DO COMPANY CHARACTERISTICS INFLUENCE THE QUALITY OF INTEGRATED REPORTING? A STUDY OF SOUTH AFRICAN JSE TOP 100 LISTED COMPANIES.

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PHSMAL001

Research dissertation presented for the approval of the University of Cape Town Senate in fulfilment of part of the requirements for the degree of Master of Commerce (Specialising in Accounting) in approved courses and a minor dissertation. The other part of the requirement for this qualification was the completion of a programme of courses.

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.

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ABSTRACT

This dissertation investigates whether a statistically significant relationship exists between a company's corporate characteristics and the quality of its integrated report. The JSE Top 100 companies are used as the study population, with the Ernst & Young Excellence in Reporting ratings used as the framework for assessing integrated reporting quality.

A multiple multivariate regression analysis was employed to assess the impact of ten company characteristics that were found to be prominent by other studies. The results show that firm size, board diversity, board independence and firms in the resource sector show a statistically significant positive association with components of integrated reporting quality as described in the Integrated Reporting Framework.

The results suggest that firms with stronger adherence to good corporate practices, with firm board diversity and board independence as a possible indicator, are more responsive to the need for quality integrated reporting. Further, firms with greater accountability to stakeholders through their size of sector also appear to respond to this obligation through increased disclosures.

Keywords: Integrated reporting; Quality of integrated reports; JSE Top 100; Firm size; Sector; Board independence; Board diversity; International Integrated Reporting Council; Integrated Reporting Framework; King IV Report on Governance;

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1. INTRODUCTION

1.1 Title

Do Company Characteristics Influence the Quality of Integrated Reporting? A Study of South African JSE Top 100 Listed Companies.

1.2 Background

During a lecture at the University of Cape Town, Mervyn King (M. King, 2017) described that the journey of integrated reporting in South Africa began when he received an unexpected phone call from then President Nelson Rolihlahla Mandela. He knew a big task awaited him when the phone call began with the words “How is my favourite judge?”.

King was tasked with implementing a new governance system for the private sector in a country that had just emerged from a new democracy (Beck, Dumay, & Frost, 2017).

The outcome of the project was the publishing of the first King Code of Corporate Governance Principles which aimed at improving the accountability of South African companies (M. King, 2017).

While the first King Code and all its subsequent iterations have always emphasised the need for strong stakeholder communications, the King III Code published in 2009 was the first to explicitly call for companies to report on their ability to create sustainable value in the short, medium and long term through an integrated report (Insititute of Directors Southern Africa, 2009).

This was reinforced by the concurrent amendment of JSE Listing Requirements (Johannesburg Stock Exchange Limited, 2018a) which required listed companies to apply the principles of the King III (and by effect, prepare an integrated report) or otherwise explain why it was not possible.

As the first country to require listed companies to publish annual integrated reports, South Africa has since become a pioneer in the field of integrated reporting contributing positively to its competitiveness in global financial markets (Atkins, Solomon, Norton, & Joseph, 2015).

It has however, been noted that the effectiveness of integrated reports in achieving their desired outcome is dependent on the quality of the disclosure (Pistoni, Songini,

& Bavagnoli, 2018). The development of integrated reporting is thus dependent on identifying and subsequently addressing the factors that impact quality of integrated reporting quality (Eccles, Krzus, & Ribot, 2015).

1.3 The purpose of the study

The disclosure quality of an integrated report has been found by multiple studies to have an impact on achieving the objectives of integrated reporting (Rinaldi, Unerman, & de Villiers, 2018). Consequently, the purpose of this study is to identify the factors that may influence disclosure quality, with a specific focus on company-specific factors impacting the Top 100 Companies listed on the Johannesburg Stock Exchange.

Once the relevant company-specific characteristics are identified, if any, this study will identify the relationships that can be drawn between those characteristics and the measures of integrated reporting quality. This will enable specific recommendations to be made to improve disclosure quality and the broader aims of integrated reporting.

1.4 Research questions and hypothesis

To enable the achievement of the purpose of this study, this dissertation aims to answer the following research questions:

1. What company characteristics influence the quality of its integrated report?
2. How do the characteristics identified affect the quality of the integrated report?

Both of these research questions can be investigated through the hypothesis below:

H_0: There is no association between a company's characteristics and the quality of its integrated report

H_1: There is an association between a company's characteristics and the quality of its integrated report

1.5 Research scope

The study is demarcated to the Top 100 companies listed on the Johannesburg Stock Exchange. Further, the study only focuses on company-specific factors affecting integrated reporting disclosure quality, while there may be other macroenvironmental factors which are relevant.

2 LITERATURE REVIEW

This chapter will present a review of the extant literature on the quality of corporate reporting, with a focus on integrated reporting. The development of the concept of integrated reporting will be explored, leading to a discussion about the broad and firm-specific factors that may influence the quality of an integrated report. These findings will then be used to develop the research questions used in this dissertation.

2.1 About Integrated Reporting

Introduction

This section is going to begin by providing a backdrop of integrated reporting to provide context to the rest of the dissertation. A brief outline of the perspectives and events that led to the creation of integrated reporting will be described followed by an explanation of the purpose and objectives that the International Integrated Report Council (IIRC) had when they developed the concept of integrated reporting. There will then be an exploration of the benefits that integrated reporting has provided as well as the key challenges facing its implementation.

2.1.1 History of Integrated Reporting

The interactions between the determination, implementation, measurement and reporting of a firm's strategic objectives has always been an area of keen interest among academics and stakeholders (Parker, 2012). Many frameworks were proposed to streamline these areas of governance and the emerging ones were the Balanced Scorecard, the Triple Bottom Line, Sustainability Reporting and Integrated Reporting (Giovannoni & Pia Maraghini, 2013).

Kaplan and Norton (1995) described the Balanced Scorecard as 'a comprehensive framework that translates an organisation's strategic objectives into a coherent set of measures of performance for customers, internal processes, innovation and improvement activities'. They explained that the balanced scorecard enhances the financial reporting process by aligning an organisation's strategy with external reporting by disclosing how well strategic objectives have been achieved (Kaplan & Norton, 1995).

Subsequently, the Triple Bottom Line was introduced as a more stakeholder-inclusive approach to measuring company performance through the reporting of the impact of

an organisation's activities on people (social context), planet (environmental context) and profit (financial context) (Elkington, 1998). With respect to external reporting, Elkington (1998) explained that the triple bottom line gained prominence towards the end of the 1990s as it introduced the idea of reporting beyond just economic profit. Instead, the triple bottom line also highlighted the need to disclose information relating to environmental and social matters that are relevant to an organisation's operations (Elkington, 1998).

Kolk and Van Tulder (2010) posit that the pressing need for this additional disclosure has been a function of the increasing responsibility placed on organisations to adapt their business practices to consider the increasing public awareness of these environmental, social and governance issues.

Although organisations started to report on sustainability issues facing their firms through their annual reports following the introduction of the balanced scorecard and the triple bottom line, these reports were still financially-oriented for the most part as the annual report was still primarily a financial reporting document (Unerman, 2000).

As companies increased their environmental and social reporting to respond to the mounting pressure placed on them, Villiers and van Staden (2011) noted that the information being disclosed consequently become too lengthy for a single annual report. The financial information was then reported in the annual report while social and environmental information was reported in a separate document (eventually called the sustainability report) so that stakeholders who had an interest in these issues could benefit from adequate disclosure (Villiers & van Staden, 2011).

HRH Prince Charles of Wales formed the Prince's Accounting for Sustainability Project in 2004 which had the aim of connecting the different sustainability reports that were being issued by firms (Accounting For Sustainability, 2018). The project encouraged organisations to practice 'connected reporting' which had the purpose of showing users of the reports the key connections between social, environmental, and economic actions and outcomes relating to the organisation (Hopwood, Unerman, & Fries, 2010)

Subsequently, the Global Reporting Initiative (GRI) and the Prince's Accounting for Sustainability Project jointly formed the International Integrated Reporting Council (IIRC) in 2010 as an organisation through which integrated reporting could be developed and sustained on a global level (de Villiers, Rinaldi, & Unerman, 2014).

The International Integrated Reporting Council (2018) defines itself as a 'global coalition of regulators, investors, companies, standard setters, the accounting profession and NGOs promoting communication about value creation as the next step in the evolution of corporate reporting'.

The IIRC aims to establish integrated thinking and reporting as the norm in the public and private sectors as a means to align capital allocation and corporate behaviour to wider goals of financial stability and sustainable development (International Integrated Reporting Council, 2018).

Integrated thinking is 'the active consideration by an organization of the relationships between its various operating and functional units and the capitals that the organization uses or affects (International Integrated Reporting Council, 2013). Eccles and Serafeim (2014) highlight that integrated thinking is a key concept in the IIRC's objectives as integrated reporting is considered a product of integrated thinking.

2.1.2 What is an Integrated Report?

The International Integrated Reporting Council (2013) defines an integrated report as being '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'.

The key distinguishing factor from financial reporting is the consideration of the entire value creation process when reporting (International Integrated Reporting Council, 2013).

Figure 2.1 below shows all the key reportable factors that form part of an organisation's process to create value:

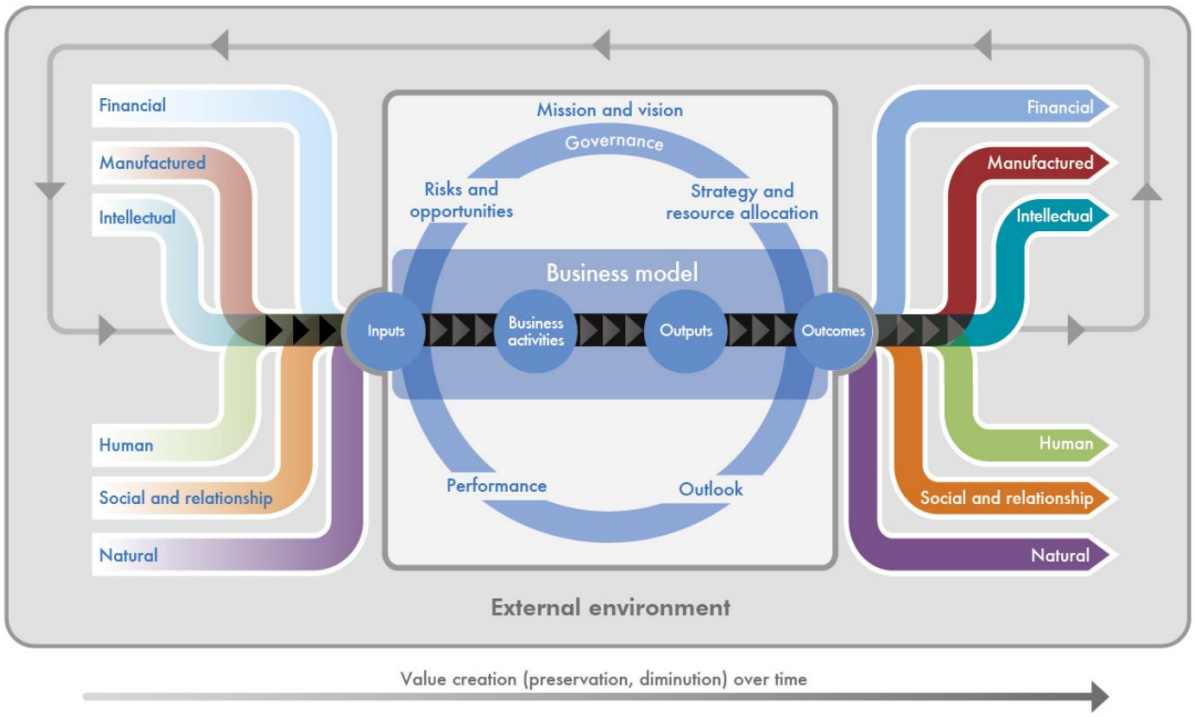

Figure 1: Depiction of the Value Creation Process

Figure 1 is an extract from the Integrated Reporting Framework (International Integrated Reporting Council, 2013) and is a depiction of an organisation's value creation process.

