McKinstry, 1996; Preston *et al.*, 1996; Beattie and Jones, 2000; Courtis, 2004; Merkl-Davies and Brennan, 2007). Graphs are vehicles of visual disclosure in corporate reports which are used as a means of impression management through the manipulation of presentational format (Graves *et al.* 1996; McKinstry, 1996; Beattie and Jones, 1999; Beattie and Jones, 2000; David, 2001; Jones, 2011).

Non-financial reporting, and specifically, sustainability, have become significant components of company corporate reporting (IoDSA, 2009; Carels *et al.*, 2013; IIRC, 2013). In particular, combining financial and non-financial reporting on environmental, social and governance (ESG) items in one integrated report has become the norm in South Africa after the implementation of King III (IoDSA, 2009; Marx and van Dyk, 2011; Carels *et al.*, 2013). Atkins and Maroun (2015, pp.209) state that “[i]t may very well be the case that the proliferation of ESG disclosures in South African integrated reports is about impression management rather than providing a comprehensive account of long-term sustainability to stakeholders”.

Many studies have analysed the economic consequences associated with voluntary disclosures and have found that voluntary disclosures are associated with higher share prices, better earnings quality, a lower cost of capital and lower analyst forecast error (Francis *et al.*, 2008; Dhaliwal *et al.*, 2011; de Klerk and de Villiers, 2012 and Dhaliwal *et al.*, 2012). Although testing whether voluntary graph disclosures have economic consequences is not within the scope of this study, prior research suggests that voluntary disclosure (such as graphs), could have economic consequences.

Non-regulated and voluntary disclosure, such as the use of graphs, is easier for management to manipulate and provides the opportunity for impression management (Brennan *et al.*, 2009; Cho *et al.*, 2010). Verrecchia (1983) and Dye (1985) explored explanations as to why managers exercise discretion in disclosing information that is a voluntary disclosure and associated it to disclosure-related costs. Visual disclosures such as graphs have become another marketing tool for management (Preston *et al.*, 1996; Beattie and Jones, 1999; David, 2001). Although visual images convey a powerful message to stakeholders, this is often ignored as part of content analysis (Davison, 2014).

The purpose of this study is to contribute to the existing literature, knowledge and understanding of corporate disclosure practices regarding ESG disclosure, and specifically, impression management and the use of visual ESG disclosure, specifically graphs, in the integrated reports of South African mining companies. Prior studies have found impression management to be used in narrative disclosure (Adelberg, 1979; Courtis 1995; Neu, 1991; Deegan and Rankin, 1996; Neu *et al.*, 1998; Stanton *et al.*, 2004; Clatworthy and Jones, 2006; Brennan *et al.*, 2009; Higgins and Walker, 2012; Tregidga *et al.*, 2014) and visual disclosure (Graves *et al.* 1996; McKinstry, 1996; Beattie and Jones, 1999; Beattie and Jones, 2000; David, 2001; Jones, 2011) of corporate reports. With particular reference to impression management and visual ESG disclosure, Jones (2011) found that impression management was used in graphs presented by UK companies in social and environmental reports. Furthermore, Hrasky (2012) is of the view that disclosure strategies relying on the use of imagery in sustainability reports differ between more sustainability-oriented and less sustainability-oriented Australian companies and that imagery is used as a rhetorical legitimacy tool in communicating sustainability to stakeholders. In South Africa, the only study carried out to date on impression management and ESG disclosure in integrated reports in South Africa is that of Atkins and Maroun (2015). In this research, interviews were held with institutional investors and findings suggest that integrated reports in South Africa are characterised by some degree of impression management. The study conducted by Atkins and Maroun (2015) was limited to interviews conducted with institutional investors. The present study fills this gap in current literature by analysing whether impression management is actually prevalent in visual ESG disclosure in integrated reports in South Africa or whether it is merely a myth. This study fills a gap in existing literature as it is more comprehensive in the analysis of graphs. The analysis of graphs is remarkably more detailed than existing literature. The focus of Jones (2011)'s study was on impression management of graphs in stand-alone social and environmental reports. Jones (2011) focused only on graph selection and graph distortion as the form of impression management. Hrasky (2012)'s analysis was limited to the usage of graphs compared to photographs in economic, social and environmental disclosures between more sustainability-oriented and less sustainability-oriented Australian companies. Further analysis of impression management of graphs through graph selection and graph distortion was not performed. This study is more detailed as it analyses impression management of graphs in ESG disclosures and uses graph selection and graph distortion as measures of impression management. Benschop and Meihuizen, (2002), Shen and Samkin (2008) and Campbell *et al.*, (2009) analysed visual disclosure but focused on photographs only and did not perform any analysis of graphs. These studies (Benschop and Meihuizen, 2002; Shen and Samkin 2008; Campbell *et al.*, 2009; Jones, 2011; Hrasky, 2012) also did not focus on ESG disclosure specifically compared to this study that analyses each category of ESG disclosure in detail. This study is also unique insofar as it specifically analyses integrated reports as the form of corporate ESG reporting. There has been a global awareness of the importance of holistic reporting in the form of integrated reporting (Carels *et al.*, 2013; IIRC, 2013). To the authors' knowledge, no study on impression management and visual disclosure has specifically analysed integrated reports as the form of corporate reporting. South Africa is unique in this sense as integrated reporting is mandatory for all Johannesburg Securities Exchange Limited (JSE) listed companies (JSE, 2010; Solomon and Maroun, 2012) and therefore also provides a South African perspective.

