‘It’s a long story…’ – Impression Management in South African Corporate Reporting

Shreeya Jugnandan

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I hereby declare that I have read and understood the regulations governing the submission of Master of Commerce dissertations, including those relating to length and plagiarism, as contained in the rules of the University, and that this dissertation conforms to those regulations.

SUPERVISOR: Dr Gizelle Willows, Associate Professor

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Abstract

Research in the field of impression management has presented evidence that suggests as a company's performance declines, the readability of its financial reports also declines in order to confound the user. In an attempt to determine whether similar impression management strategies are implemented amongst South African listed public companies, a mixed-effects linear regression model was applied to analyse data over the period 2016-2018. Performance was regressed to the report readability measures over time, where readability was divided into the aspects of length (through the word count) and complexity (as quantified by the Gunning Fog Index). The findings indicate that as the financial performance of a South African company declines, the length of all its reports increases: including the annual financial statements, Integrated Report and the annual results market announcement. However, there is limited evidence of a relationship between complexity and performance. Therefore, when South African companies perform poorly, despite producing lengthier reports, the complexity therein is not impacted. These results thus caution users when faced with reports that are unusually lengthy in nature, because this trait could signal poor performance. Users are advised accordingly to critically analyse excessively lengthy reports in order to separate decision-useful information from the impression management related content elements. Lastly, this research contributes to the foundation of impression management research in the context of the South African capital market and puts forward several suggestions for important future research.

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List of Acronyms

“AFS”	Annual Financial Statements
“IASB”	International Accounting Standards Board: an independent, private-sector body that develops and approves the International Financial Reporting Standards
“IFRS”	International Financial Reporting Standards
“IFS”	Interim Financial Statements: Report of a company’s financial performance up to its interim financial reporting date, which (for the companies sampled) consists of six months of a twelve-month financial year.
“<IR>”	Integrated Report
“JSE”	Johannesburg Stock Exchange
“ROE”	Return on Equity Ratio
“SENS”	Stock Exchange News Service: Market announcements made by companies listed on the JSE.
“F-SENS”	Final Results SENS: For the purposes of this research, a SENS announcement containing information about a company’s performance for its twelve-month financial year end.
“I-SENS”	Interim Results SENS: For the purposes of this research, a SENS announcement containing information about a company’s performance up to its interim financial reporting date, which is generally six months of a twelve-month financial year.

1. Introduction

This research study examines impression management in South Africa, the former number one ranked country for auditing and financial reporting standards according to the World Economic Forum's Competitiveness Report (The World Bank, 2013). In 2017, South Africa's rank for these standards unexpectedly fell to thirtieth in the world, despite the type of auditing and financial reporting frameworks adopted being unchanged (SAICA, 2018; The World Bank, 2018). This change in ranking could signal, from an investor's perspective, that certain aspects of reporting that extend beyond the rudimentary application of the accounting framework itself, were no longer of a high quality.

Qualitative elements, such as understandability and faithful representation, are integral to financial reports. Financial statements are key inputs into user's decisions regarding whether to provide economic resources to a business (IASB, 2019b). If the considered reports are incomprehensible, there is a risk that users might arrive at an incorrect decision. The Conceptual Framework for Financial Reporting, as issued by the International Accounting Standards Board, defines understandability as: *'classifying, characterizing and presenting information clearly and concisely'* (IASB, 2019b, p. A33). Yet, despite understandability being part of The Conceptual Framework, financial reports are perceived by users as becoming both longer and more complex (ACCA, 2012). This obstruction to understandability can be informed by the concept of impression management.

Impression management originates in social psychology and encompasses the study of the manner in which individuals present themselves, in order to create a favourable appearance (Hooghiemstra, 2000; Merkl-Davies & Brennan, 2011). An example of impression management, when applied to financial reporting, includes instances in which management drafts excessively complex narratives in order to make it difficult for readers to understand their true meaning. By reducing the readability of financial reports, management could potentially hide a company's poor performance. Literature has, indeed, confirmed cases, within both developing and stable financial markets, in which a company's poor financial performance has been associated with increased complexity of

disclosure in the Annual Financial Statements ('AFS') (de Souza, Rissatti, Rover & Borba, 2019; Li, 2008; Lo, Ramos & Rogo, 2017). Impression management is the theoretical framework that underpins this research project.

The reporting environment within South Africa is changing due to allegations pertaining to corruption, fraudulent accounting and economic uncertainty (Naidoo, 2019; SAICA, 2018). As at the end of March 2020, South Africa no longer has an investment grade sovereign credit rating from any of the major rating agencies, such as Moody's (Smith, 2020). When investor confidence is down, there is a chance that management might use impression management as a device to enhance a company's image. Moreover, previous literature suggests that financial reporting is not undertaken in a silo, but rather can be subject to influence by the degree of corruption within a country (Kythreotis, 2015). Given the concept of impression management, as well as the South African reporting environment, this research study seeks to understand whether there is a relationship between company performance and the readability of the financial reports within South Africa. In other words, the research question undertaken by this paper is to examine whether or not there is relationship between company performance and the readability of the financial reports within South Africa.

South African JSE listed companies do not only prepare AFS. They are required to prepare an Integrated Report ('<IR>') (Eccles, Krzus & Solano, 2019; The World Bank, 2013) and communicate specifically defined financial information through the Johannesburg Stock Exchange News Services (SENS') (JSE, 2019c). Previous literature considers financial reports separately, whereby, for instance, studies examine solely the <IR> for impression management (Du Toit, 2017; Stone & Lodhia, 2019) or the AFS (de Souza et al., 2019). This research study is unique and analyses the broader key reporting complement prepared by a single company for impression management: being (1) the <IR>, (2) the AFS, (3) the interim AFS, (4) the interim results SENS announcements and (5) the full financial year SENS announcements.

Of particular value to potential investors in this study is the analysis of SENS announcements, which in certain instances disseminate financial information to the market in a more timely manner, prior to the release of the AFS (JSE, 2019c). As the

SENS announcement could be the first-line disseminator of financial information to the market, this could increase its susceptibility to impression management. Previous literature that examined management earnings forecasts, through press releases, has suggested that aspects of impression management can be present in such communications (Baginski, Hassell & Kimbrough, 2004). As a result of this proposition, this research study presents unique findings regarding impression management within SENS announcements.

In order to apply the research question to the reporting complement, longitudinal data of JSE listed companies was captured for the period 2016-2018. This data included measures to quantify readability, which is separated into two components: length, being the word count of a report, and complexity, as quantified by the Gunning Fog Index (Li, 2008). The Return on Equity ratio was used as a measure of performance. The Return on Equity ratio is a popular measure of performance that is used by investors within structured ratio analyses of companies (Correia, Flynn, Uliana & Wormald, 2011). The relationship between performance and readability was controlled for by variables as informed by previous literature, such as: size, industry and leverage. Mixed-effect linear regression models were used to statistically analyse the data.

The results presented were consistent with global literature in the aspect of length, specifically that South African listed companies' reports increase in length when performance declines, particularly within the AFS of the finance and mining industries. This finding is consistent across the entire reporting complement sampled. However, there was limited evidence of a statistical relationship between performance and complexity, for all report types sampled. The absence of such a relationship contradicts existing literature (Ajina, Laouiti & Msolli, 2016; Courtis, 2004; de Souza et al., 2019; Li, 2008).

Consideration of the results of this research study could potentially allude to the fact that South African reporters provide more information in times of poor performance in order to provide greater transparency, without necessarily materially increasing the complexity of narratives. An example of enforced transparency includes the JSE's Pro-active Monitoring of Financial Statements, which encourages issuers to include entity specific

information about the nature and cause of impairment, and information regarding the calculation thereof, as required by IAS 36 (JSE, 2019e). Consequently, there is scope for further research, at a granular, content level, to understand whether the increased length presented by the reports are either (a) genuine, transparent instances of additional disclosure or (b) expanded narratives due to the specific employment of impression management techniques to induce reader fatigue (Courtis, 2004) as a means to conceal poor financial performance.

The findings of this research study are unique to South African public equity issuers and identifies poor performance to be suggestive of unusually lengthy reports. These findings also suggest that, contrary to the global drive by regulators and framework supervisory bodies, conciseness within financial reporting is not improving. The proven interrelationship amongst the reporting complement of a single entity, as demonstrated by these results, can enable future impression management studies to arrive at conclusions that are not just based on a single financial report - but on a collection of reports presented broadly throughout an entity's reporting complement.

The structure of this research study is as follows: firstly, the literature review expands on the theoretical framework of impression management and considers the global agenda for conciseness by regulatory bodies. This theoretical framework is then contextualized by application to the financial reports that form part of the selected sample. The methodology chapter then expands on the nature of the variables that form part of the study, as well as the statistical models applied, followed by the results and conclusion. Included within the results discussion are specific suggestions for future research that arise from the findings presented in this study.

2. Literature Review

2.1 Impression Management

This research study is underpinned by the impression management theoretical framework. As indicated previously, impression management is a branch of social psychology that is concerned with how individuals present themselves to others in order to generate an advantageous or favourable appearance (Hooghiemstra, 2000). It is possible for people to manage the impressions of persons other than themselves, such as companies (Leary & Kowalski, 1990). Ergo, impression management when applied to financial reporting considers how companies are presented to their stakeholders, including shareholders, with the aim to achieve a predetermined appearance. The theory of impression management is augmented by the Incomplete Revelation Hypothesis (Bloomfield, 2002), which presents the notion that investors devote resources to identifying mispriced shares on the basis of public information; whilst management of such companies seek to inflate share prices by attempting to conceal poor financial performance in financial reports. For that reason, increased complexity is used as a device to conceal the true performance of a company (Bloomfield, 2002). The existing accounting literature analyses impression management within reporting by focusing on disclosures that are both discretionary and narrative in nature (Merkl-Davies & Brennan, 2007). The types of reports that previously have been subjected to academic, impression management analysis included 10-K[1] filings, certain press release extracts (Baginski et al., 2004), AFS as well as the <IR> (de Souza et al., 2019; Li, 2008; Stone & Lodhia, 2019).