The diagram shows how an entity's business model draws on various capitals as inputs and, through its business activities, converts them to outputs (products, services, by-products and waste) (International Integrated Reporting Council, 2013). The organization's activities and its outputs lead to outcomes in terms of effects on the capitals, which can either be positive or negative (International Integrated Reporting Council, 2013).

The International Integrated Reporting Council (2013) defines the capitals as 'stocks of value that are increased, decreased or transformed throughout the value creation process' namely financial, manufactured, intellectual, human, social and relationship, and natural capital'.

Making use of these capitals in a way that meets an organisation's mission and vision is achieved through the governance structures having appropriate oversight over the risks and opportunities, strategy and resource allocation, performance and outlook, all

in the context of the external environment (International Integrated Reporting Council, 2013).

The King IV Report on Governance for South Africa (2016) defines integrated reporting as 'A process founded on integrated thinking that results in a periodic integrated report by an organisation about value creation over time'. The key feature of this definition is that the integrated report is not an end in itself, but rather is the output of integrated thinking, thus highlighting the importance of the role that governing structures play in the process of integrated reporting.

Clayton, Rogerson, and Rampedi (2015) point out that the integrated report is distinct from sustainability reports in that sustainability reports communicate the impact of the organisation's activities on external factors (such as the environment and society) while the integrated report communicates the impact of the external factors on the organisation's ability to create value. They then make a deduction that it can be understood from the distinction that integrated reports are primarily aimed at the providers of financial capital as value creation is the primary consideration (Clayton et al., 2015).

Although the intended audience of the integrated report by the IIRC is the investors, in order to avoid a conflict of objectives with other reports focusing on non-financial disclosures, a broad range of stakeholders find usefulness in the report as they are also affected by any factors that may impact how much value entity can create (Reuter & Messner, 2015).

2.1.3 The Purpose of Integrated Reporting

In its Integrated Reporting Framework published as a guide on the implementation of integrated reporting, the International Integrated Reporting Council (2013) states that the purpose of broader integrated reporting is to 'embed integrated thinking within mainstream business practice resulting in efficient and productive capital allocation, which acts as a force for financial stability and sustainability'. The following are the four ways in which the (International Integrated Reporting Council, 2013) suggests that integrated reporting will achieve this purpose:

> Firstly, the quality of information that will be made available to providers of financial capital will be improved though integrated reporting thus enabling them to allocate capital more efficiently and productively. This is on the basis that

when an entity discloses more useful and relevant information in a manner that is clear then investors and other providers of financial capital would be better able to identify companies that have the greatest potential to make the most productive use of the resources allocated to them. A resulting benefit would be the reduction of the information cost to the providers of financial capital while ensuring that entities with the greatest potential are allocated the resources they need.

Secondly, integrated reporting would integrate the different reporting strands that communicate the factors that affect an entity's ability to create value over time into a single cohesive and efficient platform. This IIRC recognised that there are multiple factors apart from financial resources that affect an entity's ability to create value and that there are many organisations with different frameworks as to how each capital should be reported. The IIRC aims to use integrated reporting to consolidate these different forms of corporate reporting.

Thirdly, the IIRC aims to enhance the accountability and stewardship of all forms of capital and promote an understanding of their interdependencies. Integrated reporting is meant to make entities fully cognisant of the capitals that form part of their value-creation process and report on these. The reporting of these capitals would increase the level of accountability of these capitals due to the fact that stakeholders would be able to direct their attention to the way these capitals are utilised.

There are also interdependencies that stem from the way in which the capitals are used to create value. This is due to the fact that these capitals are not fixed in value but rather constantly flow among each other hence creating a transfer of value from one to the other. An example is the flow from financial to human capital when employees receive training. This transformation of capitals was deemed by the IIRC as important in the understanding of the capitals because most decisions that were made by the entity would result in the trade-off of one stock of capital to another.

It was therefore important that entities do not reduce overall value of the capitals but ensure that the flows result in a net increase in the value created to benefit both the entity and its broader stakeholders.

> Lastly, the IIRC aims to support integrated thinking, decision-making and actions that support the creation of value over the short, medium and long term. Integrated thinking is the active consideration by an organization of the relationships between its various operating and functional units and the capitals that the organization uses or affects. This method of thinking would encourage the sustainable creation of value by taking into account the capitals that the entity uses and their interdependencies, the capacity of the entity to respond to key stakeholders' legitimate interests and needs, how the organization tailors its business model and strategy to respond to its external environment and the risks and opportunities it faces and the organization's activities, performance and outcomes in terms of the capitals – past, present and future.
>
> (International Integrated Reporting Council, 2013)

2.1.4 Benefits of Integrated Reporting

The impact that integrated reporting has had on organisations and their various stakeholders has been investigated by various actors in the field of corporate reporting.

Black Sun (2012), a consultant in stakeholder communications, identified the problems with conventional stand-alone sustainability reports in that they were unable to adequately account for and report on all the sources of value creation in an entity. They thus argued that integrated reporting was a way in which value-creation could be holistically accounted for through the six capitals model. Because of the lack of incorporation of the different stocks of value, many sustainability reports were unable to appropriately account for the complex relationship between sustainability and financial performance (Eccles & Serafeim, 2014).

The ability to adequately account for all the sources of value creation is strongly related to an organisation's ability to adequately articulate its business model, which was a challenge identified in many corporate reports issued by organisations according to Black Sun (2012). Eccles and Serafeim (2014) argued that the accounting of an entity's business model was central to the integrated reporting's framework therefore an improvement has been noted in this area of reporting once integrated reporting took effect

Busco, Frigo, Quattrone, and Riccaboni (2013) made findings showing that the clarity provided by integrated reporting into the value creation process has also been shown to have enhanced internal organisational clarity due to the improved articulation of the business strategy and business model. This additional clarity thus provided all actors within the organisation with a clearer picture of the organisations' objectives and how it aims to achieve them, resulting in an improved internal decision-making process with more transparent external reporting (Busco et al., 2013).

External to the reporting organisation, Black Sun (2012) also identified the additional benefits that stem from the increased transparency with stakeholders. Strengthened relationships with external stakeholders have been observed by organisations which have adopted integrated reporting, and this has been a big motivating factor for the adoption of integrated reporting (Black Sun, 2012). The additional disclosure through the six capitals which shows how each of the stakeholders play a role in the value creation process and how each of the stakeholders benefit facilitates the trust required for stakeholder-inclusive relationships (Serafeim, 2015).

The reaction of market participants such as investors to integrated reporting is perhaps the most important one as integrated reporting is primarily aimed at the providers of financial capital (International Integrated Reporting Council, 2013).

Serafeim (2015) conducted a study on US firms which had adopted integrated reporting and the study found that these firms were associated with investors who had a long-term outlook on their investments and fewer transient shareholders. Through integrated reporting, these firms were able to persuasively communicate that they integrate "economic, social and environmental dimensions into the day-to-day decision-making processes" (Serafeim, 2015).

Lee and Yeo (2016) investigated the relationship between the quality of entities' integrated reports and their valuation using a sample of listed firms on the Johannesburg Securities Exchange. Their findings showed that there is a positive relationship which suggested that on average, the benefits of integrated reporting exceed their cost. This is because integrated reporting reduces the information processing costs in firms that operate in a 'complex operating and informational environment' (Lee & Yeo, 2016).

Moreover, Lee and Yeo (2016) pointed out that this relationship was found to have been especially significant for firms with higher external financing needs showing that integrated reporting plays a role in reducing the information asymmetry between the key internal personnel and the external providers of financial capital.

A study was conducted by Bernardi and Stark (2015) into the reporting accuracy of analysts after the regime change in South Africa that required listed firms to adopt integrated reporting. They found that there was an increase in the forecast accuracy of those companies which practiced integrated reporting compared to the period when integrated reporting was not practised. Their findings suggest that investors are benefiting from the additional integrated reporting disclosure as it enables them to better appraise the firms through an understanding of how much value they can potentially create.

Zhou, Simnett, and Green (2017) conducted a similar study on firms listed on the Johannesburg Securities Exchange and concluded with results similar to Bernardi and Stark (2015) showing an inverse relationship between the quality of integrated reporting and the level of forecasting errors. The study also found an association between this improvement in forecast earnings and a reduction in the cost of equity. This echoes the findings of Lee and Yeo (2016) who found an association between the quality of integrated reporting and the reduction of information procession costs.

Barth et al. (2015) also conducted a similar study to not only find a positive association between the quality of integrated reporting and firm valuation, but also stock liquidity (measured by the bid-ask spread). They argue that this association may be caused by the cash flow effect whereby investors and analysts revise their estimates of an entity's cash flow based on a better understanding of its capitals, strategy and internal decision-making (Barth et al., 2015).

A sample of early-adopters of integrated reporting selected from organisations around the world were found by Arguelles, Balatbat and Green (2015) to have experienced an increase in the market value of their stocks due to investors perceiving the adoption of integrated reporting as a positive signal.

Mervelskemper and Streit (2015) studied firms' strategies to report on environmental, social and governance (ESG) activities. The study concluded that the ESG activities of a firm get valued more when the firms actually reports on these activities, either in

a standalone or integrated report. Furthermore, the study found that integrated reporting is ‘associated with a superior outcome compared to a standalone report for composite ESG and corporate governance performance’ (Mervelskemper & Streit, 2015). The study suggests that integrated reporting has the potential to play an important role in effectively communicating the various activities that are valued by stakeholders.

An earlier study by Arnold, Bassen and Frank (2012) had however, found results contradictory to those of Mervelskemper and Streit (2015). They found that there was no difference in the appraisal of ESG performance whether it was communicated in a standalone or integrated report.

Further, the study found that users of standalone reports only fully adjust their valuation of ESG activities when bad performance is reported. When good performance is reported in the integrated reports, however, users of standalone sustainability reports do not adjust their valuations following this information.

This suggests that users of financial statements may ‘asymmetrically anchor on their financial value judgments when assessing ESG information provided in a standalone report’ (Arnold et al., 2012).

Overall, the studies show that various stakeholders to practitioners of integrated reporting, including employees, internal decision-makers, external interest groups and investors have benefited from integrated reporting through decreased information asymmetry and increased transparency.

