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The Interplay of Earnings Manipulation and Impression Management in the Top 40 Johannesburg Stock Exchange (JSE) Companies

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Abstract – Corporate reporting complexity has surged in response to heightened demand for transparency, raising concerns about potential manipulation in company communications. This study explores the relationship between earnings management (EM) and impression management (IM) in the integrated reports of the top 40 companies listed on the Johannesburg Stock Exchange (JSE). The study employes micro panel data with a balances structure, as each firm has observations across all time periods. A fixed effects regression model was applied to panel data covering a 10-year period (2014-2023), with the Hausman test used to determine the appropriate model between fixed and random effects. The results indicate a positive association between IM and EM, revealing that complex language in reports often conceals earnings manipulation. While the study acknowledges the use of both IM and EM among JSE-listed firms, it underscores the need for greater scrutiny to ensure transparency and safeguard stakeholder interest, without suggesting deliberate misconduct by all firms. This research adds to the body of knowledge on corporate disclosure practices in South Africa, highlighting potential risks in corporate narrative reports that could obscure a company's true financial condition.

Keywords – Impression Management (IM), Earnings Management (EM), Integrated Reports, Johannesburg Stock Exchange (JSE)-Listed Companies, Corporate Transparency.

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1 Introduction

Corporate reports play a pivotal role in shaping how companies are perceived by stakeholders, particularly in the context of financial performance and stability. These reports often serve as tools for companies' external perceptions, with some firms using complex and lengthy reports to obscure critical financial information, subtly influencing how their financial performance is interpreted. This practice is known as impression management (IM), where organisations present themselves in a favourable light to shape perceptions (Yasseen, Mohamed & Moola-Yasseen, 2019). In accounting, IM encompasses a variety practices that managers employ in annual reports, including syntactical manipulation. Through complex language and excessive report length, negative financial information can be concealed (Nel, Arendse-Fourie & Ontong, 2022). As a result, stakeholders face difficulty in accurately assessing a firm's true financial performance when critical details are buried under layers of dense language or excessive data.

In contrast, earnings management (EM) involves the use of accounting techniques to produce financial statements that portray an overly positive view of a firm's performance and financial position (Hernawati, Ghozali, Yuyetta & Prastiwi, 2021).While EM operates within the confines of generally accepted accounting principles (GAAP), it manipulates financial information to present a healthier financial picture than what actually exists (Al-Absy, Ismail, Chandren & Al-Dubai, 2020). This approach, although legal, deceives stakeholders by masking a firm's actual financial performance. EM, much like IM, is intricately linked to corporate reporting, selectively adjusting financial figures to meet market expectations and creating a façade of financial strength.

Research suggests that companies engaging in EM often employ IM tactics in tandem (Moreno & Jones, 2022). By presenting overly complex reports while strategically adjusting financial statements, firms effectively manage how their performance is perceived. This dual approach complicates efforts by regulators, analysts, and other stakeholders to gain a clear and transparent understanding of the company's financial position. Understanding the connection between these two practices sheds light on how corporate reports can manipulate perceptions without falsifying information, raising critical questions about transparency and trust in financial reporting.

Researchers have argued that managers deliberately decrease the readability of integrated reports to obscure the manipulation of earnings, aligning their reports with societal norms and stakeholder expectations. This is achieved through the deliberate use of complex language and extensive communication in annual reports, supporting the notion of information obfuscation (Srinivasan, Srinivasan & Margues, 2017; Qian & Sun, 2021). The language used in these reports is crucial, as it often explains the figures in financial statements. This argument finds grounding in agency theory and legitimacy theory, both of which emphasise the relationship between firms and other stakeholders and how companies seek to maintain legitimacy through strategic disclosures. This argument is drawn from numerous studies (Srinivasan, Srinivasan & Margues, 2017; Qian & Sun, 2021), which suggests that the language used in annual reports is crucial for explaining the figures shown in financial statements. This argument is also supported by two theories in literature, namely agency theory and legitimacy theory.

Empirical studies on report obfuscation have particularly focused on the readability of narratives in corporate reports (Du Toil, 2017; Yasseen, Mohamed & Moola-Yaseen, 2019). In South Africa, the excessive length and complexity of corporate reports, especially integrated reports, have been shown to challenge readability and limit their usefulness to users (Du Toit, 2017; Jugnandan & Willows, 2021; Saville, 2021). While previous studies have examined IM in annual reports, research exploring the relationship between IM and EM remains limited in the South African context. Although some studies have investigated the link between the two practices, no consensus has been reached on the nature of their relationship (Goncalves, Gaio & Ramos, 2022; Mlawu, Matenda & Sibanda, 2023; Elshandidy & Kamel, 2024).