Leary and Kowalski (1990, p. 35) posit that impression management consists of two processes. Firstly, *'impression motivation'* determines the extent to which people are motivated to undertake impression management behaviour, such as the value of the desired outcome obtained from such behaviour. The second aspect pertains to *'impression construction'*, which considers the type of impression to be constructed. The underlying motivation behind impression management is explained by the concept of economic rationality and utility maximisation (Merkl-Davies & Brennan, 2011). Economic

[1] A 10-K filing is an annual report required by the United States Securities and Exchange Commission that provides a summary of a company's financial performance, (U.S. Securities and Exchange Commission, 2010).

rationality presumes that management uses discretionary disclosures to achieve increased compensation and monetary awards. When applying this theory within the corporate reporting context, for example: motivation could include employee equity share schemes that only vest when the share price reaches a defined target; and construction would entail the composition of a company with the image of a strong financial performance to boost the share price. In addition, management prefers high share prices for the companies that employ them because this fact can increase the value of any share options they hold (Bloomfield, 2002).

Critics of impression management rely on the efficient market hypothesis (Fama, 1970) and rational or sophisticated investors (Merkl-Davies & Brennan, 2011). Under these assumptions, investors are able to obtain information about a company, extract the relevant data, and arrive at an unbiased assessment of the company's future cash flows on which to base their investment decisions (Hand, 1990). Consequently, any bias or impression management contained within explanations would be detected and corrected under the efficient market hypothesis. Furthermore, the detection of biased reporting by the market would elicit a negative response that would ultimately lead to reduced share performance (Merkl-Davies & Brennan, 2011). By contrast, the earlier mentioned Incomplete Revelation Hypothesis (Bloomfield, 2002) makes several counterpoints: firstly, information that is more difficult to extract from public information sets are not completely incorporated into share prices. Secondly, management's financial reporting behaviours are motivated by a desire to make it challenging for investors to obtain information that negatively influences the company's share price. Such behaviour amounts to, for example, explaining significant expenses (that are perhaps recurring in nature) as extraordinary, once-off items, whilst incorporating significant, once-off, incomes as part of day-to-day operational income. These behaviours are consistent with the theories posed by impression management.

Indeed, at a practical level, impression management can take many forms: the application of diction that contains predominantly positive connotations in narratives and self-serving bias, which is the externalisation of negative results to a cause outside the organisation (Baginski, Hassell & Hillison, 2000). A commonly researched aspect of impression

management is the obfuscation of poor performance through the use of complex wording (Merkl-Davies & Brennan, 2007, 2011) which has come to be known in seminal literature as the 'Management Obfuscation Hypothesis' (Courtis, 1998; Li, 2008). This dissertation focuses on the obfuscation component of impression management, expanding the definition to include unnecessarily lengthy disclosures. Disclosures of such nature are against The Conceptual Framework's concept of understandability (IASB, 2019b) and the guiding principle of conciseness within the Integrated Reporting Framework (IIRC, 2013).

The manner in which financial information is reported has the potential to impact the share price of a company. Complex disclosures have the potential to increase the time and cost of information processing by stock analysts; thereby making it more difficult for analysts to identify information that can affect share prices (de Souza et al., 2019; Li, 2008). Research has, indeed, suggested that the disclosure quality and the quantity of text in a report is linked to the efficiency of discovering information that would impact share price valuation and movement (Chung, Hrazdil, Novak & Suwanyangyuan, 2019).

In conclusion, a number of studies have suggested that impression management is present in corporate reporting (de Souza et al., 2019; Leung, Parker & Courtis, 2015; Melloni, 2015; Melloni, Stacchezzini & Lai, 2016; Merkl-Davies & Brennan, 2007). These studies have suggested that companies have used impression management as a tool to externalise blame for poor accounting results (Clatworthy & Jones, 2003) and to confound information about poor financial performance (de Souza et al., 2019; Leung et al., 2015).

2.2 The Global Agenda for Conciseness

National market regulators and the IASB have attempted to address the issue of confounding, lengthy financial reporting (Financial Reporting Council, 2017; IASB, 2019a; JSE, 2019b). An example of regulation moving towards concise reporting is the JSE's statement on market announcements through its Stock Exchange News Service ('SENS') channels. This statement entailed the amendment of a requirement to produce a long-form text SENS announcement, due to previously reported errors and inconsistencies between the date of the market announcement release and the final set of financial statements. A result of this new regulation is that only the company's short-form financial results will be published on SENS and disseminated to the market. However, this short

form announcement will include a link to a more detailed and a longer results announcement (JSE, 2019b). The short form announcement, consistent with the JSE Listing Requirements Section 36.46A (JSE, 2019c), should contain at a minimum the following information: increases/decreases in revenue, headline earnings per share, dividends, and net asset value in comparison to the financial results for the previous corresponding period. The short form announcement should further contain a statement that the 'full' (JSE, 2019b, p. 48) announcement has been released on SENS and is available for viewing on the issuer's website. This movement, from the long-form to the short-form of SENS announcements exemplifies the drive towards succinct SENS announcements from a South African perspective.

Additionally, financial information reported in accordance with International Accounting Standard 34 – Interim Financial Reporting ('IAS 34') is required to be released at the interim date (halfway through the reporting entity's financial year). This interim announcement, per Appendix 1 to Section 11 of the JSE listing requirements (JSE, 2019b, p. 183) contains detailed disclosure requirements such as summarised versions of the primary financial statements (JSE, 2019c). A report prepared with IAS 34 should be written in such a manner that it can be read in conjunction with the reporting entity's most recent full set of financial statements, providing an update focusing on new activities, events and circumstances.

Moreover, from an AFS perspective, the IASB has also acknowledged that when information in the financial statements is communicated ineffectively, users might have difficulty in understanding the financial statements. This obscurity results in the users of the financial statements spending time unproductively trying to analyse the financial statements. This inefficient analysis process results in the risk of users potentially overlooking critical information; or not identifying important relationships between pieces of information in different parts of the financial statements (IASB, 2018).

The above scenario exemplifies the *'disclosure problem'* (IASB, 2019, p. 3). The disclosure problem comprises three parts: not enough shareholder-relevant information, too much irrelevant information, and/or ineffective communication of the information provided. Stakeholders, such as investors and analysts, stated that the way disclosure

requirements are developed and drafted in the International Financial Reporting Standards (IFRS) is a contributor to this information problem. Furthermore, the lack of clear and specific disclosure objectives in the existing IFRS (IASB, 2019a) does not provide relief to the 'disclosure problem'.

Regulators, such as the Financial Reporting Council in the United Kingdom, put forward the message that companies should *'cut the clutter'* (Financial Reporting Council, 2017, p. 2) in their financial reports in order to highlight financial reporting policies and transactions that are pertinent to the entity (Financial Reporting Council, 2017). 'Cutting the clutter' entails removing irrelevant, immaterial information and using plain language, whilst fully adhering to prescribed accounting and regulatory requirements (KPMG, 2019). In 2011, Sir Ian Powell, former PwC UK Chairman, highlighted the professional service firm's support of the *'cut the clutter'* project (PricewaterhouseCoopers, 2011).

In order to address the *'disclosure problem'*, the IASB started the *'Principles of Disclosure Project'* in an attempt to assist entities in applying judgement when selecting which information to disclose in its financial statements. Of the seven proposed principles of better communication that the IASB presented for public comment, respondents considered that information being entity specific and provided in a manner that ensures optimal comparability to be the more important principles (IASB, 2018). The concept of comparability is reiterated within the <IR> Framework's Guiding Principles for reliability and completeness (IIRC, 2013). This reassessment of the respective reporting standards, together with the introduction of <IR> and its aims and Guiding Principles, indicates global progression towards disclosure that is simple yet compliant with regulation.

2.3 Integrated Reporting

South Africa was credited as the first country to require listed companies to produce an <IR> (Cheng et al., 2014). In order to respond to economic unease and concerns of management quality post-apartheid (SAICA, 2015), the South African Institute of Directors (IoDSA) commissioned the KING Committee, chaired by former Judge of the Supreme Court, Mervyn King, to constitute a report to promote the highest standards of corporate governance in South Africa. The result was the formulation of King's Code of Corporate Governance, which colloquially became known as the 'King Code'. On the third

iteration of the King Code in 2009, the report proposed that companies produce an annual integrated report (Barth et al., 2017; King, 2013).

King III encouraged organizations to adopt integrated thinking: the understanding that strategy, governance and sustainability all work together. It follows that this understanding and mental model form the underlying foundation of the integrated report. In 2010, the listing requirements of the JSE were expanded to include the requirement to either apply the requirements of King III or explain why they were not being applied. This listing requirement was imposed three years before the official publication of the <IR> Framework.

In December 2013, the IIRC published the International <IR> Framework that is applied today. The purpose of the <IR> Framework is to establish the Guiding Principles and Content Elements that govern the overall content of an <IR>, and to explain the fundamental concepts that underpin such a report (IIRC, 2013).

Specifically, an <IR> is defined in the <IR> Framework as:

> *"…a concise communication about how an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value over the short, medium and long term."* (IIRC, 2013, p. 7)

The <IR> explains how an organization creates value to capital providers. This goal is the primary differentiator of <IR> from other environmental, social and governance frameworks, such as the Global Reporting Initiative ('GRI'). The GRI framework, instead, reports to stakeholders − which are defined as those entities that can be expected to be materially impacted by the reporting organisation's activities and outcomes (GRI, 2018). The prioritisation of providers of financial capital over other stakeholders has been a criticism of integrated reporting (Tweedie & Martinov-Bennie, 2015). In other words, the <IR> could be perceived as merely creating a new channel for corporates to promote their strategy as opposed to reporting in a manner that tangibly results in accountability. Regardless of this criticism, <IR> has been adopted by more than 1,500 businesses globally (IIRC, 2013) and its influence continues to grow.

