



# Integrated report quality and earnings management – Evidence from South Africa



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**Background:** No prescribed standard disclosure requirements for integrated reporting exist. Instead, the International Integrated Reporting Framework is widely adopted, which provides guidelines for integrated reporting to improve the quality of information reported to end-users. These guidelines, however, allow management a degree of freedom in implementing integrated reporting, making the quality of disclosure thereof dependent on management's approach to reporting. In contrast to the purpose of integrated reporting stands the management of earnings where management can use judgement to manipulate financial reports to mislead end-users. The conflicting theoretical objectives of integrated reporting and earnings management (EM) pose the question of how these two variables relate to one another.

**Aim:** We examine the association between the quality of integrated reports and EM.

**Setting:** Our sample consists of 238 company-years from 2013 to 2017 that were listed as part of the Johannesburg Stock Exchange (JSE) top 100 companies and were ranked on Ernst and Young (EY's) annual Excellence in Integrated Reporting Awards. The likely association between integrated report quality (IRQ) and EM was identified based on theoretical frameworks, including the stakeholder and agency theories.

**Method:** We perform a robust, one-way cluster regression on our main empirical model, measuring IRQ on rankings, determined by the annual EY Excellence in Integrated Reporting Awards and EM through discretionary accruals.

**Results:** We find a statistically significant negative association between EM, measured as income increasing accruals, and IRQ.

**Conclusion:** Results suggest that companies with income increasing EM activities are less likely to disclose higher quality integrated reports.

**Keywords:** integrated report; report quality; disclosure quality; earnings management; earnings smoothing; South Africa; mandatory disclosure; discretionary accruals; EY annual Excellence in Integrated Reporting Awards.

## Introduction

In this study the relationship between the quality of integrated reports and earnings management (EM) for South African listed companies is empirically investigated. Integrating reporting was introduced as a reporting format following the change in information preferences from stakeholders and market participants (Cohen et al. 2012; Krzus 2011). In South Africa it is a Johannesburg Stock Exchange (JSE) listing requirement to issue an integrated report based on a 'comply or explain' basis for the company-years reviewed.<sup>1</sup> Currently there is no prescribed standard format, or fixed disclosure requirements for integrated reporting. Instead, principled and ethically underlined guidance, as provided in the International Integrated Reporting Framework ('the framework') by the International Integrated Reporting Council (IIRC) (2013), has been widely adopted. In the absence of a standard format for integrated reports, but within the spirit of this principled and ethical underlining of integrated reporting, management is allowed a degree of freedom in implementing integrated reporting. Consequently, the level of the quality of disclosure of integrated reports is dependent on management's approach to reporting.

An integrated report is a single interconnected report that has the primary purpose to 'explain to providers of financial capital how an organisation creates value over time' (IIRC 2013). It highlights the connectivity of information and focuses on providing information that is relevant and long-

1. Following Barth et al. (2017:45), we submit that the 'comply or explain' principle and government of integrated reporting in South Africa can be classified as a mandatory setting.

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term oriented (IIRC 2013). Evidently, the purpose of the framework will not be fully met if information of a high quality is not disclosed. This is further supported by the framework, also listing the improvement in the quality of information as one of the main aims of integrated reports (IIRC 2013).

In direct contrast to the purpose of integrated reporting stands the management of earnings. Healy and Wahlen (1999) define EM as the alteration of financial reports by management through using their judgement, or by structuring transactions in such a way as to manipulate the financial reports in order to 'either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers'. The agency theory is used in various studies to explain the motivation for managers of entities to engage in EM (Sun et al. 2010; Zahra, Priem & Rasheed 2005; Xie, Davidson & DaDalt 2003). The agency theory describes that the separation of ownership might cause managers to use their position and power to promote their own interest, instead of acting in the best interest of stakeholders (Cotter, Lokman & Najah 2011). Consonantly, Prior, Surroca and Tribó (2008) state that rational managers would refrain from managing earnings, unless there are private benefits to be gained. EM may have severe consequences for shareholders, creditors, employees, local communities and the society (Zahra et al. 2005), since users of financial reports will base financial decisions on reported amounts that are not reflective of the true financial position of the company. Therefore, in order to provide transparent and reliable financial information (or information of a high quality) to stakeholders and market participants, earnings should be free of manipulation (Kim, Park & Wier 2012).

The conflicting theoretical objectives of integrated reporting and EM poses the question of how these two variables relate to one another. Extant literature investigating the relationship between various forms of disclosure and EM may provide insight as to how these variables should relate to each other; however, due to the unique nature of integrated reports, research focused specifically on integrated reporting is justified.

Integrated reports differ from stand-alone reports due to the concept of connectivity (Barth et al. 2017). Integrated reports are, therefore, not merely the amalgamation of traditional stand-alone reports, but the presentation of integrated information that interacts and connects in a manner that provides valuable insights to users thereof. The framework defines the connectivity of information as a 'holistic picture of the combination, interrelatedness and dependencies between the factors that affect the organization's ability to create value over time' (IIRC 2013). An integrated report of high quality will clearly show 'an emphasis on value creation and a high level of connectivity between the various elements presented' (Ernst & Young [EY] 2017).