The findings of this study are of relevance to all the different users of integrated reports, management of companies and regulatory bodies. The users of the integrated reports will be interested in the findings of this study as their perceptions might be manipulated or managed through the use of these visual disclosures in the integrated reports. Management of companies will be interested in the findings of this study as to emphasise the important role management plays in providing an informative integrated report and using visual disclosures to enhance the communicative effectiveness of integrated reports rather than manipulating or managing the company's corporate image. Regulatory bodies will be interested in the findings of this study as it emphasises the importance and use of visual disclosures in integrated reports and for regulations to be enacted by regulatory bodies to govern the use of visual disclosures by companies in corporate reporting, specifically taking into account the findings of prior studies regarding the economic consequences of voluntary disclosures.

To achieve the overall purpose of this study, three main research objectives were set:

- 1) To what extent do South African mining companies make use of graphs as a disclosure strategy in integrated reports?
- 2) Does the management of South African mining companies make use of impression management in ESG graphs used in integrated reports?
- 3) Is impression management more prevalent in graphs of environmental, social or governance disclosures?

To address these research objectives, the study analysed a sample of 87 integrated reports of South African mining companies in totality from 2010 to 2013. The scope of this study is not to compare the data on a year to year basis but in totality to identify whether impression management is used in ESG graphs in integrated reports of South African mining companies, Qualitative analysis was performed on all 87 integrated reports. Impression management of graphs was assessed through manual content analysis. Impression management of graphs was assessed in a two-stage process (Jones, 2011). Graph selection and graph distortion were used as measures of impression management in graphs. Non-parametric tests, specifically binomial tests, were used to evaluate the findings.

There are three main findings. First, management uses graphs as a disclosure strategy in integrated reports. Second, impression management in the form of graph selection was evident and significant in ESG graphs. Third, impression management was most prevalent in graphs related to social disclosures when compared to graphs related to environmental and governance disclosures.

The remainder of this paper is organised as follows: Section 2 provides an overview of the background and a prior literature review, Section 3 discusses the sample of the integrated reports, Section 4 discusses the analysis and research method used, Section 5 discusses the findings and Section 6 provides a conclusion to the research.

2. BACKGROUND AND PRIOR LITERATURE

2.1 Impression management in corporate reporting

Impression management is when specific information is selected and presented in such a way as to distort readers' perceptions of corporate achievements (Neu, 1991). It can either

enhance the corporate image of the company or re-establish an image that has been threatened or destroyed (Stanton, *et al.*, 2004). Deegan and Rankin (1996) found that Australian companies, even when prosecuted for environmental misdemeanours, only disclose favourable environmental information in annual reports. Similar to Deegan and Rankin (1996)'s findings, a study by Neu *et al.* (1998) found that Canadian companies try to manipulate the impressions of the public through the environmental disclosure provided in annual reports. Clatworthy and Jones (2006) studied UK companies and found that the chairman's statement is subject to impression management as managers are selective in narrative disclosures. Both Higgins and Walker (2012) and Tregidga *et al.*, (2014) found that in sustainability reports, companies seek to manage stakeholders' expectations and any criticism against their operating or ESG reporting practices. Higgins and Walker (2012) found evidence of a variety of persuasive appeals used by three New Zealand companies in their social and environmental stand-alone reports to engender a sense of reasonableness and trustworthiness in stakeholders as to the company's role in social and environmental change. Tregidga *et al.* (2014)'s study illustrated a changing organisational identity in New Zealand companies from 1992 to 2010 and that companies use reporting as a legitimising tool to enhance faith in the company as a changing agent. These findings suggest that companies do use disclosure in corporate reports as a form of impression management to convey the corporate image they would like to portray to the users of the corporate reports, especially regarding ESG disclosure. The focus of these prior studies has been on impression management and narrative disclosure. The present study contributes to existing literature by focusing on visual ESG disclosure in the form of graphs rather than only narrative disclosure.