South Africa's influence in integrated reporting and the importance of the <IR> to listed companies resulted in the specific inclusion of the <IR> in the reporting complement examined in this research. The <IR> is targeted to those that provide capital and the AFS, similarly, are targeted, at those users who aim to provide economic resources to a business. The element of conciseness in the <IR> Framework, furthermore, aligns to the previously explained Conceptual Framework's element of understandability from a financial reporting perspective (IASB, 2019b). Both of these report types are targeted to a similar user group, thus, there is a chance that they are both susceptible to impression management.

2.3.1 Impression Management and Integrated Reporting

Impression management is tacitly addressed by the <IR> Framework. In situations in which lengthy narratives might occur, there is the correcting guiding principle of conciseness within the <IR> Framework (IIRC, 2013, p. 21). Similarly, where bias may be used by management's selection of an unjustifiably positive outlook, there is the requirement to include *'all material matters, both positive and negative'* (IIRC, 2013, p. 21) within the <IR>. Integrated reporting discourages biased disclosure by specifically addressing the concept of balanced reporting within its framework. Paragraph 3.39 of the Integrated Reporting Framework states that:

> *"An integrated report should include all material matters, both positive and negative, in a balanced way and without material error."* (IIRC, 2013)

This instruction is the antithesis of the self-serving bias component of impression management. Self-serving bias is expressed by attributing positive organisational results, such as an increase in profit, to internal factors and externalises the reasons for negative organisational results, such as a poor economy (Merkl-Davies & Brennan, 2011).

Further links to addressing potential impression management are contained in the <IR> Framework through its discussion of conciseness. Paragraph 3.36 of the Integrated Reporting Framework states: '*An integrated report should be concise.'* This directive is elaborated further in paragraph 3.38 of the framework:

> *"… [in achieving conciseness, an integrated report:] expresses concepts clearly and in as few words as possible and favours plain language over the use of jargon or highly technical terminology."* (IIRC, 2013, p. 21)

The stipulation of conciseness as a component of the <IR> Framework addresses the previously described obfuscation example of impression management. Instances where the <IR> has been underpinned by complex narratives can impact the value that stakeholders can derive from the report, because the true message contained therein can be lost (Du Toit, 2017). However, contradictory to this, from a South African perspective, integrated reports tend to be perceived as being of a higher quality if written in complex language (Du Toit, 2017).

Melloni, Stacchezzini and Lai (2016) address the question of whether companies adopt impression management strategies by manipulating the tone of their business model disclosures provided in the <IR>. Despite the implicit mitigations of impression management within the Integrated Reporting Framework, business model disclosures are predominantly positive in tone. This positive tone is an indicator of potential impression management (Melloni et al., 2016). The use of an unduly positive tone extends to intellectual capital disclosures which Melloni (2015) concluded to be subject to overly positive impression management manipulation. Companies experiencing a decline in performance were observed to have a detectably optimistic tone (Melloni, 2015). By applying an unjustifiable or excessively positive tone, companies are able to opportunistically advance their corporate image or market perception. When the narrative of an <IR> focuses predominantly on positive performance and downplays negative performance, the report does not contain balance. The results of the 2018 <IR> Review performed by the Association of Chartered Certified Accountants[2] (ACCA) on submissions from the <IR> Business Network reported a distinctly perceived lack of balance (ACCA, 2019) which could suggest the employment of impression management.

2.4 Annual Financial Statements and Market Announcements

AFSs produced by companies listed on the JSE are required to be prepared in accordance with the IFRS. The AFS should fairly present the financial position, changes in equity, results of operations as well as the underlying cash flows of the issuer (JSE,

[2] ACCA is a global body for professional accountants that was founded in 1904 and operates across 179 countries.

2019c). The financial statements of each issuer on the JSE are required to be distributed within four months of each financial year end to all holders of securities. Issuers produce an interim set of financial statement, which reports the results of the company's half year operations ('IFS'), as well as a set of AFS, at the financial year end.

The IFRS accounting framework, itself, has undergone significant recent revisions. To that end, new standards to account for financial instruments (IFRS 9) and revenue (IFRS 15) respectively, were released as mandatory for reporting periods beginning on or after 1 January 2018 (IASB, 2019b; IFRS, 2019). These new standards mandated new accounting disclosures. Some of the new disclosures are once-off and are provided in order to clarify the impact of the transition to the new standards; however, most of the new disclosures will form part of the AFS on an annual basis going forward. The new financial instruments standard, additionally, has made several amendments to IFRS 7 (Financial Instruments: Disclosures) which have resulted in a significant number of additional disclosures. Volatility in financial markets has increased the need for entity specific relevant information that enables users to understand the extent of a company's exposures from financial instruments, as well as how such risks are managed, for example, credit risk (PricewaterhouseCoopers, 2020). To that end, companies with material financial instruments – such as banks – could experience an increased length in the AFS within the respective financial year in which the standards are effective. The JSE, in carrying out its thematic review of issuers' transition to the new standards, however, noted several disclosure deficiencies on transition – including instances of insufficient or generic information being provided regarding the impact of these new standards (JSE, 2019a).

The JSE Listing Requirements, furthermore, stipulate certain informational requirements to be transmitted to stakeholders of listed companies through the JSE Stock Exchange News Service (SENS). An example of such information is that if an issuer has not yet distributed AFS to all shareholders within three months of its financial year end, it must publish provisional AFS on the SENS channel (JSE, 2019c). As a result, there are instances when the SENS announcement can provide shareholders with more timely information than the AFS. This situation is similar to the timing of results dissemination in

the United States, whereby the time a company files its 10-K report, most key financial information has typically already been disclosed to the public via earnings releases (You & Zhang, 2009). SENS announcements, therefore, can be seen as a critical communication means in order for companies to provide stakeholders with decision-useful financial information. As a result, these announcements form part of the reporting complement analysed during this research study.

2.4.1 Impression Management and Financial Reporting

Impression management is not limited to the <IR>, but could potentially occur in SENS announcements as well as the IFS or AFS. Financial statements provide information about the economic resources and claims against a reporting entity (IASB, 2019b). This information can then be applied by users of the AFS in order to make decisions, particularly if such decisions pertain to providing resources to the entity in the form of equity or debt. To this end, the AFS could be used as an instrument to influence user's perceptions about the performance of the company. Individual investors (as opposed to institutional investors) have been seen, on average, to invest in companies with more clear and concise financial disclosures (Lawrence, 2013).

While conciseness is encouraged, this requirement should not translate into the omission of negative information. Companies with poor performance and a higher risk of financial distress have demonstrated an increased likelihood of concealment of negative information by reducing the length of narrative disclosures[3] (Leung et al., 2015). On the other hand, companies that have good earnings quality have more expansive voluntary disclosures (Francis, Nanda & Olsson, 2008). If disclosure readability is a tool for impression management, it follows that there is a relationship between company performance and readability of the financial reporting complement produced.

From a South African perspective, the country has historically been ranked first out of 114 countries by the World Bank within the auditing and reporting standards category up until 2017. (The World Bank, 2013, 2016) The rank of South Africa in the 2017/2018 report

[3] It is unclear as to how these findings interact with other literature that analyses the linguistics of deception through computer mediated communication, where it has been suggested that deceptive messages contain more words than non-deceptive messages (Hancock, Curry, Goorha, & Woodworth, 2005; Holtgraves & Jenkins, 2020). SENS announcements and AFS are disseminated and read, typically, through computer technology channels.

declined sharply to thirty out of one hundred and thirty-seven countries. The strength of performance in this category is linked to the process for developing and issuing auditing and financial reporting standards in South Africa, which has not changed (SAICA, 2018). Specifically, financial reporting in South Africa remained based on IFRS for JSE listed companies; and from an auditing perspective, the Standards of the International Auditing and Assurance Standards Board (IAASB) continued to be applied. Furthermore, local accounting scandals linked to auditing firms within South Africa (Motsoeneng & Rumney, 2019; Naidoo, 2019), would not have been incorporated into the score because these transgressions occurred after the ranking assessment (Naidoo, 2019; SAICA, 2018). A reason for the change in ranking, suggested by the South African Institute of Chartered Accountants, is that it is a reflection of declining investor confidence in South Africa as a result of allegations of corruption and economic uncertainty (SAICA, 2018).

2.5 Research Question

When investor confidence is down, impression management might prove to be an instrument to use to bolster, or improve, perceived company performance to analysts or investors. Conclusions reached about the relationship between company performance and disclosure complexity during the period in South Africa could assist researchers and stakeholders in predicting impression management in future financial reports. Such conclusions could, furthermore, provide implicit reasoning for the decline in South Africa's ranking for auditing and reporting standards.

The reliability of financial information has been considered as implicitly linked to the presence of corruption within the reporting environment (Kythreotis, 2015). This is topical, as South Africa has recently seen significant accounting scandals involving Tongaat Hulett (Naidoo, 2019), Steinhoff (Motsoeneng & Rumney, 2019) and VBS Mutual Bank (Mantshantsha, 2018). The impact of corruption in South Africa is considered to have been a salient developmental constraint to the country's economy (Pillay, 2004). Ergo, considering the reporting environment's potential propensity for impression management, this study poses the following research question:

Is there a relationship between company performance and the readability of the financial reports within South Africa?

3. Methodology

In addressing the research question posed in this study, readability is defined as (1) the length of the report, as expressed by word count and (2) the complexity of the report. The null hypotheses (H_0) is that there is no relationship between company performance and report length or complexity. The alternate hypothesis (H_a) is that there is a relationship between company performance and report length or complexity.

To answer the research question and test the proposed hypotheses, a sample of JSE listed companies was selected. The necessary data was captured over the period from January 2016 to December 2018. This period of time was of interest, as previously discussed, due to South Africa's ranking in the Global Competitiveness Index category for auditing and financial reporting standards declining from number one in 2016 to thirty in 2017. This process enabled an analysis of performance as a function of time, which was required in order to determine the nature of how a change in performance could potentially result in a change in the length/complexity of financial reports, year on year.