2.1.5 Challenges facing Integrated Reporting

The Association of Chartered Certified Accountants (2017) in partnership with the International Integrated Reporting Council examined the reporting practices of organisations in the <IR> Business Network with an aim of understanding the benefits of and challenges facing these organisations in implementing integrated reporting.

The findings showed that the entities who had adopted integrated reporting found difficulty with the illustration of the connectivity of information as they failed to show the interrelatedness and dependencies of all the factors that form part of the value creation process. These factors which could be better connected include the content elements, the past, present and future and the six capitals. These challenges were

further intensified by the fact that the entities had previously reported information in siloes and now they are required to integrate the information across different reports which presented them with consolidation challenges (Association of Chartered Certified Accountants, 2017)

Multiple studies also presented findings that supported the observations made by the Association of Certified Chartered Accountants (2017) above.

A study by Velte and Stawinoga (2016) into the adoption of integrated reporting concluded that many firms expressed reluctance to engage with integrated reporting as they frame it as an additional reporting burden and unnecessary exposure to legal risks. They explain that the additional reporting burden stems from the supplementary information that firms would have to measure, account for and report on.

Further, Velte and Stawinoga (2016) identified that integrated reporting, in an early stage of formation, remains a voluntary disclosure decision with no standard methodology. As such, companies may be opportunistic in their engagement with IR and to which guidelines they adhere to, thus reducing comparability (Velte & Stawinoga, 2016).

Perego, Kennedy, and Whiteman (2016) conducted a review of the extant literature on integrated reporting and one of the drawbacks they identified was that firms were disproportionally engaged with integrated reporting as they are viewing it as an external communication toolkit rather than an internal managerial process. The nature of integrated reporting is that it is supposed to be an outcome of the integrated thinking process (International Integrated Reporting Council, 2013) so the misconstruing of the fundamental process will present shortcomings in the reporting such as thinking in siloes. External reporting was thus seen by corporate reporting academics to be secondary to the primary benefits of integrated thinking which would radically change the company's internal processes (Melloni, Caglio, & Perego, 2017).

Stubbs, Higgins, Milne, and Hems (2014) reported on the findings of a research study that investigated the perspectives of Australian providers of capital. The participants concurred that there were problems with the reporting practices before integrated reporting, but they were uncertain as to whether integrated reporting was the solution to the problems. The lack of acceptance of the six capitals model by many organisations was a significant factor which undermined the effectiveness of

integrated reporting. The pushback was caused by the participants arguing that the current ESG frameworks used were broad enough to encompass the six capitals. The participants also reported a lack of understanding of the six capitals as insufficient guidance was given to the preparers as to what should be reported.

The lack of interest thus shown by investors has resulted in a lot of firms not fully engaging with integrated reporting (Cheng, Green, & Ko, 2015). Cheng, Green, and Ko (2015) argued that without this buy-in from the key people at which the integrated report is aimed, the exercise of preparing it is seen as an additional reporting burden, or worse yet, an unnecessary exposure to legal risk.

Stubbs, Higgins, Milne and Hems (2014) suggest that the reason for the disinterest is that mainstream providers of financial capital lack the understanding of integrated reporting and information gaps between what is provided by companies and desired by investors create significant barriers to its acceptance and use by the investment community.

Flower (2015), who wrote in a paper titled “The International Integrated Reporting Council: A story of failure”, tracing integrated reporting since its formation wrote a summary of its key shortcomings. The paper argues that the IIRC has failed as integrated report has not become the firm’s primary report, it does not cover sustainability, it does not comprehensively cover the impact of the firm’s activities on the stakeholders and it places very few specific obligations on the preparer.

The key challenges facing integrated reporting appear to stem from the reluctance of organisations invest in a more rigorous reporting framework before the reporting practice is widely embraced. The lack of understanding of integrated reporting by parties both internal and external to organisations further reduces the incentive for the adoption of integrated reporting.

Conclusion

As more and more actors in society started holding businesses more accountable for the various input and outputs of their activities, corporate reporting followed suit by requiring more comprehensive reporting. One of the recent culminations of this shift is the integrated report presented by the IIRC which requires companies to report on their entire value creation process and the factors that affect it. Integrated reporting has so far seen benefits such as clearer articulation of the business process to both

internal and external stakeholders, thus improving decision-making. Challenges still exist however, around the understanding and acceptance of the framework by both its practitioners and the intended users.

2.2 Differences in Integrated Reporting Quality

Introduction

Now that the nature and impact of integrated reporting has been explored in the previous section, this section will explore the relevance of the quality of an integrated report that an organisation prepares. This will be done by exploring how the IIRC, practitioners and stakeholders define the quality of an integrated report (The measurement of the quality will be discussed in Chapter 3). The section will then investigate how the current state of the quality of integrated reports is viewed by literature. Finally, the systematic factors that contribute to an integrated report not meeting the information needs of its users i.e. not having the level of quality required by them will be explored.

2.2.1 How integrated reporting quality is defined

The International Integrated Reporting Council (2011) published the Integrated Reporting Framework with the objective of establishing *Guiding Principles* and *Content Elements* that govern the overall content of an integrated report and explain the fundamental concepts that underpin its preparation. The adherence to the Guiding Principles and the Content Elements would enable an integrated report to achieve good quality disclosure as envisioned by the IIRC.

Figures 2.2 and 2.3 below from the Integrated Reporting Framework summarize these principles:

GUIDING PRINCIPLES

The following Guiding Principles underpin the preparation of an integrated report, informing the content of the report and how information is presented:

- *Strategic focus and future orientation*: An integrated report should provide insight into the organization's strategy, and how it relates to the organization's ability to create value in the short, medium and long term, and to its use of and effects on the capitals
- *Connectivity of information*: An integrated report should show a holistic picture of the combination, interrelatedness and dependencies between the factors that affect the organization's ability to create value over time
- *Stakeholder relationships*: An integrated report should provide insight into the nature and quality of the organization's relationships with its key stakeholders, including how and to what extent the organization understands, takes into account and responds to their legitimate needs and interests
- *Materiality*: An integrated report should disclose information about matters that substantively affect the organization's ability to create value over the short, medium and long term
- *Conciseness*: An integrated report should be concise
- *Reliability and completeness*: An integrated report should include all material matters, both positive and negative, in a balanced way and without material error
- *Consistency and comparability:* The information in an integrated report should be presented: (a) on a basis that is consistent over time; and (b) in a way that enables comparison with other organizations to the extent it is material to the organization's own ability to create value over time.

Figure 2: Guiding Principles

CONTENT ELEMENTS

An integrated report includes eight Content Elements that are fundamentally linked to each other and are not mutually exclusive:

- *Organizational overview and external environment:* What does the organization do and what are the circumstances under which it operates**?**
- *Governance*: How does the organization's governance structure support its ability to create value in the short, medium and long term**?**
- *Business model*: What is the organization's business model**?**
- *Risks and opportunities*: What are the specific risks and opportunities that affect the organization's ability to create value over the short, medium and long term, and how is the organization dealing with them**?**
- *Strategy and resource allocation*: Where does the organization want to go and how does it intend to get there**?**
- *Performance*: To what extent has the organization achieved its strategic objectives for the period and what are its outcomes in terms of effects on the capitals**?**
- *Outlook*: What challenges and uncertainties is the organization likely to encounter in pursuing its strategy, and what are the potential implications for its business model and future performance**?**
- *Basis of presentation*: How does the organization determine what matters to include in the integrated report and how are such matters quantified or evaluated**?**

Figure 3: Content Elements

To the users of the integrated report, the quality of integrated reporting refers to the capacity of the integrated report to present the strategic elements that describe firm performance and value creation (Pistoni et al., 2018). A key benefit for the user of the integrated report is the ability for them to understand the factors that may affect the

organisation's ability to create value in the future (International Integrated Reporting Council, 2013).

Eccles & Serafeim (2014) have cautioned against the religious application of the *Guiding Principles* and *Content Elements* as an approach to integrated reporting arguing that firms should rather take a 'longer-term, broader, more operational perspective that will challenge how companies think, operate, monitor and report performance in a connected way', which is closely linked to the definition of integrated thinking.

Further, the benefits of integrated reporting are not only intended for the users of the report, but also the preparers themselves through the careful consideration and reconfiguration on their operations (Eccles & Serafeim, 2014).

2.2.2 The state of integrated reporting quality

A study of the literature on the quality assessment of integrated reports reveals that this area is not yet as well-developed as other areas of external reporting (Eccles et al., 2015). This is a consequence of the relative recency of its implementation and its gradual adoption across the world which is yet to gain secure traction in the corporate reporting atmosphere.

The literature that is present has tended to focus on the nature, adoption, implementation and impact of integrated reporting but not the quality of the integrated reports themselves (Ruiz-Lozano & Tirado-Valencia, 2016) which has left a gap in the knowledge as to how effective the implementation of the integrated reports has actually been.

While reporting a large quantity of information was seen as a positive step towards disclosure, the evidence discussed above has shifted the attention of practitioners from the type and quantity of information in integrated reports towards its quality (Eccles et al., 2015).

The initial studies into the quality of integrated reports have found that integrated reporting is not well diffused among companies across the world as it mostly is a voluntary disclosure (de Villiers, Venter, & Hsiao, 2016).

de Villiers, Venter, and Hsiao (2016) further found that when integrated reporting is adopted, the integrated reporting framework is not fully implemented by firms to the

extent that is required thus resulting in an adverse impact on the quality of this reporting.

Eccles and Serafeim (2014) made the following concise conclusion about the state of integrated reporting in support of the findings of (de Villiers et al., 2016):

> *'The main critical issues on the quality of integrated reporting highlighted by the literature are: the absence of connectivity among strategy, the business model, performance and future outlook, due to the poor narrative flow and the limited use of diagrams and maps; the presence of an informative gap in areas such as governance, stakeholder engagement, and the materiality process; the inadequate description of the business model; and internal auditing, completeness of information, and limited third-party verification'*
>
> (Eccles and Serafeim, 2014)

The overall findings thus show that the quality of integrated reports is generally low. Firms widely apply the Integrated Reporting Framework, but they fail to substantiate the content with information about the fundamental aspects of the value-creation process such as the business model, the use of capitals and risks facing the entity (Pistoni et al., 2018). This suggests that the focus of companies is on adhering to the form of framework of integrated reporting framework without sufficient consideration to the required substance and the key objectives of the framework.

Pistoni et al. (2018) have further noted that some companies openly stipulated the application of the IR framework, but then only partially apply it. The impact of this is that the interest of practitioners, managers, and academics has shifted from the type and quantity of information included in the integrated reports towards the quality of these reports (Pistoni et al., 2018).

Eccles et al. (2015) has argued that the number of firms actually practicing integrated reports does not matter as much when the actual quality of those reports is not satisfactory.

In 2012, Ernst & Young launched the Excellence in Integrated Reporting Awards in South Africa with the aim of analysing the state of integrated reporting in South Africa by conducting surveys into the quality of the integrated reports of the JSE Top 100 companies (Ernst & Young, 2017). Key shortcomings in the process to deliver quality

integrated reports are reported as well as recommendation to companies as to how they can improve their disclosures.