2.2 Graphs and impression management

Annual reports increasingly use visual disclosure such as accounting narratives, graphs and photographs to communicate financial information (Graves *et al.*, 1996; Preston *et al.*, 1996; Beattie and Jones, 1999; Beattie and Jones, 2008). Beattie and Jones (2008) present six reasons why companies seek to use graphs instead of tables or narratives. Graphs are eye-catching, memorable, universally understood, excellent at summarising information, allow for information to be presented in a flexible manner and tap into the human cognitive skill known as spatial intelligence. These characteristics of graphs indicate that management is able to convey a strong cognitive message to stakeholders through the use of graphs in corporate reports.

Graphs is an area where impression management in the form of manipulation of the presentational format has been found. In a study performed on Australian companies, Beattie and Jones (1999) found that companies use financial graphs in annual reports as a tool for impression management. In another study performed on inter-country companies, Beattie and Jones (2000) found that in certain countries, companies do use financial graphs selectively and show measurement distortion to skew corporate financial performance in the company's favour. Jones (2011) studied the nature, use and impression management of graphs in social and environmental disclosure in the top 100 UK companies' social and environmental reports. He found that companies selectively present information and bias the results of information presented. This study found environmental topics to be the most graphed category. Hrasky (2012) studied whether more sustainability-driven Australian companies differ in the use of imagery in sustainability reports compared to less

sustainability-driven Australian companies in their pursuit of legitimacy. The study specifically focused on the use of graphs and photographs. Hrasky (2012) found that companies do use imagery as a rhetorical legitimacy tool in communicating to stakeholders, as more sustainability-driven companies adopt significantly different disclosure strategies than less sustainability-driven companies. Sustainability-driven companies placed greater reliance on graphs as opposed to photographs, particularly when compared to companies which are less sustainability-driven which tended to rely more on photographs than graphs. This study found social topics to be the most graphed category.

From these prior studies, it is clear that graphs are often used as a tool of impression management in corporate reporting. The use of graphs in disclosure is voluntary and therefore South African mining companies can use graphs as a tool of impression management in integrated reporting. This study contributes to the existing literature on impression management and visual disclosure by providing a South African perspective.

2.3 Integrated reporting in South Africa

There is a renewed emphasis on the importance of reporting financial as well as non-financial information (Companies Act No. 71 of 2008; IoDSA, 2009; Solomon and Maroun, 2012; Carels *et al.*, 2013; de Villiers and Alexander, 2014). King II was not sufficient to achieve holistic reporting (IoDSA, 2009). This led to King III which emphasised that sustainability reporting should be integrated into financial reporting (IoDSA, 2009; Marx and van Dyk, 2011; Solomon and Maroun, 2012). In addition to King III, international integrated reporting principles have been developed with the goal of integrated reporting becoming the international corporate reporting norm in the future (IIRC, 2013).

Sustainability under King III includes information on ESG considerations, however, King III does not provide a detailed framework and neither does the IIRF (IoDSA, 2009; Marx and van Dyk, 2011; Carels *et al.*, 2013; IIRC, 2013). Through its listing requirements, the JSE enforced compliance with King III in 2010 which mandated integrated reporting for all listed companies from 1 March 2010 (JSE, 2010; Solomon and Maroun, 2012). South African listed companies have consequently been legally required to prioritise disclosure of ESG information in an integrated annual report in order to present a complete picture of value creation over time (IoDSA, 2009; Carels *et al.*, 2013).