3.1 Research Data

As a starting point, the JSE Top 100 companies (by market capitalisation) were selected as a sample. However, for certain companies, data conversion errors were experienced at intermittent points in computing and capturing readability statistics and, as a result, these companies were excluded from the sample. Consequently, data could only be captured for 92 companies, and in some instances, not for the entire three-year period. The name of each of these 92 companies, which comprises the sample, is provided in Appendix 1. The final sample, nominally, covered approximately 30% of the total number of companies that were listed and amounted to approximately 75% of the total market capitalization of JSE issuers as at June 2019 (SA Shares, 2019). The final sample ranged between 239 and 242 datapoints for purposes of the statistical testing. This sample was considered large enough to not contradict the central limit theorem. The impact of missing data is addressed within the statistical model description provided later in this chapter.

3.2 Readability

There are two variables applied to quantify readability for the purposes of this study: the length and the complexity of the report. The length of the report is a function of the word count of the report. The complexity of the report is determined by reference to the Gunning Fog Index ('Fog Index').

Longer documents attract higher information processing costs; deterring readers and making a report difficult to read (Li, 2008). Word counts were determined to suffice as a proxy for the length of a report as demonstrated by existing literature (Boubaker, Gounopoulos & Rjiba, 2019; Cheung & Lau, 2016; Li, 2008; Lo et al., 2017).

The complexity of the report is measured using the Fog Index. This is a commonly cited formula from computational linguistics that is used to measure the readability of text and has been popularised in accounting literature (Ajina et al., 2016; Lawrence, 2013; Li, 2008; Lo et al., 2017; Xu, Fernando & Tam, 2018). The United States Securities and Exchange Commission (SEC) has previously employed the Fog Index in an exercise to assess whether or not executive compensation discussion disclosures were written in plain English (Cox, 2007). The output of the Fog Index indicates the number of years of formal education that is required to both read and comprehend the meaning of a body of text (Lawrence, 2013). This value, in the context of financial disclosure studies, has frequently averaged above 17 (Boubaker et al., 2019; De Franco, Hope, Vyas & Zhou, 2015; Li, 2008). A value of above 17 indicates that at a minimum, a tertiary education is required to read and comprehend the text. The Fog Index is calculated as follows:

0.4 x (average number of words per sentence + percentage of complex words[4]*)*

[Formula 1]

Alternative means to quantify complexity include the Kincaid Index and the Flesch Reading Ease Index, as seen in Stone and Lodhia (2019) however, literature that has considered the use of both these indices report similar empirical results to those based

[4] Defined as words with three syllables or more.

on the Fog Index (Ajina et al., 2016). Therefore, it was appropriate to use the Gunning Fog Index for this study.

3.3 Reports

The companies in the sample publish the following reports, publicly, which were analysed for their defined disclosure variables: AFS, <IR>, IFS, I-SENS and F-SENS. Prior literature has focused predominantly on the AFS, <IR>, notes to the financial statements and management discussions and analysis (Boubaker et al., 2019; Li, 2008; Lo et al., 2017; Stone & Lodhia, 2019). Impression management could possibly extend to other forms of management communication (Bloomfield, 2008) such as market SENS announcements. In order to inform the scope of the testing performed by this research project, a Pearson correlation matrix was computed to understand whether there is an existing relationship between the disclosure variables (readability and complexity) amongst these reports. This procedure was carried out in order to determine which reports exhibit similar levels of readability and assisted in limiting redundancy in testing the hypotheses, for the sampled companies. The output is given in Table 1.

Table 1: Correlation Coefficients of Word Count and Fog Index for Reports

	Word Count					Fog Index				
	AFS	<IR>	IFS	F-SENS	I-SENS	AFS	<IR>	IFS	F-SENS	I-SENS
AFS	1					1				
<IR>	0.1083	1				0.4187	1			
IFS	0.7177	0.0769	1			0.6568	0.4524	1		
F-SENS	0.1557	-0.0105	0.1146	1		0.4892	0.3643	0.5289	1	
I-SENS	0.0869	0.0145	0.1098	0.7766	1	0.4819	0.3315	0.6424	0.8233	1

The I-SENS and IFS reported a correlation coefficient of 0.1098 for the word count and 0.6424 for the Fog Index. As a result, the I-SENS and IFS were low to moderately[5] correlated. When comparing the I-SENS to the F-SENS, a correlation coefficient of 0.7766 was noted for the word count and 0.8233 for the Fog Index – which indicates that the two reports are strongly correlated. The IFS was also strong to moderately correlated to the AFS with a correlation coefficient of 0.7177 for the Word Count and 0.6568 for the Fog Index, respectively. The <IR> reflects low (Word Count) to medium (Fog Index) correlation values to the other report types. The AFS also shows a low (Word Count) to medium (Fog Index) correlation to the other reports, except for the IFS. It would, thus, potentially give rise to redundancy to include both the I-SENS and F-SENS as well as the AFS and IFS in the subsequent analyses. Thus, the results from Table 1 above support a narrowed focus for this research study on the <IR>, AFS, and F-SENS.

3.4 Other Variables

The independent variable of company performance is measured using the Return on Equity Ratio (ROE), as obtained from Bloomberg[6]. This ratio is a commonly applied accounting-based measure to assess company performance and is a closely monitored ratio by equity investors (Ahsan & Mainul Ahsan, 2012). Within a structured financial ratio analysis, such as the Du Pont model, the ROE is considered an overall indicator of a company's financial performance (Correia et al., 2011).

The remaining variables are control variables. Consistent with existing literature, control variables were used for company size, leverage and the industry that the company operates in. Market capitalisation was selected to control for company size (Lawrence, 2013; Li, 2008; Xu et al., 2018). This control variable factors in the size and the related operational complexity of the company. The Net Debt to Equity ratio is used as a proxy for leverage. This ratio reflects the value of debt a company has on its Statement of Financial Position relative to its liquid assets.

[5] Strong: greater than 0.7, Moderate: 0.7 – 0.3, Low: less than 0.3 (Ratner, 2009).

[6] Bloomberg is an organization that was established in the 1980s. It provides financial data, market news and analysis. Bloomberg's data is used both in financial education and professional practice (Lei & Li, 2012).

To denote the industry in which a company operates, the Global Industry Classification Standard Industry as applied by Morgan Stanley Capital International ("MSCI") (Eccles et al., 2019) was applied. Based on the sector spread of the data captured, the original MSCI was then scaled down to simply distinguish four prevalent sectors: consumer, mining and industry, financial and real estate.

This study differs from other readability studies (such as Lo et al. (2017)) by retaining companies that operate in the financial industry in its sample. Prior studies have excluded the financial service industry due to different operating and capital structures. To address this concern, controls are included for company leverage. The value of retaining companies in the financial industry allows for insight into the impact of IFRS 7 (Financial Instruments Disclosures) on the disclosure readability of companies that have material financial instruments. This new standard mandated an enhancement in credit risk disclosure and potentially resulted in an increase in the narrative produced by managements.

3.5 Hierarchical Nature of the Data

The model used in this research study considers both the longitudinal nature of the data and the fact that each data point is grouped, over time, per company. This method creates a hierarchy within the data set at two levels (Raudenbush & Bryk, 2002; StataCorp, 2013; West, Welch & Galecki, 2014). The first level within this hierarchy is the overall variability of all the companies in the sample, that is, variability between companies (for example, Company A compared to Company B). The second level is variability at the company level, year on year, that is, variability within the company (for example, Company A values in 2016 compared to its 2017 values). This variability is considered because the data is sampled over a specific time period, per company, which results in multiple responses being obtained per company. The objective of the study is not to model the specific companies sampled, but rather to make inferences about the broader population of listed companies. As a result of this objective, the sample is treated as a random sample from a larger population, modelled for between-company variation as a random effect (StataCorp, 2013, p. 294).

3.6 Statistical Method

The model applied in this research study to test the proposed hypotheses is a mixed-effects linear regression. The mixed-effects model incorporates changes in the performance measure and readability variables over the three-year time period (January 2016 to December 2018). A likelihood ratio test[7] confirmed that there was sufficient variability between companies to apply a mixed-effects linear regression, instead of an ordinary least-squares linear regression.

Linear mixed-effects models are statistical models that contain both fixed effects and random effects. This type of model permits the inclusion of random effects other than those associated with the error term. The main fixed effect in the current model is the company performance variable: ROE.

The assumptions for the Word Count and Fog Index models were assessed graphically by the inspection of scatterplots, for example, by comparing the residuals to the models' fitted values. Specifically, the following aspects of the model (West et al., 2014) were assessed:

(1) Whether the population regression function is linear.

(2) The assumption of constant, equal, variance in the error term.

(3) The distribution of the error terms, such that it is normally distributed.

(4) Agreement between the models' predicted values and the actual values observed in the data.

(5) The distribution of the random effects generated by fitting the model, which is the empirical best linear unbiased predictor[8] ('EBLUP') created by Stata (StataCorp, 2013) as part of the mixed-effects regression model (West et al., 2014, p. 2). This

[7] A likelihood ratio test compares a mixed-effects, linear model to a single level, ordinary linear regression. (StataCorp, 2013). The outcome of the test was statistically significant in all instances.

[8] These are linear functions of the observed data. The line is unbiased due to the expectation being equal to the expectation of random effects; and it is best due to having the most precision (West et al., 2014).

action is, essentially, an additional check to investigate for potential outliers that warrant further investigation.

These diagnostics tests were performed separately for each of the two sets of models and the outcome is discussed below.

3.6.1 Regression Models

Application of the above discussion regarding the method thus resulted in the following models:

$$Length = \beta_0 + \beta_1(\text{ROE}) + \beta_2(\text{Size}) + \beta_3(\text{Net Debt to Equity}) + \beta_4(\text{Industry}) + \mu$$

[Formula 2]

$$Complexity = \beta_0 + \beta_1(\text{ROE}) + \beta_2(\text{Size}) + \beta_3(\text{Net Debt to Equity}) + \beta_4(\text{Industry}) + \mu$$

[Formula 3]

The fixed portion of the model, including ROE (as previously explained) indicates the requirement for one overall regression line that represents the population average. Note that β_0 represents the intercept. The random effect is given by "μ" which will shift the regression line depending on each company – in other words, it provides a random-intercept term at the company level.