The diagram below from the 2017 Excellence in Integrated Reporting Awards report (Ernst & Young, 2017) shows the trends in the ranking of integrated reports with a small increase in the number of firms whose integrated reports have been ranked as "Good" or "Excellent":

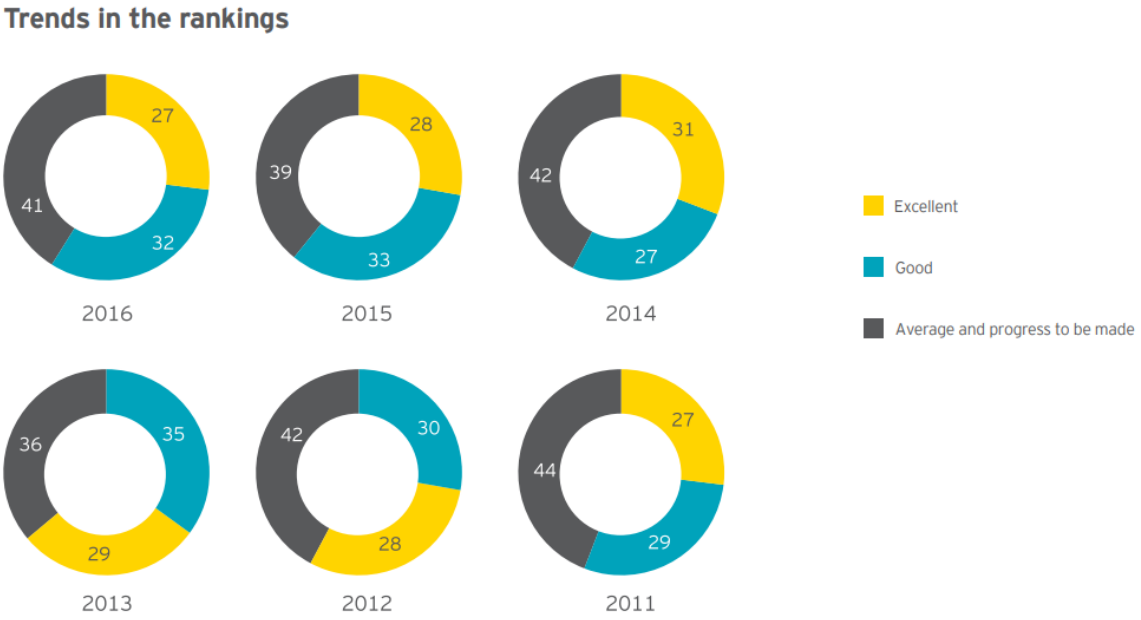

Figure 4: Trends in Integrated Reporting

The key areas showing improvement are the layout of the integrated report in a way that is conducive to easy reading, the use of infographics to illustrate business models and the increased disclosure of inputs, outputs and outcomes of business processes (Ernst & Young, 2017).

Consistent with the findings of de Villiers et al. (2016), the adjudicators of the survey found that many firms who declared to be producing an integrated report were displaying limited compliance to the framework (Ernst & Young, 2017). These findings suggest that the form of the integrated report took preference to the actual application of the essence and objective of the framework.

Other key issues found from the survey was the emphasis on the financial performance of the firm as opposed to the whole process of value-creation through the six capitals, corroborating the findings of Velte and Stawinoga (2017) who

suggested that preparers practise selective application of integrated reporting . Finally, disclosures relating to governance and remuneration continue to be largely driven by compliance in line with the legislative prescriptions relating to these disclosures, as opposed to the requirements of the integrated reporting framework (Ernst & Young, 2017).

In 2016, the Association of Certified Chartered Accountants collaborated with the IIRC to review 41 corporate reports by participants in the <IR> Business Network (Associate of Certified Chartered Accountants, 2016). The aim of the report was to examine the reporting practices of organisations.

The report found that overall, there was a high level of reporting quality with the highlight that 71% of the companies reviewed provided good insight into the organisation's strategy and 66% of the reports explained well how the organisation creates value for itself and others.

For each of the 41 reports reviewed, the adjudicators rated the quality of integrated reports each aspect of the integrated reporting framework. The findings highlighted two key areas where the quality of integrated reports was challenged: Firstly, consistent with the findings of the Excellence in Integrated Reporting Awards, reports struggled to explain the role that those charged with governance play in the preparation of the integrated reporting process.

Secondly, there was lack of consistency with prior reports issued and comparability with other organisations. This reduces the usefulness of the information as users of the report do not have a suitable benchmark with which to analyse the information presented.

As a whole, the quality of integrated reports being prepared appears to display a level of quality that falls short of what is expected by the IIRC and the users of the report. This is mainly due to limited application of the requirements of the integrated reporting framework, and somewhat of a mismatch between the requirements of the integrated reporting framework and the information needs of users.

2.2.3 Influences of integrated reporting quality

There are many different factors which potentially contribute to the poor quality of integrated reporting. Some of these factors relate to the broader area of financial and

non-financial reporting which will now be explored. Company-specific factors will be discussed in the next section

Pistoni et al. (2018) have outlined three major theories that explain the quality of extent of integrated reporting:

Firstly, they explain that one of the earliest studies into voluntary disclosure (such as integrated reporting) is underpinned by the proprietary theory. The proprietary theory states that there is no fundamental distinction that is drawn between a legal entity and its owners (Bird, Davidson, Smith & Smith, 1974), i.e. the entity does not exist separately from the owners for accounting purposes. Dye (1985) has used this theory to propose that firms will intentionally limit their voluntary disclosures due to disclosure costs such as data and information management, elaboration and communication, and the diffusion of strategic information which can give competitors an advantage.

Pistoni et al. (2018) have more recently supported these findings by naming the request of information that is too confidential, technical issues in providing this data, and the large amount of resources needed as major drawbacks against full quality disclosure. In conclusion, disclosure of information surrounding business processes that are fundamental to a firm is often sensitive and the measurement of this information can be both resource-intensive and expensive.

Secondly, Watts and Zimmerman (1986) have used to the political cost hypothesis to explain the nature of voluntary disclosure. The political cost hypothesis postulates that a firm operates in society based on upon explicit and implicit contracts with individuals and groups. These groups include government, employees, consumers, special interest groups, and the public in general. Firms thus avoid disclosure of information in order to avoid the attention of politicians and regulators and to avoid political attacks (Watts & Zimmerman, 1986).

Lastly, the agency theory, described by Ross (1973) states that where a person or entity (the ‘agent’), who is able to make decisions on behalf of, or that impact, another person or entity: the ‘principal’, a dilemma exists in circumstances where the agent is motivated to act in his own best interests, which are contrary to those of the principal (Ross, 1973).

This leads to the idea that there will often be a divergence between shareholder demand for information and managerial disclosure incentives as explained above by Dye (1985) and Watts and Zimmerman (1986). Managers are thus less inclined to disclose a lot of information because this enables their principals and other stakeholders to hold them accountable in more areas for which they are responsible (Nagar, Nanda, & Wysocki, 2003).

For integrated reporting to be implemented correctly, it has to be as a result of integrated thinking (International Integrated Reporting Council, 2013). This type of reporting is based on internal management and a lack of this culture within organisations may inadvertently affect the quality of the integrated reports stemming from them (Velte & Stawinoga, 2016).

The IIRC (2016) surveyed executives globally with the aim of understanding trends and challenges in measuring, disclosing and understanding the value that companies create. The findings showed that the main barriers to integrated reporting are the limitations associated with internally generated information. This echoes the remarks by Pistoni et al. (2018) into the large investment in financial and technological resources required to obtain all the information required to make adequate disclosure.

Mervyn King (Ernst and Young, 2016) suggested that the biggest challenges being faced by firms is the lack of shift in the mind-set from the maximisation of shareholder wealth to the long-term health of companies. If the managers of companies practice integrated thinking in their everyday business decisions by aiming to create sustainable value for all stakeholders, then it would be easier for them to transcribe the value creation story on an integrated report.

Conclusion

The findings of the literature show that the mere application of integrated reporting without consideration to the quality of the information being reported will impede the ability of integrated reporting to achieve its purpose. The very definition of integrated reporting as well as the guidance presented in the Integrated Reporting Framework show that firms have to make significant effort to prepare a report that achieves a quality that will best serve by its users. The state of the quality of integrated reports being prepared shows that there has been good progress but there still is room for improvement. The key causes of the suboptimal quality of integrated reports are the

reluctance of firms to fully commit to presenting all the information required of them, and a lack of fully embracing integrated thinking as a precursor to a good integrated report.

2.3 Company Characteristics Influencing Integrated Reporting Quality

Introduction

Following the implementation of integrated reporting, fundamental questions were raised about the impact of corporate characteristics on integrated reporting quality (Melloni, 2015). Section 2.2 explored the broad characteristics that influenced the quality of integrated reporting. There has, however, been significant literature dedicated to characteristics of individual firms that may affect the quality of the integrated report they prepare.

This section explores the key characteristics identified that could have such an impact on a firm's integrated report. The characteristics that will be explored are size, industry, profitability, financial leverage, board size, board independence, board diversity, shareholder dispersion, growth opportunities, and organisational complexity. These are the characteristics that have been found to be relevant in the quality of corporate disclosure in the extant literature.

2.3.1 Size

Wild & Van Staden (2013) conducted a study of the integrated reports of companies on the Integrated International Reporting Council Emerging Examples Database and found that larger firms produced integrated reports with a higher level of quality than smaller firms. This was attributed to the fact that these larger firms were more likely to achieve the Integrated Reporting Framework's Content Elements and they applied the six capitals model better. Sierra-García, Zorio-Grima, & García-Benau (2015) later corroborated these findings by concluding that larger firms are also more likely to practise integrated reporting.

A reason for this positive relationship was proposed by Oliveira, Lima Rodrigues, and Craig (2010) who argued that larger firms are more likely to have stronger financial, organisational and human resources that are conducive to voluntary disclosures such as integrated reporting. Smaller companies with less of the resources required to measure, account for and report the additional financial and non-financial information required for integrated reporting would then be less able to produce reports of the same quality as those of larger firms.

Additionally, a study of the online news reported on listed Portuguese firms by Branco and Rodrigues (2008) found that larger firms are subject to a higher degree of media coverage than smaller firms. It is argued that this is as a result of their higher visibility due to the scope of their operations (Liu & Anbumozhi, 2009). An earlier study of Canadian companies also confirmed that firm size can be used as a proxy for political visibility and social pressure due to higher public expectations (Bewley & Li, 2000). The result of this is that larger firms are more compelled to have a higher quality of disclosure (Vanstraelen, Zarzeski, & Robb, 2003) in order to demonstrate the level of contributions they are making to stakeholders and their interests.

On a similar thread, Chiu and Wang (2015) investigated the quality of disclosures made by 246 listed companies in Taiwan and argued that firm size represents some aspect(s) of 'stakeholder power, strategic posture, and economic resource'. The study proposed that stakeholders within bigger firms thus wield more power to pressure the firms to provide adequate disclosure in good quality.