Given the aim of the framework and the distinctive qualities of integrated reporting, an investigation of the relationship between integrated report quality (IRQ) and EM is warranted. Prior literature investigating this relationship is limited and has not been performed by using discretionary accruals as measurement of EM. The mandatory setting of the South African milieu further enhances the value of this study.

The use of South African companies, reduces concerns relating to self-selection bias, which arises in a voluntary setting (Barth et al. 2017). We measure IRQ on rankings determined by adjudicators for the annual EY Excellence in Integrated Reporting Awards and EM through discretionary accruals using a cross-sectional modified version of the Jones (1991) model as proposed by DeFond and Jiambalvo (1994). Our sample consists of 238 company-years from 2013 to 2017 that were listed as part of the JSE top 100 companies (in terms of market capitalisation) and were ranked on EY's annual Excellence in Integrated Reporting Awards.

Our study contributes to the growing literature on integrated reporting by investigating the relationship between the quality of integrated reports, which are vastly different from other stand-alone reports due to its focus on connectivity and long-term value creation, and EM. The results of the study will also be of value to various stakeholders as it provides valuable insights into current practices relating to integrated reports.

An overview of the related literature, as well as the development of the hypothesis are presented next. Thereafter the sample selection and research design are discussed, followed by the results and the conclusion of the study.

## Literature review and hypothesis development

### Related literature

In recent years there has been a significant increase in research investigating the quality of integrated reports. Lee and Yeo (2016) investigated whether there is an association between cross-sectional variation in integrated reporting disclosures and firm valuation. They investigated a sample of South African listed firms during the period 2010 to 2013 (thus after integrated reporting became a JSE listing requirement in South Africa) and compared firm valuation (measured as the sum of the market value of equity and the book value of total liabilities, divided by total assets) to a self-constructed integrated reporting score. They found a positive association between integrated reporting disclosure and firm valuation and interpreted this as evidence suggesting that the benefits of integrated reporting exceed the cost of preparing an integrated report. Results from further analysis, performed by Lee and Yeo (2016), also suggest that the positive association between firm valuation and integrated reporting is stronger in firms with higher organisational complexity and also in firms with higher external financing needs.

Building on the work performed by Lee and Yeo (2016), Barth et al. (2017) investigated how a higher quality integrated reporting is associated with higher firm value. Their study focused on whether the IIRC's dual objective for integrated reporting, namely, improved information quality to capital market participants and improved quality of internal decision making, are achieved. Barth et al. (2017) used proprietary data from EY for a sample of South African firms that forms part of the top 100 JSE listed firms each year, to measure IRQ. Their results show that the positive association between IRQ and firm value is, in fact, as a result of both improved information quality and improved internal decision making, thus providing evidence that the objective of the IIRC relating to integrated reporting is being met.

Zhou, Simnett and Green (2017) investigated the usefulness of integrated reports to capital market participants. They investigated whether there is a relation between companies that produce integrated reports in better alignment with the framework (referred to in the study as higher quality integrated reports) and analyst earnings forecast error for a sample of South African companies. After controlling for financial transparency and the issuance of stand-alone CSR reports, they found that higher quality integrated reports are more useful to analysts and investors, than current reporting practices. They interpreted the results as indicating that the quality of integrated reports is of importance to capital market participants.

In a more recent study, Mans-Kemp and Van der Lugt (2020) set out to assess whether integrated reporting is useful by investigating the relations between the quality of integrated reports and financial and sustainability performance in a South African sample of companies. They found a significant relationship between the quality of integrated reports and companies' environmental, social and corporate governance (ESG) scores, as well as between the quality of integrated reports and earnings per share and leverage. The results show that managerial efficiency and legitimacy are improved by integrated reporting for debt capital providers.

Buitendag, Fortuin and De Laan (2017), as well as Dilling and Caykoylu (2019) investigated the characteristics of entities that report higher quality integrated reports. Buitendag et al. (2017) investigated the top 100 entities listed on the JSE from 2013 to 2015 and found that the quality of a company's integrated report is affected by the type of industry, the entity's size, the composition of the entity's board of directors and the profitability of the company. Dilling and Caykoylu (2019) investigated a sample of 110 global organisations that produced an integrated report in 2017 and found that the main disclosure drivers of an integrated report with a higher quality is larger entity size, higher female board ratio and listing in the IIRC examples database.

None of these studies specifically investigated the effect of EM on IRQ. One of the characteristics investigated by Dilling and Caykoylu (2019) were, however, corporate earnings

quality. They used cash flow from operating activities/net income as a proxy for corporate earnings quality. Their results showed no significant association between the quality of earnings and that of integrated reports. Our study differs from that of Dilling and Caykoylu (2019), who examined entities' characteristics that determine the quality of integrated reports in the following ways: our study explicitly concentrate on the association between the quality of integrated reports and EM; our study uses discretionary accruals (estimated by using a cross-sectional modified version of the Jones [1991] model) as a proxy for EM; our study is performed in a South African setting where integrated reports are mandated; and we use rankings based on the EY annual Excellence in Integrated Reporting Awards as a proxy for IRQ.