3.6.1.1 Word Count Diagnostics

The proximity of the residuals to the estimated regression line suggested that the linear assumption of the regression line was reasonable in the Word Count Model. An instance of non-constant variance of errors[9] was observed in the Word Count Model of the AFS and F-SENS announcements' data. This problem was remedied by applying the natural logarithm of the word count to this study (Guay, Samuels & Taylor, 2016; Xu et al., 2018). The non-constant variance did not arise materially in the Word Count Model test of the <IR>, and, as such, a natural log transformation was not required for that respective test.

[9] This phenomenon occurs when the variance of the error term is not constant across all observations. The residuals did not form a horizontal band around the 0 point of the x axis (which represents the estimated regression line).

Transformation of the underlying data, from nominal to a natural log, thus corrected for the presence of non-constant variance noted in the initial diagnostics of the Word Count Model. Inspection of residuals for the Word Count Model when plotted, subsequent to a correction for the above, suggested that the assumption of normality for the residuals was not materially violated. The presence of large outliers was not observed in the assessment. A sufficient agreement between observed and predicted values was noted within this model. Inspection of the EBLUP reported certain random effect outliers at the company level within the consumer and financial industry. However, the outliers were not material enough to warrant alteration of the model itself.

3.6.1.2 Fog Index Diagnostics

The proximity of the residuals to the estimated regression line suggested that the linear assumption of the regression line was reasonable in the Fog Index Model. A natural log transformation of the data in the Fog Index Model was not required. However, the diagnostics suggested the presence of large outliers that warranted further investigation, which will be discussed in detail below in the presentation of the results. Inspection of the diagnostics, aside from the residuals, reported that the assumptions of variance of the error term and normality of the residuals were sufficiently acceptable. Consistent with the above, further inspection of the EBLUP reported certain random effect outliers at the company level.

3.6.2 Missing Data

As mentioned previously, in certain instances, missing data was noted due to data conversion errors. The nature of the missing data points was either haphazard due to conversion errors in the software used to obtain the data, or due to data not being available for a specific company for a specific year. An example of data unavailability in the sample includes Quilter Plc, which only listed on the JSE main board in June 2018 (JSE, 2018) which resulted in data for the two previous years being unavailable. This missing data can be noted in the number of observations generated in the output of the model. When data is missing, the application of the Linear mixed-effect Model is an appropriate method to apply in order to generate unbiased results. The missing values were addressed in this model by listwise deletion of the respective rows that contain the

missing values and the subsequent application of maximum likelihood in order to generate estimates of the parameters (West et al., 2014). The application of a maximum likelihood approach is underpinned by statistical theory and is preferential to substituting the sample mean for the missing observation, because such action could cause potential bias in results (Collins, 2006).

3.7 Limitations

This study, and its findings, are subject to certain limitations. Firstly, the Gunning Fog Index quantifies the complexity of a passage of text, but it does not encompass tone and diction. As a result, this study does not assess qualitative impression management indicators, such as excessive optimism.

Secondly, the sample profile consists solely of South African listed companies. By increasing the breadth of the study to include additional countries within the sample profile, the results would have the potential to differ. Inherent in the profile of companies selected, is bias in the financial reporting framework determination. However, because the sample consisted of JSE Listed Companies, IFRS was the only framework included in the sample. Should the study be expanded to the United States, for example, then the respective Generally Accepted Accounting Principles ('GAAP') would have to be an additional reporting framework within the sample. However, a global study is not within the scope of the research question, which was developed from the potential for impression management suggested by downward movement in South Africa's ranking in global auditing and reporting standards (SAICA, 2018; The World Bank, 2016).

Thirdly, the information included in this study is constrained to that which is publicly available. As a result, only JSE listed companies are included. The sample therefore excludes private companies, which could potentially have large market capitalisation values and be equally subject to impression management.

3.7.1 Delimitations

The delimitations of this research acknowledge that there are alternate theoretical perspectives that potentially could have been adopted in undertaking this study. Agency Theory is one of these theoretical approaches, that designates the role of principal to

shareholders and agent to directors or management that run a business (Abdullah & Valentine, 2009; Jensen & Meckling, 1976). In terms of the Agency Theory, shareholders anticipate that agents will act in their best interests and, thus, attempt to limit the agent from undertaking actions that would divert from this objective (Jensen & Meckling, 1976). However, on the contrary, agents are capable of practising opportunistic behaviour supported by their intrinsic self-interest. A conclusion posited by Agency Theory is that the value of a firm will not be maximised due to the self-interest and discretion that manager-agents possess in order to extract value for themselves (Turnbull, 1997). Impression management, within the scope of this research study, focuses on the change in report readability employed by management in response to poor company performance. This research, furthermore, does not address the potential *'agency costs'* (Jensen & Meckling, 1976, p. 308) incurred by shareholders as a consequence of impression management behaviour.

An alternative theoretical framework considered by accounting, is Legitimacy Theory. Legitimacy, as considered by Suchman (1995), entails the perception of an organisation by observers; such that the actions undertaken by an organisation are sanctioned within social norms to be appropriate or respectable. Legitimacy is thus socially constructed. Whilst impression management could be a device applied by management to gain such legitimacy, an analysis and application of Legitimacy Theory to the broader context herein is not within the scope of this research. Whilst Legitimacy Theory has been considered in informing certain results of this research, it is not the central theoretical framework of this study.

4. Results

The association between complexity, length and company performance is examined in two parts. The first part of the analyses presents descriptive statistics: a univariate analysis of length and complexity at an overall and industry level. The second part of the analyses presents the results of the mixed-effects linear regression: models through which performance is regressed to the respective complexity and length measures over time.

4.1 Descriptive Statistics

Table 2 below presents the summary of statistics values for each of the three company reports. Additional summary statistics, for independent variables, can be found in Appendix 3.

Table 2: Descriptive Statistics

	Variable	N	Mean	Std. Dev.	Min	Max
AFS	Fog Index	239	17.20	2.5	9.64	22.28
	Word Count	249	50,452	23,788	12,901	141,867
<IR>	Fog Index	232	17.17	2.04	11.84	28.46
	Word Count	241	59,880	24,893	11,252	141,655
F-SENS	Fog Index	245	15.93	3.25	7.96	24.37
	Word Count	256	11,804	8,309	1,128	44,068

The average number of words in the sampled <IR> is greater than the AFS, with greater variability given the larger standard deviation. This result is potentially because the <IR> is driven by more qualitative narratives than the quantitative information that underpins the AFS. The word count of the F-SENS is lower than the other two reports. This result is as expected, because the content of F-SENS includes summarised financial information (JSE, 2019c). The average word count of a United States 10-K filing is 38,240 (Hering, 2017), which is approximately 25% shorter than South Africa's AFS word count.

The average Fog Index for the AFS and <IR> is approximately 17. This figure is lower than the average Fog Index for a 10-K filing (between 18 and 19 (Li, 2008; Lo et al., 2017))

but higher than the average Fog Index of 15.6 for a global sample[10] of <IR> reporters (Stone & Lodhia, 2019). By way of reference to a commercial piece of writing, a random finance-based article from the *Sunday Times* online, South Africa's best-selling weekly newspaper (Tiso BlackStar Media, 2019) reflects a Fog Index of 16.25. This number is lower than the average Fog Index for the AFS and <IR>, but above the average complexity of a typical F-SENS announcement. Table 3 below disaggregates the average Word Count and Fog Index per industry.

Table 3: Word Count and Fog Index Average Values per Industry

	Word Count			Fog Index		
	AFS	**<IR>**	**F-SENS**	**AFS**	**<IR>**	**F-SENS**
2016	**50,087**	**58,015**	**10,481**	**17.03**	**16.83**	**16.00**
Consumer	42,972	52,934	8,181	16.79	16.73	15.72
Financial	64,941	62,101	9,727	17.40	16.72	15.86
Mine & Industry	53,182	66,521	11,913	17.35	17.00	16.11
Real Estate	41,039	52,938	13,823	16.40	17.00	16.71
2017	**48,968**	**59,313**	**11,097**	**17.18**	**17.17**	**15.96**
Consumer	42,286	55,054	8,195	17.68	17.15	15.75
Financial	60,943	66,053	11,746	16.54	17.41	16.12
Mine & Industry	53,671	62,891	12,560	17.52	17.52	16.11
Real Estate	41,902	56,492	14,557	15.86	16.40	15.98
2018	**52,226**	**62,162**	**13,606**	**17.36**	**17.47**	**15.85**
Consumer	41,899	55,196	9,459	17.38	17.20	15.67
Financial	68,461	71,736	16,014	17.89	17.71	16.82
Mine & Industry	57,308	64,403	14,845	17.79	17.63	15.65
Real Estate	45,113	64,022	17,976	15.73	17.66	15.19

[10] Including Africa, Asia, Australia, Europe, North America and South America.

Table 3 above depicts an increase in the word count over the sampled period, despite the regulator's requests for companies to present information in a more concise manner (Financial Reporting Council, 2017; JSE, 2019a). Potential explanatory factors, towards the end of the sampled period, include the mandatory, once-off transitional disclosure for the implementation of certain new IFRS accounting standards (being IFRS 9 and IFRS 15). The transition to these new IFRS standards was mandatory for the financial years beginning on or after 1 January 2018. From 2016 to 2017, in terms of length, the AFS declined by 2.2% whilst the <IR> and F-SENS increased by 2.2% and 5.9%. Within the same period, the complexity of the AFS and <IR> increased by 0.9% and 2% respectively, whilst the F-SENS complexity declined by 0.2%.

The AFS of companies in the financial industry tend to have the highest nominal word count, followed by the mining and industry sector. The financial industry also demonstrates the largest increase in word count (12.3%) from 2017 to 2018. This increase is potentially due to the revision of IFRS 7, which required a longer narrative explanation of the inputs and estimation techniques that underpin the IFRS 9 expected credit loss provision for the respective financial assets held per company (JSE, 2019a). The observed increases in disclosure length potentially elicited the simplified rulings pertaining to the F-SENS announcement as issued by the JSE (JSE, 2019b).