Carels *et al.* (2013) found an overall increase in ESG disclosure and the level of integration in annual and integrated reports, specifically social and environmental topics, between 2008 and 2012. These findings indicate that mining companies recognise the importance of ESG disclosure to stakeholders and the relevance of organisational legitimacy through the alignment of the company's values and beliefs to those of the various social and environmental stakeholder groups (Carels, *et al.*, 2013). Solomon *et al.* (2013) conducted interviews with UK institutional investors and found that both investors and investees make use of impression management in creating and communicating a myth regarding their social and environmental performance. In a study performed by Atkins and Maroun (2015), South African institutional investors were interviewed to determine the investors' views regarding integrated reporting in South Africa and their reactions to the first sets of integrated reports of JSE listed companies. Similarly to the findings of Solomon *et al.* (2013), the results suggest that "[t]he same could apply to South African integrated reporting" regarding the use

of impression management in integrated reports (Atkins and Maroun, 2015, pp.201). Research indicates that the emphasis may be more on impression management than communicating how sustainability concerns are actually addressed by companies and painting the 'real' picture to stakeholders (Solomon and Maroun, 2012; Carels *et al.*, 2013; Solomon *et al.*, 2013). Similarly, Atkins and Maroun (2015, pp.210) found that integrated reports are categorised by "some degree of impression management" and that this is a result of too lengthy reports, the application of disclosure checklists and a lack of an integrated approach in the manner information is communicated to the stakeholders (Solomon and Maroun, 2012; Carels *et al.*, 2013).

The studies performed by Solomon *et al.* (2013) and Atkins and Maroun (2015) used interviews as the chosen research method. The findings of these interviews, specifically those of Atkins and Maroun (2015), suggest that impression management is used in integrated reports in South Africa, although from institutional investors' perspectives. The present study is therefore relevant and fills a gap in existing literature regarding impression management and visual disclosure since to date, no study on impression management and visual disclosure has:

- tested whether impression management, from an institutional investors' perspective, is used in the visual ESG disclosure of integrated reports in South Africa; and
- analysed integrated reports as the form of corporate reporting.

2.4 The South African mining industry

At the end of 2012 the mining industry accounted for 24.7% of the All Share Index on the JSE (CMSA, 2012; de Villiers and Alexander, 2014). It is also one of the largest employing industries in South Africa (CMSA 2013; de Villiers and Alexander, 2014).

Sustainability is becoming increasingly important in mining due to the significant environmental impact stemming from the use of land and non-renewable resources as well as the social impact of the health and safety of workers (Azapagic, 2004). In the South African mining industry, ESG disclosure has become even more relevant due to the high unemployment rate, deaths due to HIV AIDS and Tuberculosis as well as labour strikes for improved working conditions and wages (Avert, 2009; Carels *et al.*, 2013; de Villiers and Alexander, 2014; Muswaka, 2014; TAP, 2014; TE, 2014).

Due to the nature of operations and significant size of the mining industry in South Africa, it can be expected that ESG disclosure will form a significant part of the integrated annual reports presented by these companies and will provide insight as to how these companies incorporate visual disclosure in their integrated reports.

3. SAMPLE

The integrated reports of companies listed in the mining sector on the JSE were selected for further analysis. This study specifically focuses on reports from 2010 to 2013. The aim of this study is not to analyse and compare data per year but in totality for the sample period. In 2010, it became a JSE listing requirement to comply with King III by preparing an integrated report or to provide reasons for not doing so in cases where a report was not produced (JSE, 2010). The study period therefore commences in 2010. Cross-listed companies not primarily

listed on the JSE were excluded from the sample as these companies were not bound by the listing requirements to comply with King III (Carels *et al.*, 2013; de Villiers *et al.*, 2014). Integrated reports were obtained from the McGregor BFA database. A separate search for integrated reports was performed on each company's website for any reports which were unavailable on the database. A total of 87 integrated reports from 28 companies was analysed³⁰.

4. METHOD

Qualitative analysis was performed in this study. Manual content analysis was used to evaluate the impression management of graphs. This form of analysis is deemed more appropriate for analysing impression management "as impression management techniques are subtle, sophisticated, and therefore complex" (Brennan *et al.*, 2009). An inherent limitation of the study is the subjective nature involved in the coding of graphs. The co-author of this paper re-coded a sample of the integrated annual reports and the results were reconciled in order to address this limitation.

The subject matter of each graph presented in the integrated annual report was coded on Atlas.ti as being environmental, social, governance or other. The classification of the subject matter was based on a coding instrument used by Carels *et al.* (2013) (see Table 1 in Annexure A). The following descriptive data was collected for each graph: the frequency of graphs (total count of graphs and the proportion of pages in the integrated report dedicated to graphs); topics graphed (ESG or other); graphical formats (type of graph, variables per graph, years graphed) and the position of graphs in the integrated annual reports. An analysis of impression management of graphs used by Jones (2011) was applied to graphs classified as environmental, social or governance. Impression management was assessed in a two-stage process: graph selection and graph distortion.