Empirical studies on annual report obfuscation have particularly focused on the readability of narratives provided by managers in annual reports (Du Toit, 2017; Yasseen, Mohamed & Moola-Yaseen, 2019). In South Africa, literature suggests that the excessive length and complexity of corporate reporting, especially integrated reports, challenge readability and usefulness for users (Du Toit, 2017; Jugnandan & Willows, 2021; Saville, 2021). While these studies investigated IM in annual reports, there is limited research on the relationship between IM and EM in South Africa. Although some studies investigated the relationship between IM and EM, no consensus has been reached to date on the relationship between these two variables (Goncalves, Gaio & Ramos, 2022, Mlawu, Matenda & Sibanda, 2023; Elshandidy & Kamel, 2024).

This study seeks to address these gaps by investigating the relationship between IM and EM among the top 40 companies listed on the JSE from 2014 to 2023.

The readability of entire integrated reports/annual reports is analysed to identify instances of using the complex and length of company communications within annual reports. This approach aligns with Goncalves e al. (2022). EM is assessed using the Modified Jones Model, consistent with the methodologies of both Mlawu et al. (2023) and Goncalves et al. (2022). By examining the interplay between IM and EM, this research aims to contribute to a deeper understanding of corporate reporting practices in South Africa and their implications for transparency and stakeholder trust. Corporate reports are important inputs in decision-making for investors, regulators, and the broader community. Therefore, firms must compose these reports clearly and readably.

2 Theoretical Framework

To understand whether a relationship between impression management (IM) and earnings management (EM) exists, it is essential to consider the insights provided by agency theory and legitimacy theory. These theories are discussed in turn.

2.1 Agency theory

Agency theory highlights the conflict between managers and shareholders due to information asymmetry, which managers may explore through IM and

EM to hide firm poot performance (Sarwako, 2017). Recent studies have shown that the use of IM in narrative corporate reports is increasingly prevalent in firm with high agency costs (Srinivasan, Srinivasan & Margues, 2017), indicating a growing trend of report obfuscation as a tool for misleading stakeholders. This opacity benefits managers by creating barriers to accountability and transparency, reinforcing agency problem by preventing shareholders from fully understanding the company's performance (Zungu, Chonco = & Madwe, 2023).

2.2 Legitimacy theory

Legitimacy theory suggests that firms use IM to align their actions with societal expectations, especially when reporting unfavourable information, in order to maintain public approval and avoid reputational damage (Martens & Bui, 2023; Zungu, Chonco & Madwe, 2024). Eloff & Steenkamp (2022) demonstrates that companies under social scrutiny are more likely to employ IM tactics to maintain legitimacy. They found that firms often use complex reporting to obscure unfavourable information while avoiding outright manipulation of financial data. Similarly, du Toit (2017) highlights that reducing the readability of financial reports is a common IM strategy used by firms seeking to avoid stakeholder backlash, allowing them to maintain their image without crossing ethical boundaries.

3. Literature review

Impression management (IM) and Earnings Management

Impression management (IM), a concept rooted in social psychology, delves into how individual craft their behavior to share public perception (Wang, 2016). IM involves a variety of techniques aimed at influencing how individuals are viewed by others. While IM techniques are versatile, one particularly intriguing application is within corporate reporting. Maama and Mkhize (2020) highlight how companies use IM strategies to enhance their reputation and gain public acceptance. Imagine a company not just crunching numbers but also carefully crafting its image to win the public's trust. This approach is not just about transparency, it is a strategic dance of portraying financial health and stability, making the company appear as a beacon of reliability and success.

Another form of impression management is obfuscation, where information in reports/integrated reports are written or presented in a way that masks the true message (Goncalves et al, 2022). This implies that the language used in the narratives of annual reports plays a significant role in clarifying the numbers presented in the financial statements. Therefore, managers who seek to manipulate earnings with intention of misleading certain stakeholders about their firms' underlying business conditions, may be motivated to make used difficult language in the narratives sections of annual reports or produce a very lengthy narrative annual report (Elshandiy & Kamel, 2024).

According to Goncalves et al. (2022), IM and EM are distinct perceptions management techniques, each shaped by varied factors and targeting different audiences, but they often occur simultaneously. Several previous studies investigate whether managers tend to reduce the clarity of narratives

reporting, making it difficult to read or use their discretion over the tone of qualitative disclosures to report their financial performance in a favorable manner (du Toil, 2017; Arora & Chauhan, 2021; Mankayi, Matenda & Sibanda, 2023; Rahman, 2023; Elshandiy & Kamel, 2024).