## Theoretical frameworks and hypothesis development

Given the unique qualities of integrated reporting, the potential association between IRQ and EM is explicated based on theoretical frameworks.

A negative association between high-quality integrated reporting and EM can be explained by both the ethical- and resource-based branches of the stakeholder theory. The stakeholder theory explains the various social contracts that exist between different stakeholders and the entity (Deegan 2009). Each of these stakeholders has different information needs and according to the ethical branch of the stakeholder theory, it is the ethical or moral obligation of management to provide stakeholders with the information they require (Deegan 2009). This branch of the stakeholder theory suggests that managerial engagements are driven by ethical concerns to protect all stakeholder interests (Jones 1995) and strongly rely on management's need to do what is in the best interest of society (Kim et al. 2012). The ethical-based theory expects of management to accept their responsibility and, by some guiding moral principle, adhere to the legitimate interest of all stakeholders (Carroll 1979; Kim et al. 2012). This theory, therefore, suggests that managers will accept its responsibility and adhere to the legitimate interest of all stakeholders (Kim et al. 2012). Ethically driven managers will, therefore, not engage in EM activities. The avoidance of activities such as EM may be indicative of managers' ethical commitment to high-quality integrated reporting. The ethical-based theory is also closely related to the legitimacy theory, which assumes that an entity will ensure that it is perceived to operate within the expectations of society, with which a social contract exists (Cotter et al. 2011; Deegan 2009). The legitimacy theory suggests that managers will operate within the expectations of society and refrain from engaging in activities, like EM; that is deemed unacceptable by society (Fombrun & Shanley 1990). Again, the avoidance of activities, such as EM, may be indicative of managers' commitment to high-quality integrated reporting, especially considering the South African JSE requirement to publish integrated reports on a 'comply or explain basis' for the company-years under

review. This listing requirement inherently creates an expectation in society for entities to produce integrated reports that comply with the principles set out by the framework and resultantly is of a high quality.

The resource-based branch of the stakeholder theory suggests that trustworthy and cooperative managerial behaviour is viewed as a resource that leads to entity wealth creation in the long term (Jones 1995). Principled managerial behaviour may not merely establish an entity's ethical proprietary, but also creates a reputational asset as a source of future financial well-being (Fombrun & Shanley 1990). Management will aspire to uphold and protect such ethical proprietary and reputational assets to secure long-term future financial benefits. If an entity aspires to protect reputational assets, such aspiration may inhibit its managers from engaging in short-sighted and typical amoral activities, such as EM. This is also supported by prior research which indicates that future-orientated managerial behaviour is less likely to engage in EM (Cheng, Lee & Shevlin 2016; Kim, Kim & Zhou 2017). Refraining from EM under the faculty of the resource-based theory may also be indicative of managerial preference to disclose high quality integrated reports. Evidently, the ethical- and resource-based branch of the stakeholder theory suggest a possible negative relationship between the quality of integrated reporting and EM.

In contrast, a positive association between the quality of integrated reporting and EM is aligned with the agency theory. The agency theory poses that the separation of ownership might cause managers to use their position and power to promote their own interest, instead of acting in the best interest of stakeholders (Cotter et al. 2011). One of many actions that managers can engage in to obtain personal gains at the expense of the stakeholders, is to manage earnings (Sun et al. 2010). EM has far-reaching consequences for all stakeholders and affected stakeholder groups will react to EM by increasing activism and vigilance (Zahra et al. 2005). Dechow, Sloan and Sweeney (1996) found evidence that a company's stock price immediately decreases when shareholders suspect the manipulation of earnings. It is thus clear that when stakeholders' interests are damaged by EM, they will respond adversely to management (Sun et al. 2010). The reaction of stakeholders will inevitably result in a decrease in the entity's corporate reputation and legitimacy. The resource dependence theory suggests that if the entity considers the reputation or legitimacy of the entity to be important, strategies will be implemented to repair the damaged caused (Deegan 2009). This managerial behaviour to counter misconduct, such as EM, is also considered by Sun et al. (2010) who argued that the informativeness of reports may be increased to deflect stakeholders' attention from the monitoring of EM and to minimise the threats of stakeholders' reaction thereto. Evidently, integrated reporting may be driven by management's quests to promote self-interest and be associated with the agency theory. Such integrated reports are regarded as opportunistic integrated reports. Opportunistic integrated reports may show a high

level of adherence to the guiding principles of the framework; that is, a high level of quality. However, such high level of adherence may be purposefully designed by management to divert end-users' attention from EM. Therefore, under the faculty of the agency theory and the opportunistic use of reporting, the relationship between the quality of integrated reports and EM can possibly be labelled as a positive relationship.

Based on the theoretical frameworks we expect an association between high quality integrated reporting and EM. Since the theoretical frameworks provide support for both a positive and negative association, we propose the following hypothesis:

There is an association between earnings management and integrated report quality.