Similarly, Table 3 above also presents an increase in complexity, as demonstrated by the increase in the average Fog Index for AFS and the <IR>. The increase for AFS is potentially driven by the increasing complexity of the consumer goods industry. The consumer goods industry presented the highest overall increase in complexity from 2016 to 2018. This particular industry in South Africa experienced constrained consumer spending during the sample period, with a decline in gross domestic product for the trade and retail industry growth amounting to -0.6% in 2017 (Stats SA, 2018). When challenging market conditions are experienced, impression management in the form of self-serving bias, externalises the cause of poor performance which could potentially result in more linguistically complex reports to confound disclosure around underperformance. The <IR> presents an increase in complexity across all industries, with the financial industry average complexity rating increasing by 6% since the start of the sampled period. The

observed increases in complexity of the <IR> is consistent with those noted in Stone and Lodhia (2019). Despite an increase in word count, F-SENS announcements have decreased in complexity across all industries, except for the financial industry. This suggests that instead of shorter, more complex explanations, entities are reporting lengthier F-SENS narratives in a simpler manner.

4.2 Regression Analyses

The models to test the proposed hypothesis have been estimated by the application of a mixed-effects linear regression. Tables 4 and 5 below report the results of the statistical model, beginning with the Word Count test and following this with the Fog Index. The reference group for the industry variable is the consumer goods industry. Standard errors are presented in parenthesis below the coefficient for each variable. Table 4 reports the results of the Word Count test.

Table 4: Results of Mixed-effects Linear Regression of Word Count Test

Word Count Test Results				
		AFS[11]	**<IR>**	**F-SENS**[11]
Return on Equity	Coefficient	-0.004***	-197.684**	-0.004**
	Standard error	(0.001)	(90.458)	(0.002)
	P-Value	0.009	0.029	0.017
Net Debt to Equity	Coefficient	0.000	-11.405	-0.000
	Standard error	(0.000)	(7.203)	(0.000)
	P-Value	0.634	0.113	0.164
Size	Coefficient	0.000*	0.011	-0.000
	Standard error	(0.000)	(0.007)	(0.000)
	P-Value	0.060	0.146	0.809
Industry				
Financial	Coefficient	0.382****	13699.370**	0.272
	Standard error	(0.111)	(6611.101)	(0.180)
	P-Value	0.001	0.038	0.132
Mining & Industry	Coefficient	0.180*	8978.364	0.246
	Standard error	(0.101)	(6156.082)	(0.163)
	P-Value	0.074	0.145	0.132
Real Estate	Coefficient	-0.078	2609.455	0.290
	Standard error	(0.123)	(7138.277)	(0.191)
	P-Value	0.523	0.715	0.129
Constant	Coefficient	10.641****	56883.760****	9.040****
	Standard error	(0.071)	(4213.423)	(0.110)
	P-Value	0.000	0.000	0.000
Observations		239	230	242
Wald $Chi^2(6)$		25.99	16.51	13.27
	P-Value	(0.000)***	(0.011)**	(0.039)**

***** p < or = 0.001, *** p < 0.01, ** p < 0.05, * p < 0.10. Values are rounded to three decimal places.*

The model that quantifies word count as a proxy for length is statistically significant when explaining the dependent variable in all tests performed (AFS, IR, F-SENS). As a result, the null hypothesis – being that there is no relationship between the length of the reports and the company's financial performance - is rejected. The negative coefficient, when read with the statistical significance of the tests, suggests that as Return on Equity increases, the word count of the reports decreases. In other words, financial performance is a significant predictor of length.

[11] Underlying data is transformed by natural logarithm. Refer to the 'Statistical Model' section for more detail.

The observed relationship of these two factors is consistent with impression management literature, specifically regarding word count measures in relation to performance as seen in De Souza, Rissatti, Rover and Borba (2019), where a negative coefficient was also observed. Furthermore, this result is consistent with the impression management theoretical framework (Merkl-Davies & Brennan, 2011) such that when a company performs poorly, the report may lengthen due to the implementation of impression management techniques.

Bloomfield (2008) posits that, in instances of losses or poor performance, the length of reports will increase due to management's explanations of the reasons behind the poor performance. Often, these explanations entail attribution to an external event that is beyond management's control. Discussion of these events, and how they are linked to the company, would entail increasing the length of the report. Such lengthier narrative explanations could potentially derive from self-serving bias (Merkl-Davies & Brennan, 2011) and occur throughout the AFS, <IR> and F-SENS. Interpretations of the coefficients show that for a 1% increase in Return on Equity, there will be a decrease of 0.364%[12], and 0.409%[13] in the word count of the AFS and F-SENS, respectively. Empirically, this could be interpreted as a decrease of approximately 184 words for the AFS, and 48 words for the F-SENS[14]. In comparison, a 1% increase in ROE is associated with a decrease of approximately 197 words for the <IR>.

Impression management observations could, from an alternate perspective, be considered deceptive because increased length could obscure the veracity of information contained in a financial report. In considering whether an observed increased length is akin to deception, Bloomfield (2008) challenges the notion that impression management self-serving bias is the same as deception. This argument is supported by Bloomfield's citation of Newman, Pennebaker, Berry and Richards (2003) which reasons that

[12] AFS: Return on Equity: ($e^{-.0036422}$ – 1) x 100 = - 0.364 (Rounded value per Table 4: -0.004)

[13] F-SENS: Return on Equity: ($e^{-0.0040941}$-1) x 100 = -0.408573049 (Rounded value per Table 4: -0.004)

[14] These values are computed by applying the percentage decrease to the average word count for the AFS and F-SENS as reported in Table 2. These calculations are not precise as the model is multidimensional, but have been included as a proxy in order to compare the values amongst the reports on a similar, nominal basis.

individuals tend to provide less detail when being deceptive in order to bolster consistency. However, recent studies into the linguistics of deception counter this argument by supporting the notion that, when communication is performed through a computer medium, deceptive messages are more likely to contain a higher word count than non-deceptive messages (Hancock, Curry, Goorha & Woodworth, 2008; Holtgraves & Jenkins, 2020). These latter studies can be analogised to SENS communications, or market announcements, that are typically disseminated and read through digital streams. Thus, there is potential scope for further research at a content level to analyse whether the lengthened reports produced by poor performers contain inherent elements of deception in the narratives.

From an AFS perspective, at the industry level, statistical significance was observed in the finance and mining categories. This statistical significance is interpreted in relation to the reference category, herein being the consumer industry. Thus, *ceteris paribus*, within the model, the finance industry has a 46%[15] higher word count than the consumer industry. The companies within the finance sample comprise a number of banks; which are required to apply specific regulations that are unique to the industry, such as the Basel III framework (South African Reserve Bank, 2013). Within the Basel framework, there is comprehensive guidance for risk disclosures, in order to enable stakeholders to understand the risk profile of a bank (Linsley & Shrives, 2005). Historically users of banks' financial information have requested enhanced risk reporting (Linsley & Shrives, 2005).The purpose of these disclosures is to provide the respective users of the AFS and <IR> with more information on bank specific, systemic risk and how the directors are managing that risk (Baumann & Nier, 2004; Linsley & Shrives, 2005). The outcome of transparent risk disclosures by financial institutions provides investors with decision-useful information in order to manage risk positions.

Previous literature has suggested that banks that present more information demonstrate lower measures of stock volatility, when compared to those with less voluminous disclosures (Baumann & Nier, 2004). It is, therefore, to a bank's potential advantage to

[15] Coefficient – Finance: ($e^{0.3822898}$-1) x 100 = 46.564

provide lengthy detailed reports, a fact which could potentially be interpreted as an indicator of industry-specific impression management. Application of these previous findings in literature could suggest the normalisation of impression management, report-lengthening techniques within the industry: such that when a bank reports information concisely, the market will react with enhanced volatility. The concept of legitimacy as proposed by Suchman (1995) includes the perception that an organisation's actions conform to socially constructed norms. To this end, having shorter, concise AFS within the finance industry could contravene such norms. This situation presents an opportunity for further research from a content analysis perspective, in order to understand whether the lengthy disclosures reported by companies in the finance industry contain sufficient and appropriate information – or are simply impression-management techniques to achieve legitimacy.

The mining industry AFS, *ceteris paribus*, presents a statistically significant 19%[16] higher word count than the consumer industry. The mining industry is, inherently, more exposed to commodity price fluctuations than the consumer industry (for example, regarding iron ore and coal prices). This situation leads to a differentiated set of risks. Unique risks can attract AFS disclosures of varying length, as has been explained in the context of the financial industry. Secondly, the mining industry is inherently susceptible to unique criticism due to its impact on the environment (Jenkins, 2004). The environmental damage caused by mines can have specific disclosure implications for the AFS in the form of environmental rehabilitation provisions. Users of the financial information of mines should be able to understand the quantum of future cash outflows in order to restore the environmental damage caused by a mine within the AFS (regardless of whether the obligation has been triggered constructively or by environmental legislation). Given that companies in the mining industry have the potential propensity to cause more environmental damage when compared to a consumer goods company, such companies are subject to additional pressure in terms of their social and environmental responsibilities. In order to seek social legitimacy, mining companies engage in strategies to create the impression that the company is complying with stakeholder expectations

[16] Coefficient – Mining: ($e^{0.1799727}$ -1) x 100 = 19.718

(Jenkins, 2004). The AFS could potentially be applied as an instrument for mining companies to create a favourable impression and allay stakeholder concerns around key issues, such as damage to the environment, or mine labourer mortality. Such impression management can give rise to comparatively longer AFS than a consumer goods company.

A practical example of different risks leading to a variance in the length of financial disclosures, at a company level, can be seen when comparing the 2018 market risk disclosures of both a random mining company and finance company to a consumer goods company (all from within the current sample). Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market price (IASB, 2019b). The finance company, firstly, differentiates market risk into a large number of sub-categories, as outlined in Table 5 below. The disclosure then defines each market risk element in its narrative before discussing the exposure and sensitivity associated therewith. There are more categories for market risk disclosure for the bank than there are for the mining and consumer industry companies. The word count for this finance company's disclosure is thus significantly higher than the mining and consumer company. The mining company's AFS striates Market Risk into foreign exchange risk, commodity price risk and other price risk; with the total narrative amounting to 862 words. By comparison, the consumer goods company's AFS striates market risk into currency risk, interest rate risk and 'other price risk' – and the narrative is 632 words long.