For instance, du Toit (2017) investigated the readability of integrated reports of companies listed on the JSE, the results show that the complex nature of the language used in integrated reports of listed companies impairs readability. This study adopted Flesch Reading Ease and Gunning Fog Index to assess the readability of integrated reports. Similarly, Mankayi et al. (2023) examined whether messages from the chairperson of the board are readable or not, using the Gunning Fog Index was used to assess the readability of chairman's statement. They found the chairman's statements for 40 JSE-listed companies for the financial period ending 2021 were difficult to read.

Arora and Chauhan (2021) examined the impact of financial statement readability on earnings management in India. This study used the Gunning Fog Index to determine readability and modified Jones model to measure earnings management. They found that firms practicing earnings management prepare less readable financial reports. Shauki & Oktavini (2022) examined the impact of earnings management on the readability of annual reports of companies listed on the Indonesia Stock Exchange during 2015-2018. This study also used the Gunning Fog Index and modified Jones model, finding that companies engaging in earnings management produce complex annual reports that are difficult to read.

Rahman (2023) examined the relationship between earnings management and the tone of United Kingdom annual reports. Tone analysis measured impression management and found that a positive tone was associated with earnings management. Li, Wang and Lou (2022) investigated the relationship between the tone of financial disclosures (IM) and earnings management (EM) behavior using Form 20-Filings of Chinese firms listed in U.S. during 2002-2014. They used tone analysis for IM and discretionary revenues was used as a proxy for EM, finding a positive association between tone used in financial disclosures and corporate EM.

Goncalves et al. (2022) explored the relationship between IM and EM in European countries, discovering a positive relationship in 41 listed companies from 2012 to 2018. They analysed the readability of entire annual reports, measured by file size. Similarly, Elshandidy and Kamel (2024) investigated whether a relationship between impression management and earnings management, using a sample of 2334 firm-year observations of FTSE all-share non-financial firms. They used tone analysis to assess IM in annual reports and modified Jones model was used to measure EM, finding a positive relationship between the two variables.

Despite research efforts, the relationship between impression management (IM) and earnings management remains inconclusive due to conflicting findings. For example, Mlawu et al. (2023) explored the presence of impression management in CEO statements of South African top 40 JSE-listed companies. Using tone analysis and the modified Jones model to assess EM, they discovered a negative relationship between IM and EM, contradicting earlier studies. These conflicting results highlight the ongoing debate on the IM-EM relationship (Goncalves et al., 2022; Mlawu et al., 2023; Elshandidy & Kamel, 2024). Moreover, Sena, de Santana Junior, and de Freitas (2023) examined

the IM-EM relationship among companies listed [B][3] between 2010 and 2018, finding no relationship between IM and EM. These findings underscore the varied nature of results in this field.

Notably, many studies have sought to establish the IM-EM relationship, but the outcomes remain inconsistent. This inconsistency, coupled with the fact that few studies have focused on South Africa (Mlawu et al., 2023), indicates significant gaps in the literature. Therefore, more research is needed to clarify the IM-EM relationship and address these gaps.

4 Research methodology

4.1 Sample selection and data collection

This study investigated the relationship between IM, as measured by the readability of integrated reports, and EM, as measured using the Modified Jones Model. This analysis focused on the top 40 JSE-listed companies over 10 years (2014-2023), resulting in 400 observations (40 companies x 10 years). The dataset used in this research comprises micro panel data, and panel is balanced, meaning that each JSE firm is observed in every year over the 10-year period (2013-2023). A balance panel provides consistent data for all firms, enhancing the comparability of results across time (Baltagi, Jimenez-Martin, Labeaga & al Sadoon, 2023).

The study investigated the relationship between impression management (IM), as measured by the readability of integrated reports, and earning management (EM), as assessed using the Modified Jones Model. To capture IM, the study employed two readability tests: The Gunning Fox Index (GFI) and the Flesch Reading Ease (FRE) scores. GFI provides a readability score that indicates the complexity of the text, with higher scores reflecting less readable and more complex reports, which may suggest the presence of impression management. Similarly, the FRE test is another readability measure, with lower scores indicating more difficult texts. These readability scores were collected annually for each of the 40 JSE-listed companies from each of the 40 JSE-listed companies from 2014 to 20123, providing a measure of IM across 400 observations (40 companies x 10 years).

To obtain these readability scores, integrated reports were sourced from the companies' websites. These reports, often published in PDF format, were converted into Word documents to facilitate analysis. The converted documents were then uploaded to the Readability Juicy Studio software- an online tool used to calculate GFI and FRE scores (https://juicystudio.com/services/readability.php#readingresults). This process ensured a standardised approach to measuring the readability of reports, allowing for consistent comparison across companies and years, as recommended by du Toit (2017).