In the analysis of graph selection, the topic chosen to be graphed and its underlying trend were assessed to consider whether the graph presented good or bad news from the company's perspective (see Table 2 in Annexure A). For example, a company may choose to graph a good news topic such as recycling; if the underlying trend was a decrease in recycling it will represent a bad news topic (conversely, an increase in recycling will represent a good news topic). Similarly, a company may choose to graph a bad news topic such as the total fatalities of employees for the year; if the underlying trend was a decrease in fatalities from the prior year it will represent a good news topic (conversely, an increase in fatalities will represent a bad news topic). Graph selection was only tested on graphs coded as ESG.

In the analysis of graph distortion, it was assessed how the company presented the information graphically: were the underlying graph trend lines drawn correctly, understated or exaggerated? According to Jones (2011), the measure used to determine whether a trend is exaggerated or understated is the Graphical Discrepancy Index (GDI) (Tufte, 1982; Taylor and Anderson, 1986). This measure has been widely used in financial graph annual report

³⁰ Certain companies in the sample did not produce an integrated report for each year of the sample period. These companies did provide reasons for not doing so, in compliance with the JSE listing requirements. Consequently, the total number of integrated reports analysed was less than 112 (28 companies x 4 years) in total.

literature (Beattie and Jones, 1999; Beattie and Jones, 2000), however, in sustainability reporting it has only been used in the study performed by Jones (2011). As a supplementary analysis measure, Jones (2011) used the RGDI Index, however, limited correlation between the GDI and RGDI Index measures was found. Based on this, and taking into consideration the difficulty of interpreting RDI results, the present study measures discrepancy using only GDI scores to evaluate graph distortion. The GDI is determined as follows:

$$\text{GDI} = [(a/b - 1)] \times 100\%$$

(1)

a = percentage change in graph

b = percentage change in data

For example, if a graph represents a company's energy consumption and increased from 2 000 000 GJ in the previous year to 4 000 000 GJ in the current year and in the graph the column representing the previous year's data was 2cm in height, the expectation is that the current year's column should be 4cm in height ($2\text{cm}/2\ 000\ 000\text{GJ} \times 4\ 000\ 000\text{GJ}$). If the actual height of the current year's column is only 3,5cm, the GDI is thus:

$$a \text{ (percentage change in graph)} = (3,5 - 2)/2 \times 100\% = 75\%$$

$$b \text{ (percentage change in data)} = (4\ 000\ 000 - 2\ 000\ 000)/2\ 000\ 000 \times 100\% = 100\%$$

$$\text{GDI} = [(75/100 - 1)] \times 100\% = - 25\%$$

The topic graphed (energy consumption) represents a bad news topic from the company's perspective and the GDI is negative (understated), this is considered as favourable to the company (see Table 3 in Annexure A). The company has understated a bad news topic by understating the trend line. Similarly, if the graph relates to a good news topic such as recycling and the GDI is positive (exaggerated), it is considered as favourable to the company (see Table 3 in Annexure A). If the GDI is equal to zero, there is no graph distortion present. Graph distortion was only tested on graphs coded as ESG. Non-parametric tests, specifically binomial tests, were used to evaluate the findings.

5. RESULTS

5.1 The extent of use of graphs in integrated reports

The majority of the mining companies used graphs as a means of visual disclosure in their integrated reports. Only 14% (four companies) of all the companies in the sample did not use graphs. A number of the companies which did use graphs did not, however, use them in each year of the study period and 18% (16 integrated reports) of all the integrated reports analysed did not contain graphs. On average, from 2010 to 2013 there were 23 graphs per integrated report (26 graphs, if the four companies which did not use graphs are excluded). The company with the highest usage of graphs had a total of 84 graphs in a 2013 integrated report. The average count of graphs per integrated report decreased from an average of 35 graphs in 2010 to an average of 18 graphs in 2013. The total proportion of pages in an integrated report presented as graphs averaged at 1.8% from 2010 to 2013. The average length of integrated reports decreased from 234 pages in 2010 to 125 pages in 2013. The

company with the highest proportion of pages presented as graphs was 9.3% in a 2011 integrated report. The column type of graph was the most popular; on average, 53% of all 1 982 graphs were in column format which is similar to the findings of Beattie and Jones (1999). Forty percent of the graphs presented data of less than one year and 50% of the graphs data of more than one year but less than five years. The majority (65%) of the graphs had two variables. The majority of the graphs were placed within the operational overview for the year provided in the integrated report.