## Sample selection and research design

### Data and sample selection

Our sample originates from data issued publicly by EY for its annual Excellence in Integrated Reporting Awards. We use this EY data as a peripheral measure to operationalise our dependent variable, IRQ, for five years from 2013 to 2017. To ensure consistency and comparability among companies included in our sample, we used 2017 as our final sample year, since compliance with the King IV report replaced compliance with the King III report as a JSE listing requirement for financial years starting on or after 01 April 2017. Following prior studies, we exclude companies in financial industries since the calculation of accruals for these companies can be problematic due to the different nature of their accruals reporting (Chen, Cheng & Wang 2015; Chung, Firth & Kim 2002; Dou, Khan & Zou 2016; Katmon & Farooque 2017; Kim et al. 2012; Klein 2002; Lobo & Zhou 2001). We complement the EY data with information compiled from the Bloomberg and iRes databases and, when necessary, with information hand-collected from financial statements available in the public domain. After excluding company-years with missing data and insufficient information to calculate discretionary accruals, our surrogate for EM, we obtain a cross-sectional pooled sample of 263 company-years from 2013 to 2017. We further eliminate 25 observations from our sample to ensure that there is at least three observations per company. This is done to ensure that reasonably balanced clusters will be obtained which will reduce bias in the cluster-robust estimator, since it has been found that bias is larger when clusters are unbalanced (Baum, Nichols & Schaffer 2010). The final sample consist of 238 company-years observations. It is not uncommon in prior literature to draw inferences from small samples to address a research question in a unique setting (Barth et al. 2017; Clarkson et al. 2013; Dilling & Caykoylu 2019; Katmon & Farooque 2017). Table 1 illustrates our sample selection and Table 2 provides a sample distribution of company-year observations by industry. Industry classifications are based on Industry Classification Benchmarks (ICB) codes.



**TABLE 1:** Sample selection.

Description	Number of company-years
Company-years included in the EY integrated report quality awards (top 100 companies listed on the JSE): 2012–2017	500
Less: Company-years excluded after completeness check†	57
Company years from industries excluded from sample (financial and industries with less than 11 companies)	21
Company-years with missing data‡	159
Company-years for companies with less than three observations	25
Total company-years	238

EY, Ernst and Young; JSE, Johannesburg Stock Exchange.

†, To ensure the completeness of the sample used to determine discretionary accruals, only companies listed on 31 December 2017 were included in our analysis.

‡, This includes missing data for determining discretionary accruals, as well as our main analysis.

**TABLE 2:** Sample composition.

ICB industry	ICB industry code	Number of companies	Number of company-years	% of final sample
Basic materials	1000	20	91	38.24
Industrials	2000	8	37	15.55
Consumer goods	3000	7	34	14.29
Consumer services	5000	15	68	28.57
Technology	9000	2	8	3.36
Total	-	52	238	100.00

ICB, Industry Classification Benchmarks.

As evident from Table 2 the maximum representation of the sample is noticeably from the 20 companies (38.24% of the sample) in the basic material industry, followed by the 15 (28.57%) consumer services companies.

## Empirical models and measurement of variables

### Main model: Equation 1

$$IRQ_{it} = \beta_0 + \beta_1 EM_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 LEV_{it} + \beta_5 GOV_{it} + \beta_7 YEAR_{it} + \varepsilon \quad [Eqn 1]$$

We investigate the relationship between the quality of integrated reporting and EM by performing a robust, one-way cluster regression on the main empirical model pronounced in Equation 1. Following Dilling and Caykoylu (2019), Sun et al. (2010) and Shaw (2003), we regard IRQ as our dependent variable and EM as our independent variable of interest. We cluster the standard errors at company level 'to account for serial correlation within the error term within the same firm', since companies appear more than once in our sample (Katmon & Farooque 2017; Landier et al. 2013). To lessen the force of outliers, all observations with an absolute studentised residual of more than two are deleted. The variables in this model are measured as follows (all variable definitions are also summarised in Appendix 1):

**Measurement of integrated report quality:** As mentioned before, we use data issued publicly by EY, for its annual Excellence in Integrated Reporting Awards to operationalise our dependent variable, IRQ. The EY data is based on scores for IRQ awarded annually to the top 100 companies listed on the JSE in terms of market capitalisation. Each company's score is classified under one of five report categories regarding quality; that is, top 10, excellent, good, average, and progress to be made. We rely on the validity of the publicly released

**TABLE 3:** Integrated report quality ranking per Ernst and Young report quality category.

EY report quality category	Rank
Top 10	5
Excellent	4
Good	3
Average	2
Progress to be made	1

EY, Ernst and Young.