Table 5: A Company Level Comparison of Market Risk Disclosure Length

Industry	**Finance**	**Mining**	**Consumer**
Market Risk Types per 2018 AFS			
Trading book market risk	✔		
Equity risk in the banking book	✔		
Own-equity linked transaction risk	✔		
Post-employment obligation risk	✔		
Commodity price sensitivity risk	✔	✔	
Foreign exchange risk	✔	✔	✔
Interest rate risk	✔	✔	✔
Other price risk		✔	✔
Word Count of Narrative	1,566	862	632

Financial reports have the propensity to increase in length, determined by the number of words, in a manner that is inverse to company performance. The industries in South Africa that are potentially more susceptible to this form of impression management include the finance and mining industries, both of which carry unique risk exposures and warrant particular focus by stakeholders. Within the finance industry, financial reports that are not lengthy enough, or do not provide enough disclosure, can result in comparably more share price volatility (Baumann & Nier, 2004) which creates a unique incentive for finance companies to ensure their reports are lengthy enough to meet market expectations in South Africa. Meeting market expectations, empirically, form part of management's objectives – especially when South African investor confidence is down (SAICA, 2018).

Where disclosure is excessively lengthy, useful information may be lost (IASB, 2013). The results, when considered in an alternative light, could potentially , suggest that management could employ impression management techniques, such as attempting to induce reader-fatigue through the creation of significantly lengthy corporate reports. These long-winded reports reduce reading ease (Courtis, 2004), which could lead to the report users missing key pieces of information when entities perform poorly. In this manner, analysts may miss information that could signal poor performance.

An alternative understanding, across industries, of the increased length of reports, that is specific to South Africa, considers the local regulator. The JSE has implemented specific measures to ensure enhanced transparency of reporting in South Africa by undertaking proactive monitoring of the AFS and interim results produced by listed companies. The objective of the review is to ensure the integrity of financial information, thereby enhancing the quality of financial reporting on the market (JSE, 2019e). For example, when impairments have given rise to poor performance, the JSE has indicated to issuers that there has previously been insufficient disclosure regarding the supporting calculations (JSE, 2019e). In cases when an entity implements the JSE's pro-active monitoring requests, the disclosure of the AFS could lengthen due to the provision of the supposedly 'useful' information that is now mandatory in terms of IFRS.

Consequently, in respect of the results of the Word Count model, users should apply discretion when using reports that are of anomalous length in order to distinguish decision-useful information as a result of enhanced transparency in reporting from impression management tactics. In addition, the results obtained from the Word Count test should be considered in addition to the results of the Fog Index test. Table 6 below reports the results of the statistical model in its application to the Fog Index.

Table 6: Results of Mixed-effects Linear Regression of Fog Index Test

Fog Index Test Results				
		AFS	**<IR>**	**F-SENS**
Return on Equity	Coefficient	0.008	0.000	0.010
	Standard error	0.009	0.008	0.010
	P-Value	0.358	0.990	0.291
Net Debt to Equity	Coefficient	-0.001	-0.000	0.000
	Standard error	0.001	0.000	0.001
	P-Value	0.361	0.482	0.853
Size	Coefficient	0.000	0.000	0.000
	Standard error	0.000	0.000	0.000
	P-Value	0.511	0.581	0.273
Industry				
Financial	Coefficient	-0.371	0.394	0.713
	Standard error	0.685	0.551	0.976
	P-Value	0.588	0.474	0.465
Mining & Industry	Coefficient	0.273	0.355	0.429
	Standard error	0.621	0.514	0.883
	P-Value	0.660	0.489	0.627
Real Estate	Coefficient	-1.267	0.206	0.746
	Standard error	0.758	0.599	1.033
	P-Value	0.095	0.731	0.470
Constant	Coefficient	17.397	17.045	15.744
	Standard error	0.439	0.361	0.601
	P-Value	0.000	0.000	0.000
Observations		239	230	242
Wald $Chi^2(6)$		6.63	2.07	3.19
	P-Value	0.356	0.914	0.784

***** p < or = 0.001, *** p < 0.01, ** p < 0.05, * p < 0.10. Values are rounded to three decimal places.*

The models in Table 6 above were not determined to be statistically significant at any of the determined threshold levels. Furthermore, test results did not indicate statistically

significant p-values for the dependent variable coefficient. Therefore, there is limited evidence to support the claim of a statistical relationship between performance and complexity. This outcome is contrary to prior impression management literature (Li, 2008) that has identified a relationship between these entities. The null hypothesis pertaining to complexity, thus, is not rejected based on the Fog Index test. A potential explanation for this result could be attributed to a flaw in the selected quantitative measure of complexity, namely the Fog Index, in its application to South African reports. There are alternative measures of complexity that can potentially be considered, such as the Flesch-Kincaid reading ease index (Xu et al., 2018).

The results from Table 6 above should be considered together with those delineated in Table 4. This finding suggests that disclosures are not complex (that is, using shorter sentences which contain words with a large number of letters) potentially because they are explained in a lengthier manner (that is, using numerous simpler words to explain a concept that could have been put across in a more concise manner). These results inform the nature of South African reporting narratives: it appears that there is a trend to use copious words to convey complex messages, in order to communicate ideas simply. Lengthier reports which contain key content in a readable format could represent enhanced, transparent information. Previous studies have shown that the application of IFRS, as an accounting framework, leads to an increased quantity and quality[17] of disclosures; which is then correlated with liquidity, analyst following and mutual fund ownership (Mark & Stice-Lawrence, 2015). Hence, the application of the IFRS framework potentially has an impact on both the length and complexity of the AFS.

These findings present insight into corporate reporting length and complexity of a sample of JSE listed companies reporting suites. These findings should, consequently, be contextualised from the perspective of the South African market. Thus, in examining these findings, it is one should consider that only 42% of South African adults are financially literate (Leroa, Anamaria & Peter, 2014). Evidence has suggested that, even amongst university educated South Africans, financial literacy is moderate and most individuals

[17] Disclosures in which quality has been considered as: more disclosure, less generic disclosures and greater comparability between companies (Mark & Stice-Lawrence, 2015).

require fundamental finance concepts to be constantly reiterated (Richard & Robert, 2012). The absence of enhanced complexity in response to poor performance could be perceived as a response to individual investors, as opposed to institutional investors, because, on average, individuals invest more in companies with clear and concise financial disclosures (Lawrence, 2013). The majority of individual investors on the JSE have, at a minimum, a bachelor's degree and are employed in senior management positions (Brijlal, 2007). When arriving at investment decisions, the majority of individual South African investors use fundamental and technical analyses (Brijlal, 2007) in conjunction with stockbroker advice. Fundamental analysis primarily entails the analysis of financial statements, which have been included in the sampled reporting complement. It is unclear whether there is a relationship between Black Economic Empowerment ('BEE') consortia holdings, which represent the largest category of private, direct ownership (Chandler, 2016), and the reporting-complexity of the companies these consortia are invested in. South African companies often engage with such empowerment groups, which can result in highly complex transactions (Alessandri et al., 2011). This interpretation, however, should be considered in the context that individuals do not own a material percentage of the JSE market in aggregate (Chandler, 2016). Private individual holdings comprised 1% of the JSE Top 25 companies by market capitalisation in 2016 (Thomas, 2017).

4.2.1 Removal of Outliers

As previously discussed within the methodology applied in this research study, certain outliers were noted and removed. The outliers pertained to large error terms and x-values. The test was run after the removal of these outliers and the output is reported in Appendix 2 below. The model for AFS and F-SENS is statistically significant on removal of the outliers. The model for <IR> continues to not be statistically significant, suggesting that there is only limited evidence to conclude a relationship between ROE and complexity within the <IR>.

The coefficient for performance is statistically significant for the AFS at the 5% level. However, the observed coefficient in this, subsequent, iteration of the model is positive. This result, thus, implies that, when performance improves, complexity is increased. This

prognosis is not in line with observed trends of impression management literature in financial reporting (Ajina et al., 2016; de Souza et al., 2019; Li, 2008). An empirical reasoning for this alternative result, from an AFS perspective, is that companies attempt to conceal the true reason for their increased returns (through enhanced complexity) because these returns are potentially not founded in robust accounting mechanisms or faithful representation. The accounting scandal of Steinhoff is a South African example of this phenomenon, in which highly complex business acquisition transactions were entered into with formerly failing companies that yielded much-improved results shortly after the acquisition date (CNBC Africa, 2018; Motsoeneng & Rumney, 2019). In the context of this example, hypothetically, there would be an increase in both performance and complexity in the AFS.

5. Conclusion

There are fundamental challenges in contemporary corporate reporting, as indicated by the users of those reports, such as: including too much information about irrelevant items, and too little information on decision-useful aspects of company performance. Underpinning these challenges is the theoretical framework of impression management and the Management Obfuscation Hypothesis. These counterpoints posit that disclosure complexity may be heightened as an obstacle to information extraction and comprehension when companies perform poorly.

As previously indicated, impression management is an instrument that management can apply in order to present company performance in a more favourable manner (Merkl-Davies & Brennan, 2011). Increased complexity and length of financial information can potentially obscure a reader's understanding of true company performance and this phenomenon has been demonstrated in the reviewed international literature when companies perform poorly (de Souza et al., 2019; Li, 2008). This research study analyses the relationship between report readability and company performance on the premise that as performance decreases, the length and complexity of a company's reports will increase.