Larger firms also differ from smaller firms in that they are more likely to have complex operating structures across various geographical markets which requires a more extensive use of capital markets (Lee & Yeo, 2016). This places a greater importance on the quantity and quality of information that is disclosed through the integrated report as it will have an impact on the firm's interactions with its various stakeholders (García-Sánchez, Rodríguez-Ariza, & Frías-Aceituno, 2013).

On the contrary, a study by Hallgren and Johansson (2016) found that larger firms actually provide corporate reporting disclosures with a lower level of quality. They provided two possible reasons for this – firstly that larger firms employ perception management techniques by making it more difficult to read specific information on which they may not want particular attention. The second possible reason is that larger firms are more likely to have complex operations which makes them difficult to effectively communicate through an integrated report. It is worth noting, however, that Richards and van Staden (2015) investigated the readability of corporate reporting disclosures and found no significant relationship with size therefore challenging the validity of the second proposed reason.

Other studies are indifferent on the issue such as Roberts (1992), who investigated the corporate social responsibility disclosure of firms found no relationship between

the size of a firm and the quality of the disclosure given. This was recently reaffirmed by Lai, Melloni, and Stacchezzini (2016) who also failed to find a significant relationship between size and the quality of integrated reporting.

In conclusion, the majority of studies observe a positive relationship between firm size and the quality of their corporate disclosures due to greater financial resources, and a stronger expectation placed on them by stakeholders. Contradicting studies argue that attempts to reduce this expectation place on them as well as the inherent complexity of larger firms will result in a lower level of quality.

2.3.2 Industry

Multiple studies have concluded that a firm's industry is a determinant of the quality of their disclosures (Bouten & Everaert, 2015; Hou & Reber, 2011; Wanderley, Lucian, Farache, & de Sousa Filho, 2008). Wild and Van Staden (2013) focused on integrated reporting and concluded that a firm's industry is a determinant of how well it will achieve compliance with the Integrated Reporting Framework's Content Elements.

The most prominent reason for the differences in disclosure quality is that there are differences in the reporting behaviour of, and market response to, firms in in certain sensitive industries (Bachoo, Tan, & Wilson, 2013). Some industries, such as the mining industry in South Africa, have regulations which stipulate the kind of information they should disclose such as mine productivity and safety statistics (PricewaterhouseCoopers, 2017).

This argument by Bachoo et al. (2013) is, however, not fully supported by Federica, Andrea, and Pasquale (2016) who investigated the early adopters of integrating reporting in the South African mining industry to find that there is no homogenous reporting behaviour among companies in the sector.

Another study performed by Cho, Freedman, and Patten (2012) who investigated the Fortune 500 companies in the United States and concluded that firms from industries that are environmentally sensitive make a greater effort in their disclosure of information than firms in industries with less exposure.

An explanation for certain industries disclosing more than others is that highly visible companies are more subjected to pressure from the media, NGOs, and regulators regarding social and environmental issues (Ali, Frynas, & Mahmood, 2017). The result

of this is that these companies have to provide good quality disclosure on these issues in order to show their responses to these issues.

An extreme view of the above studies was taken by Mio and Fasan (2014) who concluded that a firm's industry is the determinant of the quality of its integrated report, not the firm itself.

Contrary to these findings, a study of the annual reports of Saudi Arabian companies conducted by Alsaeed (2006) found an insignificant relationship between a firm's industry and its level of disclosure. da Silva Monteiro and Aibar-Guzmán (2010) affirmed these findings when they conducted their own study of 109 large firms in Portugal to also conclude that there is a lack of a significant relationship.

Perhaps the most amicable conclusion was derived by Lai et al. (2016) who found a limited effect of a firm's industry on the quality of its integrated report. Lai et al. (2016) conducted the study across ten industries and they only observed a significant relationship between the industry and the quality of the integrated reports in three industries, namely 'basic materials', 'financials', and 'industrials'. These industries were concluded to be the ones most likely to practise integrated reporting.

The studies above do not show a conclusive relationship between corporate reporting quality and industry. Several studies argue that certain industries have mechanisms which conducive to good corporate reporting disclosure such as legislative reporting requirements and stakeholder pressure. Contradicting studies did not observe a significant relationship between these factors.

2.3.3 Profitability

Firms that are experiencing weak performance, such as low profitability, may choose a communication strategy that is characterised by deflecting the focus on the negative issues and highlighting other achievements and accomplishments in their reports (Lindblom, 1994).

The implication of this is that firms with low profitability will direct attention to improving the quality of their integrated reports as a positive communication strategy. This theory was more recently confirmed by Campbell, Chen, Dhaliwal, Lu, and Steele (2014) who found an association between the level and quality of disclosure and a variety of risk factors in addition to low profitability such as high leverage.

Frias-Aceituno et al. (2014) investigated whether the decision to practise integrated reporting was affected by a firm's profitability but did not find a significant relationship. This suggests that firms may not actually use integrated reporting with the intention of drawing attention to the positive aspects of their firms (Mahoney, Thorne, Cecil, & LaGore, 2013). Firms with low profitability therefore do not face any legitimacy threats arising from their weak performance (Lai et al., 2016).

An opposing view was suggested by Hallgren and Johansson (2016) who conducted a study of European gas and oil companies. They came to the conclusion that profitable firms have a higher level of disclosure than non-profitable firms. The results of this study may be severely limited by the fact that only one industry was looked at which may hide any industry-specific effects.

The results of such a limitation were shown during a similar study conducted by Perego, Kennedy, and Whiteman (2016) who looked at the integrated reports of various companies that early-adopted integrated reporting. Their results show that the relationship between integrated reporting adoption and quality is significant for the healthcare and the information technology sectors only, not the whole sample.

Frias-Aceituno, Rodríguez-Ariza, and Garcia-Sánchez (2014) had earlier conducted a more extensive study than Hallgren and Johansson (2016) with a focus on integrated reporting by investigating 1590 international companies across all sectors. They corroborated the later study by finding a positive relationship between a firm's profitability and the quality of its integrated report.

Firms that are experiencing a low level of performance will create a bias in the message they communicate in their integrated reports by carefully choosing the content they insert in the report, the language they use, as well as the verbal tone (Abu Bakar & Ameer, 2011). The result of this is that lower performance is associated with "higher value of both quantity and thematic content manipulation and syntactical reading ease and verbal tone manipulation" (Melloni et al., 2017).

A potential explanation of the positive relationship between profitability and the quality of integrated reporting is that profitable companies can devote more of their resources to the integrated reporting process (García-Sánchez et al., 2013). This would also allow the reporting firm to publicize their profitability thereby improving their corporate image.

There is one study which found an insignificant relationship between profitability and the quality of disclosure. In a recent paper, Lim, White, Lee, and Yuni (2017) investigated the relationship in companies listed on the Australian Stock Exchange and they did not find significance using return on equity and return on assets as a proxy for profitability. A significant limitation of this study is that they only studied companies in the biotechnology sector which may distort the results as discussed above.

Overall, the above studies point to two potential effects of profitability on the quality of corporate disclosure – Either the quality increases with decreasing profitability due to an attempt by firms to deflect focus from the negative financial performance, or the quality also decreases due to a lack of financial resources to fund adequate reporting mechanisms.

2.3.4 Financial Leverage

There are conflicting studies on the interaction between a firm's leverage and the quality of integrated reporting, or broadly, corporate reporting. An early paper that is often referred to is a study done by Leftwich, Watts, and Zimmerman (1981) who concluded that there is an increase in the demand for information from firms as debt levels in increase due to more stringent monitoring requirements.

Prencipe (2004) performed a later study of the reports of 64 companies listed in Italy and the studies were in line with the previous findings. It was found that firms facing greater monitoring from shareholders and debtholders as their leverage increases tend to disclose more financial and nonfinancial information.

It has been studied and confirmed more recently that lending institutions do require a wider variety and more comprehensive information from firms which results in particular reporting strategies that will increase the quality of the information (Lai et al., 2016). A potential reason is that firms try to show their future earnings potential to shareholders and debtholders as a way of convincing them to retain their capital in the business (Abeysekera, 2011; White, Lee, Yuningsih, Nielsen, & Nikolaj Bukh, 2010).

Abhayawansa and Guthrie (2016) conducted a study into the intellectual capital disclosure of firms and they concluded that firms with high leverage tend to disclose

more intellectual capital information as a way of communicating value that may not otherwise be adequately reflected in the financial statements. Firms with more debt will therefore increase the quality and quantity of disclosures over time to continue reassuring shareholders and debtholders (S. J. Lim et al., 2017).

Firms do not improve the quality of their disclosures in response to liquidity risk only, rather it is linked to several risk factors such as declining profitability and weak growth forecasts (Campbell et al., 2014).

Lee and Yeo (2016) conducted a study of the integrated reports of listed companies in South Africa and they found that better quality of disclosures arising from integrated reporting reduces agency costs and information asymmetry between management and providers of external financial capital. Shareholders and debtholders are better able to monitor the risk associated with their capital when adequate disclosure is provided about the firm's activities which them enables them to hold management accountable.

Orens and Lybaert (2010) investigated the ways in which sell-side financial analysts use non-financial information when making decisions about the company and they found that analysts tend to increase their use of non-financial information as financial leverage increases. This increases the extent to which firm characteristics such as debt impact the disclosure decisions of firms (Clarkson, Li, Richardson, & Vasvari, 2008; Mahoney et al., 2013).

There have been some contracting studies to the findings discussed above. Barnea and Rubin (2010) conducted a study of 3000 of the largest firms in the United States and they found a negative relationship between leverage and level of CSI disclosure. This could be because information contained in CSI disclosures may not be directly relevant to a firm's ability to generate enough cashflows to repay providers of capital.

Mahoney et al., (2013) did not find evidence of the impact of leverage on the adoption of integrated reporting in US companies. Of the companies that do practise integrated reporting, Wild and Van Staden (2013) concluded that a firm's leverage is not associated with how well it achieved the guiding principles provided for in the Integrated Reporting Framework.

Thus the majority of studies show a positive relationship between a firm's leverage and the quality of its corporate disclosure. This relationship is mostly attributable to more stringent financial and non-financial disclosure requirements by lenders when financial leverage is high. Opposing studies question the relevance of the broader ESG disclosure to the assessment of the creditworthiness of the borrower.

2.3.5 Board Size

The relevance of board size to the quality of corporate reporting disclosure stems from the observation that the quality of a firm's corporate governance plays a big role in its disclosure qualities, and more specifically, its decision to practise integrated reporting (Izzo & Fiori, 2016). This relationship is observed because the way a firm is governed not only influences its disclosure decisions, but it also ultimately affects the information asymmetry between management and investors (R. Bushman, Chen, Engel, & Smith, 2004; Chan, Watson, & Woodliff, 2014).

Sartawi, Hindawi, Bsoul, and Ali (2014) looked at the integrated reports of 103 companies listed on the Amman Stock Exchange in Jordan and they observed a positive relationship between board size and the level of disclosure. They attributed this result to the role that board members play in mitigating the effects of information asymmetry and the agency problem (Cormier, Ledoux, & Magnan, 2011).