EY data to operationalise IRQ, based on its assessment and use in prior studies (Barth et al. 2017; Buitendag et al. 2017; Mans-Kemp & Van der Lugt 2020). Barth et al. (2017) endorses the validity of the EY scores underlying the publicly known report quality categories by regarding the EY scores as being independently awarded by expert adjudicators, where scores are determined for quality of disclosures based on the guiding principles and content elements outlined by the framework<sup>2</sup> and the extent to which the framework's fundamental concepts relating to how value is created, are incorporated in the integrated report (EY 2017). During the scoring process specific emphasis is placed on 'the quality of information presented, the relevance, understandability, accessibility and connectedness of that information' (EY 2017). Zhou et al. (2017) also validates their internally generated rankings for IRQ as being demonstrative of the quality components described in the framework based on its consistency with the external ratings produced by EY. Following Mans-Kemp and Van der Lugt (2020) we construct the proxy for IRQ by ranking each of the EY report quality categories. Table 3 provides the detail rankings used.

**Measurement of earnings management:** We follow a collection of prior studies that use discretionary accruals as an alternate for our independent variable of interest, EM, in our main regression (Equation 1). Specifically, we use a cross-sectional modified version of the Jones (1991) model as proposed by DeFond and Jiambalvo (1994). This model is extensively used to measure EM by computing discretionary accruals (e.g. Chung et al. 2002; Dechow, Sloan & Sweeney 1995; DeFond & Subramanyam 1998; Katmon & Farooque 2017; Kim et al. 2012; Kothari, Leone & Wasley 2005; Lobo & Zhou 2001; Prior et al. 2008; Shaw 2003). Guay, Kothari and Watts (1996) and Dechow et al. (1995) conclude that this modified version of the Jones (1991) model exhibits the strongest power to provide reliable estimates of discretionary accruals. This accruals model is formalised in Equation 2 and is separately estimated for each year for all company-year observations categorised under the same industry (ICB codes). Following prior studies, we estimate these annual estimations for each industry that has at least 11 observations per year (e.g. Katmon & Farooque 2017; Shaw 2003). Subsequently, discretionary accruals are calculated from the residuals computed from regressing Equation 2. Consistent with other studies, the absolute values of discretionary accruals

2. EY only releases the report quality categories publicly and not the scores underlying the publicly known report quality categories. Barth et al. (2017) had privileged and proprietary access to the underlying EY scores, which upholds their assessment of the EY data.

are used as our proxy for EM (Jordaan, De Klerk & De Villiers 2018; Katmon & Farooque 2017). Following Jordaan et al. (2018) we also differentiate between positive and negative discretionary accruals, to determine whether IRQ is associated with either positive (income increasing) or negative (income decreasing) discretionary accruals.

#### Accruals model: Equation 2

$$TA_{it}/A_{it-1} = \alpha_0(1/A_{it-1}) + \Delta_1(\Delta REV_{it} - \Delta REC_{it})/A_{it-1} + \alpha_2(PPE_{it})/A_{it-1} + \varepsilon_{it} \quad [\text{Eqn 2}]$$

where:

$TA_{it}$ , total accruals for company  $i$  in year  $t$  (computed as net income minus cash from operations);

$A_{it-1}$ , lagged total assets;

$\Delta REV_{it}$ , change in revenue for company  $i$  in year  $t$  from year  $t-1$ ;

$\Delta REC_{it}$ , change in account receivables for company  $i$  in year  $t$  from year  $t-1$ ;

$PPE_{it}$ , gross property, plant and equipment for company  $i$  in year  $t$ .

**Measurement of control variables:** We include control variables in our estimation that have been identified in prior literature to influence the quality of disclosure of our variable of interest, EM. Dilling and Caykoylu (2019) and Mans-Kemp and Van der Lugt (2020) found a positive relationship between IRQ and company leverage (LEV), suggesting that, as predicted by the agency theory, highly leveraged companies will improve their disclosure in an attempt to decrease information asymmetry (Dilling & Caykoylu 2019). Likewise, LEV may also be an inducement for EM (e.g. Kim et al. 2012; Prior et al. 2008). We therefore include LEV as a control variable and measure LEV as long-term debt scaled by total assets (Chen et al. 2015; Kim et al. 2012). Following prior studies (Dilling & Caykoylu 2019; Katmon & Farooque 2017; Lee & Yeo 2016; Lobo & Zhou 2001; Mans-Kemp & Van der Lugt 2020; Shaw 2003), we include company size (SIZE) as a control variable in our analyses. Prior studies suggest that there is a positive association between SIZE and IRQ (Buitendag et al. 2017; Dilling & Caykoylu 2019; Lopes & Coelho 2018). In the EM literature, it is also suggested that larger companies are less likely to engage in EM, due to higher scrutiny from financial analysts and investors (Chen et al. 2015; Lobo & Zhou 2006). We quantify SIZE as the natural log of the market value of equity, following the specifications in several studies on EM and IRQ (e.g. Buitendag et al. 2017; Chen et al. 2015; Jordaan et al. 2018; Katmon & Farooque 2017; Kim et al. 2012). Corporate governance (GOV) is included as a control variable, since Dilling and Caykoylu (2019) and Buitendag et al. (2017) found a positive relationship between IRQ and