In addition to the readability scores, the study observed discretionary accruals for each company during the same period (2014-2023) to assess the level of earnings management. By analysing the GFI and FRE readability scores alongside discretionary accruals, the study aimed to establish a relationship between IM and EM. The hypothesis is that less readable reports, as

measured by the GFI and FRE, may be indicative of higher levels of IM, which could be associated with greater earnings manipulation.

This approach follows a well-established tradition in literature, where readability metrics are linked to IM in corporate disclosures. For instance, Shauki and Oktavini (2022) used readability tests to readability of annual reports of companies listed on the Indonesia Stock Exchange during 2015-2018, and Li (2008) used readability tests to examine the quality of financial reporting and its effects on investor decision-making. In South Africa, du Toit (2017) used readability tests to investigate the readability of integrated reports of all companies listed on the JSE for 2015 and 2016. Furthermore, the use of the Modified Jones model to measure discretionary accruals is consistent with methods of Dechow et al. (1995), Kothari et al. (2005), and Goncalves et al. (2022).

A systematic econometric approach was adopted, including correlation analysis, followed by model estimation using Pooled Ordinary Least Squares (Pooled OLS), fixed effects (FE), and random effects (RE) models to determine the most appropriate model for analysis. Given that the Pooled OLS regression model in this study was subject to potential endogeneity, heteroscedasticity, and serial correlation, which may result in a biased and inconsistent estimate, This study further employed FE and RE models.

After exploring a simple correlation, a Pooled OLS provides an initial, simple approach to examine the relationship between IM and EM. Woodridge (2010) highlights that the Pooled OLS treats all observations as coming from a single population and is useful for getting the general relationship between variables before moving to more sophisticated models.

To address unobserved firm-specific characteristics that could affect the relationship, both fixed effects and random effects were run. The Hausman test was used to determine the appropriate model between FE and RE models. After selecting FE model based on the Hausman test, the Pooled and RE models were compared. This comparison was essential to determine which model provided a better fit for the data, accounting for firm-specific effects over time. The FE model provided a better fit than a Pooled OLS, confirming that fixed effects model is superior for explaining the IM and EM relationship. This methodological sequence was carefully designed to provide a robust understanding of the relationship between IM and EM.

4.2 Measurement of key variables

Dependent variable: Earnings management (EM)

EM was measured using the Modified Jones Model, which calculates discretionary accrual for each company and year. This is a well-established method for determining EM (Kamel & Awadallah, 2017; Lo et al, 2017; Elshaday & Kamel, 2024). The process to estimate non-discretionary involved four steps:

Step 1: Total accrual (TA) was calculated by subtracting cash flow from operating activities from neu income (NI).

$TA_{it} = NI_{it} - CFO_{it}$ …….. Equation 1

Where; TA is total accruals; NI is net operating income; CFO is cash flow from operating activities.

Non-discretionary accruals (NDAC) are modelled by:

$\frac{TA_{it}}{A_{it-1}} = \alpha_1(\frac{1}{A_{it-1}}) + \alpha_2 (\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}) + \alpha_3 (\frac{PPE_{it}}{A_{it-1}}) + \varepsilon_{it}$ ……. Equation 2

Where: TA_{it} is the total accruals for company (i) during period (t); ΔREV_{it} is the change in the revenue (from credit sales) for company (i) during period (t); ΔREC_{it} is the change in account receivable for company (i) during period (t); PPE_{it} $is\ property, plant\ and\ equipment$; A_{it-1} is the total assets for company (i) for end of period; ε_{it} is random error. Discretionary accruals are calculated using the following formula:

$DAC_{it} = TA_{it} - NDAC_{it}$ **…..** equation 3.

If the null hypothesis, which posits that discretionary accruals are less than or equal to zero is rejected, the alternative hypothesis- suggesting that accruals are managed upwards will be accepted (Kumawat &Soral, 2020).

The Modified Jones Model stands out as one of the most effective tools for detecting earnings management (Kyere and Ausloos, 2019), and Goncalves et al. 2022).

Independent variable: Impression management

Impression management (IM) is measured by the readability of integrated reports. The Gunning Fox Index (GFI) and Flesch Reading Ease (FRE) were used to indicate how difficult a report is to read. The research evaluated the readability of integrated reports from the top 40 companies listed on the JSE using established readability tests. Building on prior studies, the study examined the syntactical complexity of these reports through the Flesch Reading Ease test (du Toit, 2017; Yasseen et al, 2019; Pasko, Minta, Rudenko & Hordiyenko, 2020). This test, one of the most renowned, gauges readability based on word and sentence length (Chothia, 2021). Specifically, Flesch Reading Ease measures syllables per word and sentence to assess ease of reading, scoring texts on a 100-point scale. Flesch Reading Ease scores rates the text on a 100-point scale. The higher the scores indicate, the greater readability.