Table 4: Use of graphs in 87 integrated reports

	Graphs
Companies that used graphs	24
Average graphs per integrated report from 2010 to 2013	25
Highest number of graphs per integrated report from 2010 to 2013	84
Average proportion of pages used as graphs from 2010 to 2013	1,8%
Highest proportion of pages per integrated report from 2010 to 2013	9,3%

Due to the unregulated nature of graphs, the topics chosen to be presented as graphs provide an indication of what management considers important to visually communicate to stakeholders. Table 2 below shows the different categories in which graphs were coded: ESG and other. It is evident that mining companies place greatest emphasis on social issues when presenting graphs.

These findings differ from the study conducted by Jones (2011) who found that environmental topics were the most graphed category but confirm the findings of Hraskey (2012) which suggest that social topics had the highest representation as graphs in annual reports. The social topics with the highest representation as graphs were related to safety issues (especially lost-time injury frequency rates), community development, transformation, employee issues (such as the total employment figure and employee turnover) and employee development. The environmental topics with the highest representation in graphs were energy issues, air issues (such as pollution and CO² emissions), water issues and waste management.

The use of social graphs compared to environmental and governance graphs was highly significant (0.01 level using a binomial test).

Table 2: Distribution of graphs by category in 87 integrated reports

	No. of graphs	% of graphs
Environmental	154	8%
Social	389 ^a	20%
Governance	88	4%
Other	1 351 ^b	68%
Total	1 982	100%

^a The use of social graphs compared to environmental and governance graphs in integrated reports was highly significant (0.01 level using a binomial test).

^b Other consists of all graphs that could not be classified as ESG (refer to table 1 in Annexure A). For example graphs on financial information.

5.2 Impression management and graphs

Companies preferred to present graphs that illustrate a decreasing trend in a bad news topic, such as a decrease in CO² emissions and a decrease in fatalities, and an increasing trend in good news topics, such as an increase in transformation or an increase in energy efficiency. For favourable graphs the results for graphs presenting an increasing trend in good news topics and graphs presenting a decreasing trend in bad news topics were highly significant (0.01 level using a binomial test). Together, this presented 229 graphs favourable to the company rather than 148 graphs which were unfavourable to the company³¹. This finding is in line with the results of Jones (2011). The results for graphs presented favourably and unfavourably were highly significant for total and social graphs (0.01 levels using a one-tailed binomial test at a test probability of 54% for total graphs and 56% for social graphs). The results for environmental and governance graphs presented favourably and unfavourably were not statistically significant. These results are similar to Jones (2011) who found a significant difference between the total favourable and unfavourable graphs. The results for social graphs presented favourably compared to environmental and governance graphs presented favourably were highly significant (0.01 level using a binomial test).

Table 3: Overall analysis of graph selection in ESG topics

	Environmental	Social	Governance	Total
Presented favourably to the company				
- Increasing trend in good news topics	4	53	3	60
- Decreasing trend in bad news topics	50	116	3	169 ^d
Total presented favourably	54	169 ^{b, c}	6	229 ^a
Presented unfavourably to the company				
- Increasing trend in bad news topics	45	74	1	120
- Decreasing trend in good news topics	2	23	3	28
Total presented unfavourably	47	97	4	148
Total graphs analysed for graph selection	101	266	10	377

^a The results for total graphs presented favourably compared to total graphs presented unfavourably were highly significant (0.01 level using a one-tailed binomial test).

^b The results for social graphs presented favourably compared to social graphs presented unfavourably were highly significant (0.01 level using a one-tailed binomial test).

^c The results for social graphs presented favourably compared to environmental and governance graphs presented favourably were highly significant (0.01 level using a binomial test).

^d The results for total favourable graphs presenting an increasing trend in good news topics and total favourable graphs presenting a decreasing trend in bad news topics were highly significant (0.01 level using a binomial test).