GOV, suggesting that the monitoring role of good GOV also extends to the improved quality of integrated reporting. Likewise Xie et al. (2003) and Klein (2002) indicate that GOV is related to EM and thus may also have an impact on the reporting behaviour of companies. We follow Dilling and Caykoylu (2019); Buitendag et al. (2017) and Katmon and Farooque (2017) and operationalise GOV as an indicator variable, taking a value of 1 in the instance when more than 50% of the board of directors of a company are independent (or non-executive) directors, and zero otherwise. We follow Jordaan et al. (2018); Lee and Yeo (2016); Chen et al. (2015) and Prior et al. (2008) and control for company performance by including return on assets (ROA) in our analyses. Lee and Yeo (2016) found that companies with higher quality integrated reports show an increased operating performance, while Chen et al. (2015) find a significant negative association between their control variable company performance (measured as ROA) and EM. ROA is calculated as net income divided by average total assets (as captured and defined on the Bloomberg database). Finally, to control for time fixed effects, we include a dummy variable, YEAR.

## Empirical results and findings

### Descriptive statistics

We present the descriptive statistics for the main model (measuring EM as the absolute value of discretionary accruals) in Table 4. Table 4 discloses a mean IRQ of 2.909, indicating that the mean annual quality of integrated reports, based on the annual EY Excellence in Integrated Reporting Awards, is between average and good. The standard deviation for IRQ of 1.153 together with an inter-quartile range of two suggests that, because IRQ varies between one and five, the year-to-year IRQ of companies may vary substantially. Similar results for IRQ were reported by Barth et al. (2017), in which it was submitted that these results lessen concerns that IRQ is mostly consistent over time. Barth et al. (2017) also base their measure of IRQ on EY's integrated reporting awards. The mean for EM is 0.048, which is akin to results reported in Katmon and Farooque (2017) who reported a mean of 0.060. The standard deviation of 11.049 for ROA is expressive of the vast difference in ROA to be expected between a company generating a negative net loss and a positive net income.

**TABLE 4:** Descriptive statistics.

Variable	Mean	Std. dev.	Min	25th	Median	75th	Max
IRQ	2.909	1.153	1.000	2.000	3.000	4.000	5.000
EM	0.048	0.074	0.000	0.015	0.032	0.061	0.767
SIZE	17.517	1.243	15.693	16.654	17.249	18.036	21.380
ROA	7.872	11.049	-19.899	3.388	6.671	10.633	120.812
LEV	0.140	0.114	0.000	0.043	0.116	0.219	0.470
GOV	0.716	0.452	0.000	0.000	1.000	1.000	1.00

Note: Table 4 presents descriptive statistics for the main model: Equation 1, in which EM is measured as absolute discretionary accruals (EM ABSOLUTE). The sample includes 232 company-year observations. The original sample size was reduced with the number of company-years where the absolute studentised residual was more than two. All variables are defined in-text above in the sample selection and research design section and summarised in Appendix 1.

IRQ, integrated report quality; EM, earnings management; SIZE, company size; ROA, return on assets; LEV, company leverage; GOV, corporate governance; Std. dev., standard deviation; Min, minimum; Max, maximum.

**TABLE 5:** Univariate results – Spearman correlations.

Variable	IRQ	EM	SIZE	ROA	LEV	GOV
IRQ	-	-	-	-	-	-
EM	0.017	-	-	-	-	-
	0.793	-	-	-	-	-
SIZE	0.134	-0.053	-	-	-	-
	0.042**	0.425	-	-	-	-
ROA	-0.238	0.003	0.014	-	-	-
	0.000***	0.967	0.829	-	-	-
LEV	0.343	-0.015	0.276	-0.350	-	-
	0.000***	0.824	0.000***	0.000***	-	-
GOV	0.201	-0.034	0.227	0.027	0.080	-
	0.002***	0.608	0.001***	0.683	0.227	-

Note: Table 5 presents Spearman correlations for the main model: Equation 1 in which EM is measured as absolute discretionary accruals (EM ABSOLUTE). Two-tailed *p*-values are reported in parentheses. The sample includes 232 company-year observations. The original sample size was reduced with the number of company-years in which the absolute studentised residual was more than two. All variables are defined in-text above in the sample selection and research design section and summarised in Appendix 1.

IRQ, integrated report quality; EM, earnings management; SIZE, company size; ROA, return on assets; LEV, company leverage; GOV, corporate governance.

\*\*\*, \*\* and \* indicate that values are significant at 1%, 5% and 10% levels, respectively.

Table 5 provides the Spearman correlations for the variables used in the main regression. To ensure that multicollinearity is not a concern, the variation inflation factor (VIF) for all variables in our main model was measured. The untabled VIF scores for all variables were less than three, suggesting that multicollinearity is not a major concern in our results, as is it well below the common benchmark of 10 (Burns & Burns 2008). Furthermore, Table 5 reveals that all correlation coefficients are well below 80% (a benchmark as used by Katmon and Farooque [2017]) with a maximum correlation coefficient of 35% reported between ROA and EM and ROA and LEV. Again, suggesting that serious multicollinearity is not a concern for our model. Intriguingly, and consistent with the Spearman correlations disclosed in Dilling and Caykoylu (2019), IRQ and EM are not significantly correlated, suggesting that EM does not meaningfully affect the quality of integrated reports. This correlation between EM and IRQ is highlighted in our empirical findings below.