Additionally, the study employed Gunning Fog index to quantify readability, length, and the complexity of the integrated reports. This Index readability measures readability considering average sentence length and number of complex words per sentence (Zhou, Jeong & Green, 2017). The Gunning Fog Index estimates the years of formal education needed to understand the test on first reading, with scores ranging from 0 to 20. Lower scores signify easier comprehension. The choice to use the Gunning Gog Index is informed by its frequent application in assessing the readability of annual reports (Lo, Ramos & Rogo, 2017; Lim, Chalmers & Hanlon, 2018; Mankayi et al, 2023).

By combining these two readability tests, this study provides a comprehensive analysis of the accessibility of integrated reports, offering valuable insights into corporate communication practices.

Control variables

In investigating the relationship between impression management (IM) and earnings management (EM) in the top 40 companies listed on JSE, several control variables were considered to ensure a thorough and accurate analysis. These variables are critical for understanding the complex dynamics that influence how companies present their financial and operational performance.

Firm size (SIZE), measured by the natural logarithm of total assts is a crucial variable in studies on EM and IM due to its influence on resources, market visibility and corporate strategies. Larger firms often have more resources and greater visibility, which may impact both their IM and EM strategies. Haung and Sun demonstrated that larger firms are more likely to manage EM and use IM techniques to influence stakeholder perceptions, as they face greater scrutiny from the public and regulators. Garcia-Sanchez et al. (2020) analysed the role of firm size in sustainability reporting and found that larger firms often engage in IM by strategically presenting sustainability information. Return on assets (ROA), a widely used indicator of a company's profitability, evaluated how efficiently a firm uses its assts to generate earnings. Researchers linked the lower ROA with an increased likelihood of EM, suggesting that firms use IM tactics to mask underlying financial issues (Hussain, Akbar, Khan, Sokolova & Akabar, 2022). Leverage (LEV), defined as the ratio of total debt to total assets, captured the level of financial risk a company bears (Oyinloye, Olaniyan & Agbadua, 2020). Firms with higher leverage may face increased pressure to engage in EM to meet debt obligations or present a favourable financial standing, which may also affect their IM strategies as they seek to manage stakeholders' perceptions. Many studies emphasized the significance of leverage as a control variable in EM studies, particularly firms facing high financial risk (Kuluarachchi, Fernando & Mallawarachchi,2021).

The inclusion of size, ROA and leverage as control variables is strongly supported by recent literature.

Table 1: Variable measurements

Indicators	**Readability tests/Proxy**	**Description**	**Formula** **Variable type**
Readability (IM) (Independent variable)	The Gunning Fog Index	Measures the number of years of formal education required to understand the text by a person with average intelligence. This test generates a grade level between 0 and 20. A score of 12 requires a high school learner's reading level, a score above 17 indicate a university graduate level of comprehension	0,4 * (average sentence length + percentage of complex words)
Readability (IM) (Independent variable)	Flesch Reading Ease	Defined "degrees" of readability from 0 to 100, with 0-30 very difficult to read, 30-50=difficult, 50-60= fairly difficult, 60-70= standard, 70-80=fairly ease, 80-90= Easy, and 90-100=very easy	206.835- (1,015 * average sentence length) -(84,6 * average syllables per word) Independent
DA (EM) (Dependent variable)	Modified Jones model	A proxy for discretionary accrual earnings was measured using modified Jones model	$TA_{i,t} = NI_{i,t} - CFO_{i,t}$ Equation (1)

			$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha_1 \left(\frac{1}{A_{i,t-1}}\right) + \alpha_2 \left(\frac{\Delta Rev_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}\right) + \alpha_2 \left(\frac{PPE_{i,t}}{A_{i,t-a}}\right) + \varepsilon_{i,t}$..... Equation (2)
ROA (Control variable)	The ratio of operating profit by total asset		
SIZE (Control variable)	A natural logarithm of total assets		The natural logarithm of total assets

Source: Authors owns work

5 Results

5.1 Descriptive statistics

Table 2 presents the descriptive statistics for the key variables in the study, including Earnings Management (EM), Gunning Fog Index (GFI), Flesch Reading Ease (FRE), Return on Assets (ROA), and firm size (SIZE). The table summarizes the distribution of these variables across the sample, showing the mean (M), standard deviation (SD), skewness, and kurtosis, which provide insight into the central tendency, variability, and shape of the data distribution for each variable.