Larger board are more effective at dealing with these issues because they add to the diversity of perspectives by providing a greater variety of choices and solutions to the decision-making processes of the board (Schweiger, Sandberg, & Ragan, 1986). This variety then better enables the board to make decisions that help them achieve their goals and objectives on behalf of shareholders (Eisenhardt, 1989).

Integrated reporting in particular requires the input of directors with different expertise and specialisations in order to achieve the Integrated Reporting Framework's *Guiding Principles* and *Content Elements* (Frías-Aceituno, Rodríguez-Ariza, & García-Sánchez, 2013) which suggests that larger boards are then able to produce integrated reports of a better quality.

From a balance of power point of view, Kaymak and Bektas (2008) have found that larger boards are more difficult to control by the chairman, hence smaller boards are more likely to produce better quality disclosure as individual agenda are less likely to

succeed. Following on this argument, it has been found that boards of a bigger size disclose more tactical internal capital and more strategic human capital (Abeysekera, 2011).

There do not appear to be any studies that have observed a negative relationship between board size and the level or quality of a firm's disclosure, however, there were some studies that found an insignificant relationship. Rao and Tilt (2016) analysed the CSR disclosure of 150 firms listed on the Australian Stock Exchange and they did not find a significant relationship. Mio and Fasan (2014) also found an insignificant relationship when they focused on the integrated reports of companies on the IIRC Pilot Programme.

2.3.6 Board Independence

Pavlopoulos, Magnis, and Iatridis (2017) studied a sample of integrated reports from 82 international companies from 2011 to 2015 and their findings indicated that the higher the percentage of independent directors on a firm's board, the more likely it is to be aligned with the IIRC Framework disclosure principles. This was contrary to an earlier study conducted by Mio and Fasan (2014) who performed a similar study on international companies to find an insignificant relationship.

The findings are also mixed when it comes to broader CSR disclosures. Post, Rahman, and Rubow (2011) analysed the CSR disclosures of 78 Fortune 1000 companies in the United States and they found a positive relationship between the proportion of independent directors and the quality of the related disclosures. Prado-Lorenzo, Gallego-Alvarez, and Garcia-Sanchez, (2009) had performed a similar study and found the same significant relationship.

Some academics believed that the influence of independent directors on CSR disclosure may vary by sector but Khan, Muttakin, and Siddiqui (2013) and Lattemann, Fetscherin, Alon, Li, and Schneider, (2009) both observed a positive relationship in all sectors of multiple developing countries.

Contrary to this, a study of 246 listed companies in Malaysia was conducted by Haniffa and Cooke (2005) they observed a negative relationship between board independence and CSR disclosure quality. In order to balance the scales by considering developed countries as well, Michelon and Parbonetti (2012) investigated

the boards and sustainability disclosures of companies in the United States and Europe and they found an insignificant relationship. (S. J. Lim et al., 2017) also failed to find a significant relationship when they observed CSR disclosures of companies listed on the Australian Stock Exchange.

The positive relationship observed could be explained by independent directors' role as internal corporate governance mechanisms which look after the interests of shareholders and other stakeholders (Jizi, Salama, Dixon, & Stratling, 2014). Independent directors are also able to keep executive directors accountable for their actions in order to pursue the interests of all stakeholders as they do not have any material interest in the activities of the companies they serve (Fuente, García-Sánchez, & Lozano, 2017).

Overall, the role that independent directors play in monitoring and controlling executive directors (Ahmed, Hossain, & Adams, 2006) appears to have positive consequences for the quality of disclosures.

Researchers who do not observe a positive or a significant relationship argue that independent directors do not know the company well enough to influence the quality of its disclosures and they lack suitable training in social and environmental issues as they do not normally comprise their responsibilities (Fahlenbrach, Low, & Stulz, 2010).

2.3.7 Board Diversity

Boards generally work in groups when executing their functions and variation in the composition leads to an increase in the skills, abilities, knowledge and information of the team as a whole (Nielsen & Huse, 2010).

Rose (2007) studied the effects of board diversity using listed Danish firms as a sample and she argues that diversity among members of the board has the potential to impact financial performance and reporting. She argued that this influence exists because board diversity enhances the performance and discussion of the whole group as each board member comes contributes a different perspective to the firms' activities, including reporting (van Knippenberg, De Dreu, & Homan, 2004).

Homogeneous boards, on the contrary, are more likely to have similar perspectives and views which tend to encourage conformity and reluctance to new initiatives (Miller & del Carmen Triana, 2009) such as integrated reporting.

Of the studies performed on the association between board diversity and corporate disclosure, most of them have focused on the nationality and gender of the directors (Prado-Lorenzo & Garcia-Sanchez, 2010). There is, however, room to investigate a wider array of less visible traits such as level of education, occupational background, and industry experience (Kang, Cheng, & Gray, 2007)

Rao and Tilt (2016) studied the CSR disclosures of 150 companies listed on the Australian Stock Exchange over a three year period to investigate the effects of corporate governance (particularly board diversity) on CSR reporting. Their results showed that diverse boards perform better on CSR reporting when compared to homogeneous boards.

Abdul Rashid, Kamil Ibrahim, Othman and Fong See (2012) had contradicting findings when they studied the intellectual capital disclosures of 130 Malaysian firms. They did not find a significant relationship between the level of disclosure and board diversity. The difference in the results may be by virtue of the limited scope of the latter study which only focused on intellectual capital disclosure and not sustainability disclosure as whole.

2.3.8 Shareholder Dispersion

The agency theory proposes that there will be agency conflict between the shareholders and management due to the separation of ownership and control (Jensen & Meckling, 1976). The agency conflict is likely to be more pronounced the more widely dispersed the ownership of shares is (Fama & Jensen, 1998).

Craswell and Taylor (1992) argued that management will, in an effort to diffuse this agency conflict, disclose more information to demonstrate to shareholders that they are acting in their best interests thus leading to a positive relationship between shareholder dispersion and disclosure quality.

Zeckhauser and Pound (1990) conducted a study on the ability of shareholders to monitor companies and concluded that a dispersed ownership structure lacks in its

monitoring capability when compared to a concentrated ownership structure due to the relatively low ownership stake, thus necessitating the need for good disclosure quality. Burkart Panunzi (2006) confirmed these findings in a later study that concluded that large shareholders possess significant monitoring power and management influence.

On the contrary, Barako Hancock and Izan (2006) argue that the lack of shareholder power associated with shareholder dispersion results in information asymmetry and the shareholders' inability to influence the company's reporting practices thus inhibiting any possible influence on the integrated reporting quality.

An alternative view to the information asymmetry faced by shareholders in a widely dispersed ownership structure was presented by García-Meca and Sánchez-Ballesta (2010) who proposed that management will still try and reduce the agency costs associated with the information asymmetry by making more information available to shareholders in order to avoid adverse shareholder reactions.

Moreover, Liu and Anbumozhi (2009) submit that where shareholder dispersion is high, management intend on attracting many investors and improving the level of disclosure quality is an effective way of achieving this.

The effects of information asymmetry may affect all investors and this has a material impact on their investment decisions (Slangen & van Tulder, 2009) by hampering their ability to process the information and disclosures that are presented (Abdioglu, Bamiatzi, Cavusgil, Khurshed, & Stathopoulos, 2015).

Of the empirical studies, Juhmani (2013) conducted a study of the reporting practices of firms listed on the Bahraini Stock Exchange and a positive relationship was observed between shareholder dispersion and the level of disclosure.

Conversely, Said, Hj Zainuddin and Haron (2009) studied the CSR disclosures of companies around the world and found no significant relationship between shareholder dispersion and the level of disclosure. Similarly, Eng and Mak (2003) conducted a similarly study to find no relation between shareholder dispersion and the level of disclosure.

2.3.9 Growth Opportunities

Maniora (2017) conducted a study of both the integrated reports and sustainability reports of companies around the world and the findings showed that companies that practise integrated reporting had a higher market-to-book ratio, suggesting that they have greater growth opportunities.

A classic theory for this relationship by Smith and Watts (1992) suggests that a high market-to-book ratio indicates that a company is capable of generating large revenues in the future. This situation is, however, indicative of information asymmetry since the directors in a high-growth company have inside knowledge about the investment that will result in this growth, while other stakeholders don't (Smith & Watts, 1992).

A situation characterised by information asymmetry is not advantageous for a firm in a growth phase (Prado-Lorenzo & Garcia-Sanchez, 2010) therefore the most likely result is that firms will disclose a greater volume of information in better quality in order to reduce this problem of information asymmetry (García-Sánchez et al., 2013)

A high-growth firm increasing the level and quality of its disclosures will result in it lowering its cost of external financing through the lower information costs incurred by potential providers of capital (Verrecchia, 2001) hence increasing its growth opportunities (R. M. Bushman & Smith, 2001)

The same positive relationship was found with regards to sustainability reporting disclosure by Battista (2017). Prado-Lorenzo et al., (2009) also observed a positive relationship with regards to CSI disclosures but it was not significant in econometrics terms, while Debreceny, Gray, and Rahman (2002) observed a negative relationship.

2.3.10 Organisational Complexity

Firms with high organisational complexity are characterised by more complex operational environments which results in similarly complex information environments (Dmour, Love, & Debei, 2016). These complexities in the information arise as a result of the differences across the organisation's operations such as geographic dispersion, multiple currencies, high auditing costs, differing legal systems and language differences (R. Bushman et al., 2004).

A feature that adds to the complexity of firms is the operations through multiple segments or divisions in order to better manage different business lines or functions. The information systems in such an operation are very complex which results in

information asymmetries within the firm and for external stakeholders of the firm (Habib, Johnsen, & Naik, 1997).

Although these external stakeholders have long raised concerns that traditional reporting was insufficient to meet their needs (Bushman & Smith, 2001), these concerns are especially amplified in firms with high organisational complexity (Aboody & Lev, 2000) for the reasons expressed above.

The organisational complexity negatively affects stakeholders by increasing their efforts and costs of analysing the firm (Barth, Kasznik, & McNichols, 2001) due to the inherent communication inefficiencies with the firms. These stakeholders therefore require extensive information from the firms themselves in order to effectively analyse the firm.

In addition to the inherent inefficiencies, stakeholders also have limited processing and capital capacity because they are not privy to the inside information that management have access to (Chen, Cohen, Dong, & Lou, 2012).

Lee and Yeo (2016) conducted a study of the impact of integrated reporting on firm valuation by studying the integrated reports of listed companies in South Africa. Their results showed that complex firms characterised by high intangible assets, multiple business segments, and a big size employ integrated reporting. They argue that this may be as a result of a need to improve the information environment for the benefit of organisation and stakeholders.

There do not appear to be any studies done focusing directly on the impact of organisational complexity on integrated reporting. The findings above do, however, suggest a relationship that may be significant due to the benefits that can obtained from practising integrated reporting.

2.3.11 Other characteristics

Lai et al. (2016) conducted a review of 44 empirical studies on integrated reporting and investigated the potential relationship between a firm's Bloomberg ESG disclosure score and the quality of their integrated reporting disclosure. The argument made was that firms who had received a low ESG disclosure score would use integrated reporting

as a way of repairing their corporate image. The argument was rejected as a significant association was not found.