## Empirical findings

The results are unveiled in Table 6. We discern between absolute discretionary accruals (EM ABSOLUTE), income increasing discretionary accruals (EM POSITIVE) and income decreasing discretionary accruals (EM NEGATIVE), following Jordaan et al. (2018). Our results for EM ABSOLUTE do not indicate a significant association (*p*-value of 0.901) between IRQ and EM ABSOLUTE, implying that the quality of integrated reports is not strongly determined by EM. The results do, however, reveal that EM POSITIVE are negatively and significantly (*p*-value of 0.040) associated with IRQ, suggesting that companies with income-increasing EM activities are less likely to disclose higher quality integrated reports. This is consistent with the negative association described under the faculty of the stakeholder theory, which suggests that managerial engagements are driven by ethical concerns towards stakeholders and/or to secure long-term financial benefits (Jones 1995), rather than using integrated reports opportunistically.

**TABLE 6:** Empirical results.

Variable	IRQ coefficients for EM (absolute)	IRQ coefficients for EM (income increasing)	IRQ coefficients for EM (income decreasing)
EM ABSOLUTE	0.121	-	-
	0.901	-	-
EM POSITIVE	-	-5.306	-
	-	0.040**	-
EM NEGATIVE	-	-	-6.052
	-	-	0.215
SIZE	-0.031	-0.249	0.112
	0.796	0.020**	0.567
ROA	-0.016	0.017	0.015
	0.109	0.281	0.608
LEV	3.179	3.837	4.173
	0.004***	0.004***	0.038**
GOV	0.498	1.033	0.033
	0.084*	0.007***	0.946
R-squared	0.191	0.412	0.289
F-value	5.46	8.40	3.25
	0.000	0.000	0.011
Mean VIF score	1.41	1.81	1.77
N (company-years)	232	76	86

Note: Table 6 presents coefficient estimates for the main empirical model: Equation 1. Two-tailed *p*-values are reported in parentheses. We discern between absolute discretionary accruals (EM ABSOLUTE), income-increasing discretionary accruals (EM POSITIVE) and income-decreasing discretionary accruals (EM NEGATIVE). The sample for EM ABSOLUTE, EM POSITIVE and EM NEGATIVE includes 232, 76 and 86 company-year observations, respectively. For each analysis the original sample size was reduced with the number of company-years where the absolute studentised residual was more than two. All variables are defined in-text above in the sample selection and research design section and summarised in Appendix 1. For concision the coefficients on the control variable YEAR are not reported.

IRQ, integrated report quality; EM, earnings management; SIZE, company size; ROA, return on assets; LEV, company leverage; GOV, corporate governance; VIF, variation inflation factor.

\*\*\*, \*\* and \* indicate that values are significant at 1%, 5% and 10% levels, respectively.

The inconsequential results for the association between IRQ and EM ABSOLUTE are consistent with the findings of Dilling and Caykoylu (2019), in which results were insignificant for the association between the quality of integrated reports and earnings quality. Interestingly, Sun et al. (2010) also found no significant statistical association between corporate environmental disclosure and EM. These insignificant results are, however, contradictory with studies reflecting on the association of stand-alone reports' disclosure quality and EM, in which a significant association was reported (Katmon & Farooque 2017; Lobo & Zhou 2001; Shaw 2003). This inconsistency may be ascribed to the difference between stand-alone reports and the distinctive quality of connectivity in integrated reports, as well as the compliance requirement within the South African context in which our study was conducted.

Our results show weak explanatory power for the association between IRQ and our control variables ROA and SIZE. This is consistent with the findings of Mans-Kemp and Van der Lugt (2020). The insignificant results for the association with SIZE is contradictory to the results of other studies that explored this relationship, which found a significant and positive relationship between these variables (Dilling & Caykoylu 2019; Lobo & Zhou 2001; Shaw 2003). In response to the insignificant results for SIZE and ROA, we run our regressions excluding these control variables. Untabled results of this test substantiate our findings.



Noteworthy is the significance of the association with LEV and GOV. The reported significant and positive association between IRQ and LEV, as well as GOV, implies that companies which are highly leveraged and has stronger governance monitoring, are more inclined to report higher quality integrated reports. The strong positive association between IRQ and LEV, shows that integrated reporting alleviates the information asymmetry between management and financiers, reducing agency costs and sending a valuable signal to stakeholders (Lee & Yeo 2016). Mans-Kemp and Van der Lugt (2020) also find a significant positive association between IRQ and LEV and argue that the increase in IRQ of highly leveraged companies could be ascribed to increased pressure from financiers for good quality reporting given the risk associated with high leveraged companies. The significant and positive association between IRQ and GOV is aligned with findings of other studies reporting that stronger governance and board composition result in higher quality reporting (Buitendag et al. 2017; Dilling & Caykoylu 2019; Mans-Kemp & Van der Lugt 2020).