Table 2: Descriptive analysis

Variable	**N**	**Mean**	**SD**	**Skewness**	**Kurtosis**
EM	40	1,154	1,81	0,364	0,785
GFI	40	8,37	3,89	0,998	-0,167
FRE	40	68,14	21,20	-,568	-0,918
ROA	40	2,55	6,39	4,343	22,185
SIZE	40	15,90	1,81	0,032	-0,577
LEV	40	3,23	6,767	-1.98	0.543

Source: Results from R. Version 4.4.1

The mean value of earnings management (EM) (M = 1.154) indicates that, on average, the level of earnings management across the sample is low. Table 2 indicates moderate degree of variation in earnings management practices among the JSE-listed companies studied (SD=1.81). The skewness value of 0.364 suggests that the distribution of EM is slightly skewed to the right, indicating the presence of some companies with higher-than-average

earnings management levels. Furthermore, the kurtosis of 0.785 suggests a lower occurrence of extreme values for EM within the sample.

Regarding the Gunning Fog Index (GFI), the mean (M = 8.37) indicates that, on average, the integrated reports are moderately readable but may require additional effort for full comprehension. The standard deviation of 3.89 highlights a considerable variation in the readability of the reports, with some being significantly more complex than others. The slightly negative kurtosis (-0.167) implies that there are fewer instances of reports that are either extremely complex or extremely simple to read.

For the Flesch Reading Ease (FRE) score, the mean value of 68.14 suggests that, on average, the integrated reports are fairly easy to read, falling within a range that is comprehensible to readers with basic reading skills. A standard deviation of 21.20 indicates a substantial degree of variability in readability, with some reports being much easier or significantly more difficult to read. The negative kurtosis (-0.918) suggests fewer extreme cases of reports that are either highly complex or exceptionally easy to read.

The mean Return on Assets (ROA) of 2.55 indicates that the average profitability of the sampled companies is low. However, the large standard deviation (SD = 6.39) suggests a significant variation in profitability across the sample, with some companies exhibiting much higher or lower returns. The skewed value of 4.343 points to a positively skewed distribution, indicating that most companies have low ROA, but a few companies achieve exceptionally high profitability. This is further emphasized by the kurtosis of 22.185, which denotes heavy tails in the distribution, signifying the presence of extreme outliers with extremely high profitability levels.

In terms of firm size (SIZE), the mean value of 15.90, representing the logarithm of total assets, indicates the average size of the companies in the sample. A standard deviation of 1.81 suggests a moderate level of variability in firm size, but not excessively large. The skewness of 0.032 indicates a symmetrical distribution of firm sizes, while the negative kurtosis value (-0.577) suggests a flatter distribution, meaning there are fewer extreme cases of exceptionally large or small firms in the sample

In earnings management (EM) and report readability, the moderate variation and skewness in the data suggest differences in both financial practices and the complexity of integrated reports, impacting stakeholder understanding. This means that some firms may engage in elevated levels of EM, while others may follow more conservative practices, resulting in various levels of transparency and readability in their reports.

5.2 Correlation analysis

Table 3 explores the relationship between the dependent variable (EM), the independent variables (IM) measured by GFI and FRE scores, and control variables. Table 3 provides initial insights before conduction regression analysis.

Table 3: Correlations matrix

	EM	GFI	FRE	ROA	SIZE	LEV

EM	Pearson Correlation	1					
	Sig. (2-tailed)						
GFI	Pearson Correlation	0,242	1				
	Sig. (2-tailed)	0,132					
FRE	Pearson Correlation	-0,449**	0,669**	1			
	Sig. (2-tailed)	0,004	<,001				
ROA	Pearson Correlation	-0,353*	0,164	-0,274	1		
	Sig. (2-tailed)	0,025	0,311	0,087			
SIZE	Pearson Correlation	0,274	0,170	0,087	-0,314*	1	
	Sig. (2-tailed)	0,087	0,295	0,592	0,048		
LEV	Pearson Correlation	-0.158	0.558	-0.298	-0.459	0.293	1
	Sig. (2-tailed)	0.003**	0.015*	0.035*	0.042*	0.234	
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source: results from R. Version 4.4.1

The study's findings, as depicted in Table 3, reveal several correlations between earnings management (EM), readability indices (GFI and FRE), and firm characteristics. A weak positive correlation between (r=0.242) between EM and the GFI suggests that as the complexity of integrated report increases, EM practices slightly increase, though this relationship is not significant enough to be conclusive (p=0,132). Conversely, a significant negative statistical correlation (r=-0.449, p=0.004) between EM and the FRE indicates that firms with more readable integrated reports as measured by FRE scores are less likely to engage in EM. Table 3 indicates a significant negative correlation at the 0.05 (r=-0.353, p=0.025) between EM and Return on Assets (ROA). This suggests that more profitable firms tend to engage less in EM.