The association between a firm's region and the quality of its integrated report was also investigated by Lai et al. (2016) in this study. The rationale is that different regions would be associated with different corporate behaviours. There was no significant association observed for this variable.

Conclusion

There appears to be significant relationships observed between the quality of integrated reporting and multiple firm characteristics discussed in this subchapter. As the different studies explored here covered heterogeneous samples with varying methodologies, inconclusive results were found within each characteristic investigated.

3. METHOD

3.1 Introduction

The purpose of this dissertation is to investigate whether there is a relationship between a company's characteristics and the quality of the integrated report it prepares. It has been noted from the studies in section 2.3 that companies with different characteristics tend to issue integrated reports with different levels of quality. This study thus aims to determine if the corporate characteristics of individual firms influence the quality of the integrated report.

Furthermore, this study aims to determine which specific measures of integrated reporting quality are affected by these corporate characteristics.

Both these research questions can be expressed in the following hypothesis:

> H_0: There is no association between a company's characteristics and the quality of its integrated report
>
> H_1: There is an association between a company's characteristics and the quality of its integrated report

The remainder of this chapter will outline the considerations and methodologies that were followed the test this hypothesis.

3.2 Research Paradigm

The selection of a research paradigm is one of the most critical decisions in answering a research question as it determines the direction of the methodology (Mackenzie & Knipe, 2006). A positivist paradigm was chosen to answer the research questions in this study. A positivist approach is appropriate because it is best used when the aim of research inquiry is to "collect and examine data as a means to verify hypotheses as fact and/or laws" (Manning & Stage, 2015). As discussed in section 3.1, the aim of this dissertation is to investigate the relationship between integrated reporting quality and corporate characteristics, thus making the positivist approach appropriate.

The positivist paradigm will best produce an outcome that consists of explanations as to why the relationships between variables exist and generalisations that can be applied to entire populations with the aim of predicting the relationships between these variables (Lincoln, Lynham, & Guba, 2011). The relationships between corporate

characteristics and integrated reporting quality will be investigated by dissecting the components that make up the quality.

This paradigm is further characterised by statistical analysis which is performed in order to express the relationships that exist between the variables (Gall, Gall, & Borg, 2007). This is important for the research questions being investigated in this study as the independent and the dependent variables that are being considered are numerical in nature and thus require statistical analyses in order to make meaningful conclusions therefrom.

3.3 Research Population and Sample

The title of the dissertation “Do Company Characteristics Influence the Quality of Integrated Reporting? A Study of South African JSE Top 100 Listed Companies.” defines the companies which comprise the population of the study i.e. the JSE Top 100 companies, ranked by market capitalisation, listed on the Johannesburg Stock Exchange (JSE) Limited.

All 100 companies that comprise the population were selected as part of the sample in order to maximise the reliability of the statistical outputs and the conclusions we can infer from the results and outputs. The sample of the study is therefore equal to the population. The companies that form part of this study are listed in appendix A.

Due to the availability of the latest Excellence in Integrated Reporting Awards report, from which the dependent data was obtained (discussed in section 3.5) all the data measurements for the independent variables and the integrated reports studied relate to the latest year-ended on or before 31 December 2016. The 100 companies used in the study account for 95% of the market capitalisation of the JSE at 31 December 2016 (Ernst & Young, 2017).

3.4 Research Design

This section will describe the research model employed to test the null hypothesis, as well as the dependent and independent variables that form part of the model.

3.4.1 Research Model

Given that the aim of the study is to determine the impact that the independent variables have on the dependent variables, a linear regression is an appropriate method to investigate the relationship (Poole & O ’farrell, 1971). This is the same

method used in a similar study conducted by Chiu & Wang (2015) who looked at the determinants of social disclosure quality in Taiwanese firms.

The linear regression in this study will take the form of a multivariate multiple linear regression. The regression is multivariate as there are more than one dependent variables and it is multiple as there are more than one independent variables (Hair, Black, Babin, Anderson, & Tatham, 2006).

The model will regress ten independent variables (company characteristics) against four dependent variables (measures of integrated reporting quality).

The multivariate multiple linear regression model is expressed in the form of the matrices in *Equation 1* below (Iowa State University, 2011; Stata Corp LLC, 2017):

$$\mathbf{Y = XB + E}$$

where

$\mathbf{Y}$ = [*Value Creation, The Capitals, Guiding Principles, Content Elements*] $\in R^{nxm}$

$\mathbf{y_k} = (y_{1k}, \ldots, y_{nk})' \in R^n$

$\mathbf{X}$ = [1_n, *Assets, ROE, PE Ratio, DE Ratio, Complex, Board Size, Board Indep, Board Div, SH Dispersion, Sector*] $\in R^n$

$\mathbf{x_j} = (x_{1j}, \ldots, x_{nj})' \in R^n$

$\mathbf{B} = [b_1, \ldots, b_m] \in R^{(p+1)\times m}$

$\mathbf{b_k} = (b_{0k}, b_{1k}, \ldots, b_{pk})' \in R^{p+1}$

$\mathbf{E} = [e_1, \ldots, e_m] \in R^{n\times m}$

$\mathbf{e_k} = (e_{1k}, \ldots, e_{nk})' \in R^n$

Equation 1: Multivariate Multiple Regression Equation

Table 1 below provides descriptions of the variables that form part of the equations describing the model above:

Table 1: Regression Model Variables

Dependent Variables	
Y	The n x m response matrix
$\mathbf{y_k}$	The k-th response vector (n x 1)
n	The number of observations (companies) in the sample i.e. 100
m	The number of dependent (response) variables in the regression i.e. 4
Value Creation	A score out of 10 for how well a company's integrated report is able to convey how its uses its six capitals to create value for stakeholders.
The Capitals	A score out of 10 for how well a company's integrated report is able to describe each of the six capitals that form part of its value creation process.
Guiding Principles	A score out of 70 for how well a company's integrated report is able to demonstrate the use of the guiding principles in the preparation of its integrated report, namely, strategic focus, connectivity, stakeholder relations, materiality, conciseness, reliability and consistency.
Content Elements	A score out of 80 for how well a company's integrated report is able to demonstrate the inclusion of the content elements in its integrated report, namely, organisational overview and external environment, governance, business model, risks and opportunities, strategy, performance, outlook, and basis of preparation.
Independent Variables	
X	The design matrix
$\mathbf{1_n}$	An n x 1 vector of ones

$\mathbf{x_j}$	The j-th predictor vector (n x 1)
p	The number of independent (predictor) variables i.e. 10
B	The (p+1) x m matrix of coefficients
$\mathbf{b_k}$	The k-th coefficient vector (p + 1 x 1)
stdAssets	A standardised measure of the total assets of the company
ROE	The return on assets of the company, a metric that can be used to measure of profitability, measured as the ratio of net profit over total equity.
PE Ratio	Price-earnings ratio of the of company, a measure of growth opportunities, measured as the ratio of market capitalisation over net profit.
DE Ratio	The debt-equity ratio of the company, a measure of leverage, measured as the ratio of total liabilities over total equity.
Complex	The complexity of the company, measured as the ratio of intangible assets over total assets.
Board Size	The number of directors on the board of the company.
Board Indep	Board independence, the ratio of independent non-executive directors over the total number of directors on the board.
Board Div	Board diversity, the ratio of the number of female board of directors over the total number of directors on the board.
SH Dispersion	Shareholder dispersion, the percentage of shareholders with a shareholding greater than 10%.
Sector	A categorical variable for the company's sector as defined by the JSE, either Industrials, Resources, or Financials.
Error Values	
E	The n x m error matrix

e_k	The k-th error vector (n x 1)

3.4.2 Dependent Variables

The dependent variables in this study describe the measure integrated reporting quality. As will be discussed in section 3.5, the EY Excellence in Integrated Reporting methodology and results is what is used in this study to measure the quality. The nature of the methodology is that it uses the principles of the Integrated Reporting Framework to determine the measurement of quality.

The first two dependent variables, *The Capitals* and *Value Creation*, are collectively called the *Fundamental Concepts* of the Integrated Reporting Framework (International Integrated Reporting Council, 2013). These are the key concepts that underpin and reinforce the requirements and guidance within the IR Framework (International Integrated Reporting Council, 2013).

Value Creation is a measure of how well an integrated report depicts the story of how it creates value using the six capitals in the context of the company's external environment, its business model, missions and vision, risks and opportunities, strategy and resource allocation performance and outlook (International Integrated Reporting Council, 2013). Figure 1 described in section 2.1 illustrates the value creation process.

The Capitals is a measure of how well an integrated report describes all the capitals that are relevant to its business model as well as all the transformations encounter throughout the value creation process (International Integrated Reporting Council, 2013). There are six capitals which can be described by a company's integrated report:

I. **Financial capital** - The pool of funds obtained through financing available for use in the organisation)
II. **Manufactured capital** - Manufactured physical objects that are available to an organisation for production or goods or provision of services
III. **Intellectual capital** – Organisational knowledge-based intangible assets
IV. **Human capital** - People's competencies, capabilities and experience, and their motivations to innovate

V. **Social and relationship capital** - The institutions and the relationships within and between communities, groups of stakeholders and other networks, and the ability to share information to enhance individual and collective well-being

VI. **Natural capital** - All renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organization

(International Integrated Reporting Council, 2013)

Guiding Principles is a measure of how well an integrated report incapsulates the guiding principles that underpin the preparation and presentation of an integrated report, informing the content of the report and how the information is presented (International Integrated Reporting Council, 2013). The *Guiding Principles* measure is allocated a score out of 70 which comprises each of the following individual principles, each having been allocated a score out of 10 (Ernst & Young, 2017):

I. **Strategic focus and future orientation** – The ability of the integrated report to provide insight into the organization's strategy, and how it relates to the organization's ability to create value in the short, medium and long term and to its use of and effects on the capitals

II. **Connectivity of information** – The ability of the integrated report to show a holistic picture of the combination, interrelatedness and dependencies between the factors that affect the organization's ability to create value over time.

III. **Stakeholder relationships** – The ability of the integrated report to provide insight into the nature and quality of the organization's relationships with its key stakeholders, including how and to what extent the organization understands, takes into account and responds to their legitimate needs and interests

IV. **Materiality** – The ability of the integrated report to disclose information about matters that substantively affect the organization's ability to create value over the short, medium and long term.

V. **Conciseness** – The ability of the integrated report to include sufficient context to understand the organization's strategy, governance, performance and prospects without being burdened with less relevant information.

VI. **Reliability and completeness** – the ability of the integrated report to include all material matters, both positive and negative, in a balanced way and without material error.

VII. **Consistency and comparability** – the ability of the integrated report to present information on a basis that is consistent over time and in a way that enables comparison with other organizations to the extent it is material to the organization's own ability to create value over time.

(International Integrated Reporting Council, 2013)

Content Elements is a measure of how well an integrated report incorporates the content elements into the communication of how it creates value (International Integrated Reporting Council, 2013). The *Content Elements* measure is allocated a score of 80 which comprises each of the following individual content elements, each having been allocated a score of 10 (Ernst & Young, 2017):

I. **Organisational overview and external environment** – How well the integrated report answers the question: What does the organization do and what are the circumstances under which it operates?