In order to detect the presence of impression management in the South African reporting environment, a longitudinal data set of JSE listed companies for the period 2016-2018 was applied in this research. The financial reports that formed part of the final sample included the AFS, the <IR> and the F-SENS announcement. These reports were selected by analysing their correlation to other reports prepared by companies, such as the I-SENS and IFS. The above specified period of time was of interest, because South Africa's ranking in the Global Competitiveness Index category for auditing and financial reporting standards declined severely, from number one to thirty in 2017. This decline in rank could potentially indicate a decline in investor confidence (SAICA, 2018) and, as a result, the potential for impression management in financial reporting could increase. The JSE, furthermore, is an African financial market leader – and conclusions about impression management reached in this context could potentially be extrapolated to other African financial markets.

The results obtained through this research project, primarily identified an inverse relationship between report length and company performance within all three specified financial report types. The results indicated that companies with lower financial performance tend to present lengthier disclosures throughout the reporting complement. This finding is consistent with existing literature. Secondly, however, this research study found that there is limited evidence to conclude the existence of a relationship between report complexity and length. This lack of evidence suggests that although South African companies' financial reports lengthen when company performance is poor, the complexity, thereof, is not specifically impacted. An alternative iteration of the test for complexity, on removal of outliers, provided evidence of an increase in complexity when performance improves. This could, potentially, be explained by companies obfuscating the rationale for increased returns.

5.1 Areas for Future Research

The findings presented by this research could be further explored at a content level in order to better inform the results. A manual content analysis to identify the tone that underpins the narratives included in the reports could be performed in order to address questions of whether the lengthened reports can be attributed to baseless optimism; or contain credible causes of poor performance. If the narratives are lengthened due to highly emotive language, or undue positivity, this extension could suggest the cause of the increased word count is due to the employment of impression management techniques (Melloni et al., 2017).

Improvements to the research design, from a complexity perspective, could include the incorporation of multiple rhetorical features in the test in order to capture the association between performance and disclosure, as demonstrated in Patelli and Pedrini (2014). Potential enhancements to the study include the use of multiple methods of measuring complexity, such as the Kincaid Index and the Flesch reading Ease Index (Ajina et al., 2016) in order to prove robustness[18]. There is thus scope for further research to apply such measures in the testing of companies' financial disclosures at a South African level.

[18] However, literature suggests that this can provide one with very similar empirical results (Ajina et al., 2016).

Such exploratory research could leverage the notion of individual investors preference for companies with clear and concise disclosures (Lawrence, 2013) together with the understanding of the relative ownership discrepancies between individual and institutional investors on the JSE, whilst considering South Africa's continual transformation journey towards economic empowerment.

As at the time of this study, the JSE's Practice Note 4/2019 ('Performance Measures') was in draft (JSE, 2019d). Financial reports sometimes present non-IFRS based performance measures in their communication with investors. This practice note will regulate potentially misleading performance measures with overly optimistic descriptions, such as 'guaranteed profit'. To that end, when the JSE's Practice Note is made mandatory, there will be scope for further research that can blend both a quantitative and qualitative methodology approach.

5.2 Recommendations

The findings of this research project caution investors, and other users of financial disclosures, to approach unusually lengthy financial reports with increased scepticism of the contents. The increased length of a report, across the reporting complement in South Africa, is frequently associated with poor financial performance. This increase in length could be for a number of reasons, such as: in response to industry-specific investor expectations of the length of the report, the potential employment of impression techniques, or to provide enhanced and transparent information. Therefore, users should apply their discretion in order to separate useful information from the potential 'clutter' within the financial reporting complement. Furthermore, audit committees and other supervisory bodies, should question the nature and content of lengthy narratives on account of poor performance in the reported financial year. Reports that are lengthier should contain incremental, decision-useful information when compared to their more concise counterparts.

This research study confirms that South African listed companies have made limited progress towards conciseness in their financial disclosures. Greater efforts are required by regulators and preparers of financial information in order to achieve a balance between

conciseness and the provision of decision-useful information. These research findings can be applied to inform regulators of the potential for impression management in financial disclosures. Lastly, this research has made a salient contribution to the foundation for ongoing impression management research in the context of African capital markets.

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Appendix 1: Sampled Companies

South African Listed Company Sample

1. AECI Ltd.
2. African Rainbow Minerals Ltd
3. Anglo American Platinum Ltd
4. AngloGold Ashanti Ltd
5. Anheuser-Busch InBev SA/NV
6. Aspen Pharmacare Holdings
7. Assore Ltd
8. AVI Ltd
9. Barloworld Ltd
10. BidCorp Ltd
11. Bidvest Group Ltd
12. Brait SE
13. British American Tobacco PLC
14. Capital & Counties Properties PLC
15. Capitec Bank Holdings Ltd
16. Clicks Group Ltd
17. Compagnie Financiere Richemont AG
18. Coronation Fund Managers Ltd
19. Curro Holdings Ltd
20. Deneb Investments Ltd
21. Dis-Chem Pharmacies Ltd
22. Distell Group Holdings Ltd
23. EPP N.V.
24. Exxaro Resources Ltd
25. FirstRand Ltd
26. Fortress REIT Ltd
27. Glencore PLC
28. Globe Trade Centre S.A.
29. Gold Fields Ltd
30. Greenbay Properties Ltd
31. Growthpoint Prop Ltd
32. Hammerson PLC
33. Harmony Gold Mining Company Ltd
34. Hyprop Investments Ltd
35. Impala Platinum Holdings Ltd
36. Imperial Holdings Ltd
37. Intu Properties PLC
38. Investec Ltd
39. Italtile Ltd
40. JSE Ltd
41. KAP Industrial Holdings Ltd
42. Kumba Iron Ore Ltd
43. Liberty Holdings Ltd
44. Life Healthcare Group Holdings Ltd
45. MAS Real Estate Inc.
46. Massmart Holdings Ltd
47. Mediclinic International PLC
48. MMI Holdings Ltd

49. Mondi Ltd
50. Mondi PLC
51. Montauk Holdings Ltd
52. Mr Price Group Ltd
53. MTN Group Ltd
54. Naspers Ltd
55. Nedbank Group Ltd
56. NEPI Rockcastle PLC
57. Netcare Ltd
58. Northam Platinum Ltd
59. Old Mutual Ltd
60. Pepkor Holdings Ltd
61. Pick n Pay Stores Ltd
62. Pioneer Food Group Ltd
63. PSG Group Ltd
64. PSG Konsult Ltd
65. Quilter PLC
66. RCL Foods Ltd
67. RDI REIT PLC
68. Redefine Properties Ltd
69. Reinet Investments Ltd
70. Remgro Ltd
71. Resilient REIT Ltd
72. Reunert Ltd
73. RMB Holdings Ltd
74. Sanlam Ltd
75. Santam Ltd
76. Sappi Ltd
77. Sasol Ltd
78. Shoprite Holdings Ltd
79. Sibanye Gold Ltd
80. Sirius Real Estate Ltd
81. South32 Ltd
82. Standard Bank Group Ltd
83. Super Group Ltd
84. Telkom SA SOC Ltd
85. The Foschini Group Ltd
86. The Spar Group Ltd
87. Tiger Brands Ltd
88. Truworths International Ltd
89. Tsogo Sun Holdings Ltd
90. Vodacom Group Ltd
91. Vukile Property Fund Ltd
92. Woolworths Holdings Ltd

Appendix 2: Regression Results

Table 7: Results of Mixed-effects Linear Regression of Fog Index Test from which identified outliers have been removed

Fog Index				
		AFS	<IR>	F-SENS
Return on Equity	Coefficient	0.0173**	0.001	-0.004**
	Standard error	(0.008)	(0.008)	(0.002)
	P-Value	0.025	0.864	0.017
Net Debt to Equity	Coefficient	-0.009**	-0.000	-0.000
	Standard error	(.004)	(0.001)	(0.000)
	P-Value	0.028	0.464	0.164
Size	Coefficient	0.000	0.000	0.000
	Standard error	(0.000)	(0.000)	(0.000)
	P-Value	0.127	0.617	0.809
Industry				
Financial	Coefficient	-0.618	0.402	0.272
	Standard error	(0.752)	(0.524)	(0.180)
	P-Value	0.411	0.443	0.132
Mining & Industry	Coefficient	0.096	0.375	0.246
	Standard error	(0.657)	(0.489)	(0.163)
	P-Value	0.884	0.443	0.132
Real Estate	Coefficient	-1.251	-0.031	0.290
	Standard error	(0.767)	(0.568)	(0.190)
	P-Value	0.103	0.957	0.129
Constant	Coefficient	17.933	17.012	9.040
	Standard error	(0.527)	(0.338)	(0.110)
	P-Value	0.000	0.000	0.000
Observations		215	229	240
Wald $Chi^2(6)$		15.94**	2.50	13.27**
	Prob > Chi^2	0.014	0.869	0.039

**** p < 0.01, ** p < 0.05, * p < 0.10.*

Table 7 above reports the effect of the Fog Index on company performance as represented by Return on Equity. This result is achieved by regressing the Fog Index on Return on Equity and the control variables over the years sampled. This table is based on the same underlying data as that presented in the Regression Results listed in Table 2 above, however, instances of large residuals have been removed, as well as the outlier values. Outlier data points that were removed due to very large error terms: Sanlam (only 2017) and Vodacom Group (only 2016). Outlier data points that were removed based on large x-values: Quilter Plc, Anheuser-Busch InBev SA/NV, Sasol, Standard Bank, MTN, FirstRand and Greenbay.

Appendix 3: Additional Summary Statistics

Summary statistics for independent variables are disclosed below. Note that summary statistics for the dependent variables per industry are already provided in Table 3. All values are rounded to 2 decimal places. The below statistics are determined in aggregate based on the total data set.

Table 8: Additional Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Return on Equity	14.61	16.35	-48.11*	74.76
Market Capitalisation	96,475.14	288,655.70	813.17	2,941,611
Leverage	1.83	230.11	-3,063.19**	205.52

*A negative return on equity is possible where a company has made a loss in a year, instead of a net profit.

**A negative net debt to equity ratio occurs when a company's cash and cash equivalents exceed its debt (short-term and long-term debt) thus creating a negative numerator for this ratio. The net debt to equity ratio is computed by total debt, less cash and cash equivalents divided by the book value of equity.