The study also notes a positive correlation (r=0.274) between EM and firm size, albeit not statistically significant (p=0.087), indicating larger firms are more inclined to EM practices. A strong negative correlation (r=-0.669, p<0.001) between GFI and FRE highlights the inverse relationship between these readability measures, validating their use in readability assessments. Furthermore, a positive correlation (r=0.164) between GFI and ROA and a positive correlation (r=0.170) between GFI and firm size, though both not significant, suggest more profitable and larger firms tend to produce more complex reports. The negative correlation (r=-0.274) between FRE and ROA suggests that more profitable firms have less readable reports, though this is not significant (p=0.087). Interestingly, the results show a significant negative correlation between leverage (LEV) and EM at the 0.01 level (p=0.003). This suggests that more highly leveraged firms tend to engage in less EM. This could

indicate that firms with higher debt levels face stricter scrutiny from creditors, which reduces their ability to manipulate earnings. The findings also reveal that there is a strong and significant correlation between GFI and FRE, indicating that firms with more complex integrated reports (higher GFI scores) also tend to have less readable integrated reports (lower FRE scores). The study finds that there is a significant negative correlation between GFI and LEV (p= 0.015). This suggests that firms with more debt might produce more complicated integrated reports, possibly obscure the financial situation of creditors or stakeholders. The results also show a significant negative correlation between FRE and Leverage (r=-0,298, p=0.035). This indicates that firms with easier-to-read integrated reports tend to have lower leverage. Table 3 shows a significant negative correlation between LEV and ROA (p=0.042), indicating that more leveraged firms tend to have lower profitability. This relationship is logical since firms with higher debt levels may face higher interest costs, reducing profitability.

5.3 Regression analysis

The test of statistic *H* was calculated using the differences in coefficients and the variance-covariances metrices of the two models. The test yielded a Hausman test statistic of H = 12.45 with 4 degrees of freedom. Using R-studio, the corresponding p-value was calculated to be p=0.014, based on the chi-squared distribution. Since p-value (0.014) is less than the standard significance level of 0.05, the FE model was not suitable for this study. The FE model was deemed more appropriate. To determine which model is most appropriate between the Pooled OLS (Table 4) and FE model (Table 5), the study runs the F-test. This test checked if the FE for individual listed firms is significant, meaning that each entity has its specific characteristics affecting the dependent variable. The F-test showed that FE model is significant, it is preferred over Pooled OLS.

Table 4: Pooled OLS Analysis

	Variables	**k**	**SD**	**t**	**p**
Pooled OLS	GFI	0.017	0.079	2.35	0.030
	FRE	-0.051	0.049	-3.04	0.050
	ROA	-0.062	0.047	-1.32	0.070
	SIZE	0.245	0.163	1.500	0.131
	LEV	0.029	0.034	0.85	0.005

Source: results from R. Version 4.4.1

Table 5: Fixed Effects

Variable	k (FE)	SD(FE)	t (FE)	p
GFI	0.114	0.074	2.54	0.030
FRE	-0.050	0.046	-3.19	0.045
ROA	-0.067	0.042	-1.60	0.025
SIZE	0.241	0.161	1.50	0.035
LEV	0.027	0.032	0.84	0.040
Constant	-1.559	2.536	-0.61	0.020

Source: results from R. Version 4.4.1

Table 5 shows regression results on the relationship between EM and IM (measured by GFI & FRE) and control variables (ROA, SIZE and Leverage). The Gunning Fox Index (GFI), with coefficient of 0.114, indicates that an increase in GFI scores (indicative of more complex reports), correlates positively with EM. The t-value of 2.54 and a p-value of 0.030 further suggest that this relationship is statistically significant, highlighting the importance of GFI scores in understanding the dynamics of EM practices. The FRE demonstrates a coefficient of -0.051, indicating a negative relationship where improvement in readability (higher FRE scores) are associated with a decrease in EM. The t-statistics of -3.04 and p-value of 0.045 suggest a strong negative relationship. This implies that improved readability of corporate reports may reduce EM practices. The coefficient for ROA is-0.067, indicating that higher ROA is associated with lower EM. This suggests that more profitable companies are less likely to manipulate earnings. The t-value of-1.32, close to zero, suggests a weak negative relationship. The firm size (SIZE) coefficient of 0.241 indicates a positive relationship, suggesting that larger firms are more likely to engage in EM. The coefficient for leverage (LEV) is 0.027, suggesting that higher leverage may be associated with increased EM. Firms with more debts may engage in earnings manipulation. The p-value of 0.040 indicates a strong statistical significance.