## Conclusion

Extant literature on the association between various forms of disclosure and EM focus on stand-alone reporting formats (e.g. Katmon & Farooque 2017; Lobo & Zhou 2001; Shaw 2003; Sun et al. 2010). Our study is juxtaposed to prior studies as the purpose of our study is to examine the relationship between the disclosure quality of specifically integrated reports and EM. Integrated reports are distinguished from stand-alone reports as it aims to highlight the connectivity of information (Barth et al. 2017). Also, our study is performed in a South African milieu, in which integrated reporting is mandatory for companies listed on the JSE.

We base our analyses on a robust, one-way cluster regression, operationalising the quality of integrated reports using EY data from its annual Excellence in Integrated Reporting Awards, and EM by estimating discretionary accruals through the modified Jones (1991) model, including several control variables.

We hypothesise the potential association between IRQ and EM under the faculties of the stakeholder and agency theories. The ethical- and resource-based branches of the stakeholder theory suggest that managerial engagements are driven by ethical concerns towards stakeholders and/or to secure long-term future financial benefits (Jones 1995). Contrary to this, IRQ may be driven by management's quests to opportunistically use integrated reports to promote self-interest, which is akin to the agency theory. Our findings suggest that companies that are less inclined to income-increasing EM activities also produce higher quality integrated reports. This suggest that managers who are less inclined to manage earnings upward, will show the same ethical and forward-thinking approach to value creation and prepare integrated reports of high quality. Similar to the findings of Dilling and Caykoylu (2019), our findings also show weak explanatory power regarding the effect of EM (measured as the absolute value of discretionary accruals) on the quality of integrated reporting.

Our findings contribute to the growing literature on integrated reporting, especially since our inferences are from a mandatory setting. It may provide insightful information to specifically the IIRC with the main purpose of promoting higher quality disclosures to all stakeholders (IIRC 2013) to lessen the consequences of agency-problems. Our findings also serve investors in showing that companies that do not engage in income-increasing EM are more likely to also present integrated reports of a higher quality.

We submit that our inferences may be biased as a result of certain limitations, specifically related to our relatively small sample size. Prior studies of a similar nature, which rendered informative results, were also based on sample sizes comparable to ours (Barth et al. 2017; Dilling & Caykoylu 2019; Katmon & Farooque 2017). Furthermore, we acknowledge that the EY scores awarded by adjudicators may be subject to bias; and that our study is constricted to the JSE top 100 companies included in the EY Excellence in Integrated Reporting Awards.

We regard our findings as one of the initial steps in the direction of an improved understanding of factors, specifically EM, that influence the quality of integrated reports. Future research may dissect in more detail the relationship between the quality of integrated reporting and EM from a South African perspective, by considering the impact of specific events on high quality integrated reports and EM.

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### Competing interests

The authors have declared that no competing interest exists.

### Authors' contributions

A.E. contributed to the conceptualisation of the article, wrote the literature review and research design section, and contributed to the hypothesis development, sample selection and results sections. S.S. contributed to the conceptualisation of the article, wrote the sample selection, results and hypothesis development sections, and contributed to the literature review and research design sections.

### Ethical considerations

The authors confirm that the project does not involve human participants or the use of their data. The authors confirm that they have collected data that are freely accessible in the public domain only.

Ethical clearance was obtained from the Research Ethics Committee: Human Research, Stellenbosch University. 02 July 2018.

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## Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

## Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

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## Appendix 1

**TABLE 1-A1:** Summary of variable definitions.

Variable	Definition
IRQ	The proxy for IRQ is constructed, ranking each of the report qualities for the annual EY Excellence in Integrating Reporting Awards: 5: Top 10; 4: Excellent; 3: Good; 2: Average; 1: Progress to be made.
EM	<p>Measured using a cross-sectional modified version of the Jones (1991) model.</p> <p>Accruals model:</p> $TA_{it}/A_{it-1} = \alpha_0(A_{it-1}) + \alpha_1(\Delta REV_{it} - \Delta REC_{it})/A_{it-1} + \alpha_2(PPE_{it})/A_{it-1} + \epsilon_{it}$ <p>where:</p> <p><math>TA_{it}</math>, total accruals for a company <math>i</math> in year <math>t</math> (computed as net income minus cash from operations);</p> <p><math>A_{it-1}</math>, lagged total assets;</p> <p><math>\Delta REV_{it}</math>, change in revenue for company <math>i</math> in year <math>t</math> from year <math>t-1</math>;</p> <p><math>\Delta REC_{it}</math>, change in account receivables for company <math>i</math> in year <math>t</math> from year <math>t-1</math>;</p> <p><math>PPE_{it}</math>, gross property, plant and equipment for company <math>i</math> in year <math>t</math>.</p>
SIZE	Natural log of the market value of equity.
ROA	Calculated as net income divided by average total assets (as captured on Bloomberg database).
LEV	Long-term debt scaled by total assets.
GOV	Indicator variable taking a value of one, if more than 50% of the board of directors is independent and zero otherwise.