When the trend line was measured to determine graph distortion, Table 4 below indicates that mining companies tend to distort graphs in their favour, presenting a decreasing trend in a bad news topic. Overall, the results of graph distortion indicated that many South African mining companies did not make use of graph distortion as a form of presentation

³¹ The total number of ESG graphs tested for graph selection do not agree to the total graphs in the 87 integrated reports as not all graphs allowed for graph selection to be tested. For example, if the graph (such as a pie chart) only illustrated one year of data, it was not possible to determine whether there was an increase or decrease in trend.

management, compared to findings of other similar studies on UK, Australian and inter-country companies (Beattie and Jones, 1999; Beattie and Jones, 2000; Jones, 2011).³² This suggests that South Africa might be more conservative regarding impression management and graphs. The difference between the favourable distortions and unfavourable distortions, total and per ESG category was not statistically significant. This finding is in contrast to Jones (2011) that found the difference to be significant. No statistically significant difference was found between the different categories (ESG) of graphs with favourable distortions. These findings remain a suggestion due to the limited sample size of graph distortions found.

Table 4: Overall analysis of graph distortion in ESG topics

	Environmental	Social	Governance	Total
Favourable distortions				
- Increasing trend in good news topics	2	1	0	3
- Decreasing trend in good news topics	0	0	0	0
- Increasing trend in bad news topics	0	0	0	0
- Decreasing trend in bad news topics	3	2	0	5
Total graphs with favourable distortions	5 ^a	3 ^a	0 ^a	8 ^a
Unfavourable distortions				
- Increasing trend in good news topics	1	0	0	1
- Decreasing trend in good news topics	0	0	0	0
- Increasing trend in bad news topics	1	2	0	3
- Decreasing trend in bad news topics	1	1	0	2
Total graphs with unfavourable distortions	3	3	0	6
Total graphs identified as containing graph distortion	8	6	0	14

^a When the results were compared between favourable and unfavourable distortions (total and per ESG category) it was not statistically significant.

6. CONCLUSION

The aim of this paper was to evaluate if impression management is used in visual ESG disclosures in integrated reports of the South African mining sector. To achieve this, the study investigated the use of graphs and impression management in graphs in 87 integrated reports of companies in the South African mining industry through manual content analysis. The measures for impression management in graphs (Jones, 2011) were graph selection (the topic chosen to be graphed and its underlying trend) and graph distortion (whether the

³² Only graphs in which an underlying trend could be established (presenting more than one year's data) could be tested for graph distortion. All the graphs with underlying trends were tested for graph distortion, however, the majority did not display any form of graph distortion.

company presented the information graphically correct: were the underlying graph trend lines drawn correctly). Non-parametric tests, specifically binomial tests, were used to evaluate the findings on graphs. The following key findings were identified from the analyses performed.

The first research objective was to evaluate to what extent South African mining companies make use of graphs as a disclosure strategy in integrated reports. Graphs are widely used by companies in ESG disclosures. Of the sample of 28 companies, only four companies did not make use of graphs in the integrated reports. This finding suggests that graphs are an important part of companies' disclosure strategy. The use of graphs was the highest in social disclosures and statistically significant compared to graphs used in environmental and governance disclosures. The second research objective was to evaluate whether management of South African companies make use of impression management in ESG graphs used in integrated reports. The measures for impression management were graph selection and graph distortion. In the analysis of graph selection in ESG disclosures companies presented more favourable (229) than unfavourable graphs (148). This finding was highly significant for the total ESG graphs and suggests that management do use impression management in the selection of ESG graphs to be presented. In the analysis of graph distortion companies presented more favourable distortions (8) than unfavourable distortions (6). This finding was however not statistically significant. The third research objective was to evaluate whether impression management is more prevalent in graphs of environmental, social or governance disclosures. The favourable graphs used in social disclosures were highly significant in comparison to environmental and governance disclosures. A more detailed analysis of graph selection in each category of ESG disclosures revealed that companies presented significantly more favourable graphs than unfavourable graphs in social disclosures. The findings for environmental and governance disclosures were not statistically significant. This suggests that impression management is most prevalent in graphs of social disclosures.

To summarise the findings: management employ graphs as a disclosure strategy in integrated reports, impression management in the form of graph selection was evident and significant in ESG graphs and lastly impression management was most prevalent in social graphs.

A limitation of the study is that the sample size is limited to the mining industry in South Africa and the jurisdiction of the JSE and thus is not generalizable to all South African companies or international companies. Lastly there may be other variables influencing the use of impression management in graphs in ESG disclosures which were not taken into consideration.