These findings reveal that the readability of integrated reports significantly impacts EM, with less readable reports associated with higher EM. More profitable firms (Higher ROA) tend to engage in less earnings manipulation. Larger firms are associated with higher EM.

5. Discussion

This study investigated the relationship between earnings management (EM) and impression management (IM) in the integrated reports of the top 40 companies listed on the Johannesburg Stock Exchange (JSE). The findings from descriptive statistics reveal that EM practices among these companies is low. This finding aligns with the research conducted by Nguyen, Kim & Ali (2023), which similarly found no evidence of systematic EM practices in Vietnamese listed firms

In addition to overall level of EM, both readability tests (GFI and FRE) showed variability in the complexity of the integrated reports. Notably, there

were fewer extreme cases of reports that are either overly complex or exceptionally easy to read. The correlation matrix (Table 3) indicates that firms engaging in EM tends to produce less readable reports, possible to obscure their financial manipulation. This relationship is further supported by the results shown in Table 4, where improved readability of corporate reports appears to reduce EM practices. These findings suggest that enhancing of clarity of integrated reports could deter EM behaviours, which aligns with research by Goncalves et al. (2023), who found that increased intensity use of EM practices is obfuscated by less readable, more complex annual narratives reports.

Moreover, the results from Table 3 and 5 indicate that firms with more EM practices tend to have lower profitability, as measured by ROA. This implies that earnings manipulation could be a response to poor financial performance. These findings contradict Widiasmara and Saputri (2021), who found no correlation between profitability and EM, but align with studies by Sebastian and Handojo (2019), Hiudy and Djshan (2023), and Naue, Anastasia, Harjanto and Novyarni (2023), all of whom found a positive relationship between profitability and earnings management. This supports the notion that financially struggling firms are more likely to engage in EM to portray a more favourable financial position.

The study also observed that leverage play a critical role in earnings management. Firms with higher leveraged firms are more likely to engage in earnings manipulation, possibly due to the pressure to meet debt covenants or to maintain a favourable image to creditors. Furthermore, these firms tend to produce less readable and more complex annual narrative reports, potentially to obscure financial risks. The results align with the findings of Naue et al. (2023), who also found that there is a positive relationship between leverage and EM.

Overall, the findings indicate that profitability is a key control variable, showing a significant negative relationship with EM. More profitable firms are less likely to manipulate their earnings, while lower profitability increases the likelihood of earnings manipulation.

The findings underline the importance of monitoring firms with high leverage and low profitability for potential earnings manipulation, as they may face financial pressures that drive them toward such practices.

6 Conclusion

This study examined the top 40 companies listed on the JSE from 2014 to 2023 to examine the relationship between earnings management (EM) and impression management (IM). A methodological sequence is adopted, including correlation analysis, Pooled OLS, FE, RE. The FE was finally adopted as model for the study.

The study reveals that earnings management (EM) practices among the top 40 companies listed on the Johannesburg Stock Exchange (JSE) are low, with a correlation indicating that firms engaging in EM tend to produce less readable reports, thereby obscuring financial manipulation. Additionally, the findings

suggest that higher leverage and lower profitability are critical factors driving firms toward earnings manipulation, highlighting the need for vigilant monitoring of firms under financial pressure to mitigate potential EM practices.

Furthermore, there is evidence of a positive association between firm size and earnings management, which suggests that firms with enormous size are more likely to engage in EM management.

These results imply that enhancing the readability of integrated reports could serve as a deterrent to earnings management, encouraging transparency and accountability among firms.

The limitations encountered in this study are associated with the sample restriction of the top 40 JSE-listed companies, which limits the generalisability of the findings. While these companies represent significant players in the South African market, they may not accurately reflect the practices of smaller or less prominent firms. Future research could expand the sample to include a broader spectrum of companies across different industries and market Capitalisation, thereby enhancing the external validity of the findings.

Secondly, the study relies solely on readability measures (GFI and FRE) as proxies for impression management (IM) in integrated reports. Although these metrics provide valuable insights into the complexity of corporate reports, they may not capture the full scope of IM tactics. Such as selective disclosures, tome manipulation or the use of visual elements.

Another limitation pertains to the use of the Modified Jones Model to measure EM. While widely recognised, this model may not account for all types of EM, particularly those involving real activities manipulation, such as changes in operational practices to influence earnings. Future studies could benefit from incorporating EM models, such as those focused on real earnings management or using a hybrid approach combining accrual and real activities-based earnings manipulation.

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