This study confirms the findings of Jones (2011) and Hrasky (2012) which suggests that management do use graphs as a disclosure strategy in ESG disclosures. The findings suggest that social disclosures are the most graphed and category of disclosure. Social graphs were highly significant compared to environmental and governance graphs. This suggests that the management of mining companies is most concerned with managing the impressions of stakeholders regarding socially-related topics. This finding agrees with Hrasky (2012) but differs from Jones (2011) who found environmental graphs to be the most graphed category of disclosures. The findings of this study suggest that management do use

impression management in the form of graph selection but not graph distortion in ESG graphs. The finding regarding graph selection agrees to Jones (2011), who similarly found companies to rather select and present favourable than unfavourable graphs. However, the finding regarding graph distortion does not agree to Jones (2011), who found companies to distort the underlying trend of the graph in the company's favour.

This study fills an important and relevant gap in current literature by analysing whether impression management is actually used in visual ESG disclosures in integrated reports in South Africa or whether the suggested impression management concluded from interviews with institution investors is merely a myth (Atkins and Maroun, 2015). In addition, this study fills a gap in existing literature as it is more comprehensive in the analysis of graphs (Benschop and Meihuizen, 2002; Shen and Samkin 2008; Campbell *et al.*, 2009; Jones, 2011; Hrasky, 2012), and focuses on ESG disclosure in total as well as each of the individual components thereof.

The findings of this study are of relevance to all the different users of integrated reports, management of companies and regulatory bodies. The relevance of the findings to each of these groups are discussed in more detail in the introduction of the paper.

This study can be extended by analysing the time dimension of the use of graphs and impression management by analysing a longer period and comparing data on a year to year basis. A longitudinal study analysing how visual disclosure strategies evolved pre- and post-integrated reporting can also be interesting. It can also be extended to other industries to compare the findings between different industries.. Companies in more sustainable-driven industries can be compared to companies in less-sustainable driven industries. It will be interesting to determine whether disclosure strategies are different regarding the use of visual disclosures between these different industries. The disclosure tone of "captions" of graphs can be further analysed. In addition, the extent to which the information portrayed in graphs agrees with the information and data in the narrative disclosures can be analysed. An interview based study with management, to determine from their perspective the motivation, process, considerations and problems which they experience in selecting and disclosing graphs in integrated reports can provide additional insight regarding visual disclosure strategies. It can also be extended to the analysis of photographs and how photographs are used in visual ESG disclosure. And lastly, the economic consequences of impression management and the use of graphs in integrated reporting, such as share prices, earnings quality and cost of capital can be analysed.

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Annexure A

Table 1: ESG coding instrument (Carels et al., 2013)

<u>Social (S)</u>	<u>Environmental (E)</u>	<u>Ethical (G)</u>
Employment turnover	Compliance	Integrity/business integrity
Safety issues	Energy	Accountability
EE health issues	Air	Transparency/openness
EE development	Water	Responsibility/responsible employer
EE transformation	Waste	Ethical standards/values/code/good corporate citizen
Compliance	Rehabilitation	
Community development	Initiatives	
General concerns	social	General

The coding instrument of Carels et al. (2013), illustrated in table 1 above, was used to classify the subject matter of each graph as either environmental, social or governance (ESG) for further analysis per sub-category.

Table 2: Classification of graph selection (Jones, 2011)

	Classified as a good news topic based on trend	Classified as a bad news topic based on trend
Increasing trend in a good news topic	<input type="checkbox"/>	
Decreasing trend in a good news topic		<input type="checkbox"/>
Increasing trend in a bad news topic		<input type="checkbox"/>
Decreasing trend in a bad news topic	<input type="checkbox"/>	

Table 2 above was used to analyse graph selection and whether the graph selected for disclosure represents good news or bad news from the company’s perspective based on the topic chosen to be graphed (a good news topic such as recycling or a bad news topic such as fatalities for the year) and its underlying trend (an increasing trend or a decreasing trend).

Table 3: Classification of graph distortion (Jones, 2011)

Nature of news (topic and trend)	Trends exaggerated	Trends understated
Good news (increase in recycling)	Favourable to company	Unfavourable to company
Bad news (increase in greenhouse emissions)	Unfavourable to company	Favourable to company
Good news (decrease in greenhouse emissions)	Favourable to company	Unfavourable to company
Bad news (decrease in recycling)	Unfavourable to company	Favourable to company

Table 3 above was used to determine whether the graph distortion is favourable or unfavourable to the company. If the GDI calculated relates to a good news topic such as recycling and it is positive (exaggerated), it is considered as favourable to the company. Similarly, if the GDI relates to a bad news topic such as fatalities for the year and it is negative (understated), it is considered as favourable to the company.