II. **Governance** - How well the integrated report answers the question: How does the organization's governance structure support its ability to create value in the short, medium and long term?

III. **Business model** - How well the integrated report answers the question: What is the organization's business model?

IV. **Risks and opportunities** - How well the integrated report answers the question: What are the specific risks and opportunities that affect the organization's ability to create value over the short, medium and long term, and how is the organization dealing with them?

V. **Strategy and resource allocation** - How well the integrated report answers the question: Where does the organization want to go and how does it intend to get there?

VI. **Performance** - How well the integrated report answers the question: To what extent has the organization achieved its strategic objectives for the period and what are its outcomes in terms of effects on the capitals?

VII. **Outlook** - How well the integrated report answers the question: What challenges and uncertainties is the organization likely to encounter in pursuing its strategy, and what are the potential implications for its business model and future performance?

VIII. **Basis of preparation** - How well the integrated report answers the question: How does the organization determine what matters to include in the integrated report and how are such matters quantified or evaluated?
(International Integrated Reporting Council, 2013)

3.4.3 Independent Variables

The *stdAssets* variable is a measure of how large a company's operations are. Frias-Aceituno, Rodriguez-Ariza, & Garcia-Sanchez, (2013), Oliveira et al., (2010) and Wild and Van Staden (2013) have used the natural logarithm of total assets as a proxy for size. The natural logarithm is used to normalise the data where there may have been skewness due to companies having varying sizes of total assets. The natural logarithm of total assets was therefore used as a measure for size for this study.

Debreceny et al. (2002), Melloni et al. (2017), Prado-Lorenzo and Garcia-Sanchez (2010) used the market-to-book ratio to measure the growth opportunities of companies as it shows the value that the market places on the company over and above the value that is accounted for in the balance sheet. The difference between the market and book values can thus be said to account for the future earnings potential of the companies i.e. growth opportunities.

The market-to-book ratio was however, not used as a significant portion of the intangible assets (such as internally-generated intangibles) may not be accounted for. The market-to-book ratio may also distort the analysis where there are differences in the asset intensity depending on the business model of the various companies. The price-earnings ratio was therefore used as a measure of growth opportunities as it removes these biases and is represented by the *PE Ratio* variable. A relationship has been observed between price-earnings ratio and the growth prospects that a company faces (Fama & French, 2002).

DE Ratio represents the variable that measures a company's leverage. Barnea and Rubin (2010) used the debt ratio as a measure of leverage which represents the proportion of assets funded by liabilities. For this study, the debt-equity ratio was

chosen as used by Abhayawansa & Guthrie (2016) because it shows how much debt is being used to finance assets relative to the value of the equity in the company.

The complexity of a company's operations are measured by the *Complexity* variable. The complexity of operations has been shown to be correlated with the proportion of intangible assets on the balance sheet (Gu & Wang, 2005). Lee and Yeo (2016) used size and total assets as a proxy for the firm complexity. For this study, a ratio of intangible assets over total assets will be used as a proxy for firm complexity.

The *Board Size* variable measures a count of the number of directors that are appointed to the board of directors. The definition as per South Africa's Companies Act was used to qualify individuals as directors: "a member of the board of a company, as contemplated in section 66, or an alternate director of a company and includes any person occupying the position of a director or alternate director, by whatever name designated" (Parliament of the Republic of South Africa, 2008).

The *Board Indep* variable measures a count of the number of directors appointed to a board that are independent. The definition as per the King III Code on Governance (Insititute of Directors Southern Africa, 2009) was used as a basis for independence, shown below:

> *"67. An independent non-executive director is a non-executive director who: 67.1 is not a representative of a shareholder who has the ability to control or significantly influence management or the board; 67.2 does not have a direct or indirect interest in the company (including any parent or subsidiary in a consolidated group with the company) which exceeds 5% of the group's total number of shares in issue. 67.3 does not have a direct or indirect interest in the company which is less than 5% of the group's total number of shares in issue, but is material to his personal wealth; 67.4 has not been employed by the company or the group of which it currently forms part in any executive capacity, or appointed as the designated auditor or partner in the group's external audit firm, or senior legal adviser for the preceding three financial years; Chapter 2 Boards and directors 39. All rights reserved 67.5 is not a member of the immediate family of an individual who is, or has during the preceding three financial years, been employed by the company or the group in an executive capacity; 67.6 is not a professional adviser to the company or the group, other*

than as a director; 67.7 is free from any business or other relationship (contractual or statutory) which could be seen by an objective outsider to interfere materially with the individual's capacity to act in an independent manner, such as being a director of a material customer of or supplier to the company; or 67.8 does not receive remuneration contingent upon the performance of the company"

(Insititute of Directors Southern Africa, 2009)

The diversity of a company's board is measured by the *Board Div* variable. There are many different factors that can be used to measure diversity such as race, gender, age, citizenship, ethnicity and occupation. Gender proportion was chosen as the measure for the *Board Div* variable as it one of the most debated and significant issues facing modern corporations among all the diversity factors (Rao & Tilt, 2016).

The *Sector* variable is an indicator for the sector or industry within which a company categorised. Regulators, stock exchanges, and other bodies classify all companies into specific industry groups and these groups were used as indicators for sectors/industry by Bouten and Everaert, (2015), Hou and Reber (2011), Wanderley et al. (2008), Wild & Van Staden (2013). For this study, the Industry Classification Benchmark (ICB) codes adopted by the JSE (Johannesburg Securities Exchange Limited, 2018b) were used. The three sectors are stipulated below:

- SA Resources – JSE listed companies that belong to ICB Industries Oil & Gas (0001) and Basic Materials (1000)
- SA Financials – JSE listed companies that belong to ICB Industry Financials (8000)
- SA Industrials – All remaining companies, i.e.: JSE listed companies that do not belong to ICB Industries Financials (8000), Oil & Gas (0001) and Basic Materials (1000)

3.5 Data Collection Method

This section describes the procedures that were carried out to obtain the data that comprised the dependent and independent variables of this study.

3.5.1 Dependent Variables

The measurements for the dependent variables were obtained from raw score data requested from the adjudicators of the EY Excellence in Reporting Awards. The data comprises the marking plan for all the 100 companies that were ranked as part of the 2017 competition.

Below is the adjudication process that is followed to develop the mark plan as disclosed in the EY Excellence in Reporting Awards publication (Ernst & Young, 2017):

I. The mark plan is developed by three adjudicators from the College of Accounting at the University of Cape Town, in conjunction with EY's Professional Practice Group. The UCT team comprises Professors Alexandra Watson, Goolam Modack and Mark Graham.

   The mark plan is quite simple and is based on the Guiding Principles and Content Elements that appeared in the International Integrated Reporting Council's Framework (the Framework), which was issued in December 2013. A mark out of ten is awarded for each of the seven Guiding Principles (i.e. strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness and lastly consistency and comparability). Similarly, a mark out of ten is awarded for each of the eight Content Elements (i.e. organisational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook and finally basis of presentation and preparation). Marks are also awarded for the extent to which the integrated report incorporates the Framework's fundamental concepts, dealing with how value is created with reference to the six 'capitals' where relevant.

II. Each of the integrated reports of the top 100 companies is separately adjudicated by each of the three adjudicators from the College of Accounting at the University of Cape Town using the pre-agreed mark plan.

III. Where an adjudicator's ranking differs widely from the others, this is reviewed to ensure that information has not been overlooked. Often, scores may vary widely. While the adjudicators generally agree on what is good disclosure, perception of the relative importance of items may differ. Despite this, there is

a high degree of consensus among the adjudicating members' overall perceptions and recommended rankings

IV. There are three specific areas which are believed to be crucial to excellence in integrated reporting. These are, the extent to which the report has a clear strategic focus, an emphasis on value creation and a high level of connectivity between the various elements presented. These three areas are then used to identify the Top 10 integrated reports from all the companies ranked as "Excellent" and to assign them a ranking within the Top 10.

(Ernst & Young, 2017)

3.5.2 Independent Variables

Table 2 presents the description of the data collection methods for the independent variables:

Table 2: Description of Collection Methods for Independent Variables

Variable (s)	Data collection method
Assets **ROE** **PE Ratio** **DE Ratio** **Complex** **Sector**	The Bloomberg Professional Service software accessed using the Bloomberg Terminal was used to extract these variables in their raw formats. The list of the companies in the sample as well as each of these variables was inputted and the results were extracted as outputs.
Board Size	All the population integrated reports, annual reports and/or annual financial statements were inspected, and the number of directors was recorded.
Board Indep	All the population integrated reports, annual reports and/or annual financial statements were inspected, and the number of directors declared as independent was recorded.

	For a few companies which do not apply King III, the reason for the independence of all directors declared as such was considered against the standards in King III.
Board Div	All the population integrated reports, annual reports and/or annual financial statements were inspected, and the number of directors who were disclosed as female was counted. For those integrated reports where the disclosure was not made, references to the individual directors using gender-specific terms such as “male”, “Mr”, “he” or “him” were used as a proxy for the determination of gender.
SH Dispersion	All the population integrated reports, annual reports and/or annual financial statements were inspected, and the percentage of shareholders with a shareholding greater than 10% was recorded from the regulatory disclosure made on significant shareholding.

3.6 Data Analysis and Synthesis

This section will begin by describing the steps that were taken to get the data in the form whereby it is ready for statistical analysis. This will be followed by a discussion into the procedures taken to obtain an overall understanding of the data and the interaction between the variables using descriptive statistics. The assumptions that are relevant to the model used will then be laid out, as well as the steps taken to test them. Lastly, the procedures taken to test the hypothesis by analysing the data through the research model will be discussed.

3.6.1 Data Preparation

The data outputs that were received were in a raw format as described in section 3.5. The raw data was sorted and categorised in accordance with the dependent and independent variables of the data using Microsoft Office Excel.

Conditional formatting was used on Microsoft Office Excel to identify any data that falls outside the parameters of its variables e.g. a negative number for assets or a decimal number for board size. Further, a filtering function was used to identify extreme values across all the categories. Any numbers that appeared to be unreasonable were cross-referenced with the integrated report or annual financial statements for that specific company.

All blanks were investigated through cross-references to the integrated report or annual financial statements to determine if the blank was valid e.g. a blank price-earnings ratio where earnings are negative would be a valid blank. If a blank was due to missing information from the output, then the data was entered into the raw database manually.

The data was then formatted into a dataset that fit the requirements of the statistical system used to run the data analyses, namely Stata 15 by StataCorp (Stata).

The raw data is not included as an appendix as it would result in the disclosure of information disaggregated to a level that violates the confidentiality agreement with the adjudicators of the EY Excellence in Reporting Awards.

3.6.2 Descriptive Statistics

An output summary of the data was extracted and analysed to get an overview of the key statistical values relating to each of the variables. For each of the dependent and independent variables, the count, mean, standard deviation, minimum and maximum values were analysed for reasonability given the understanding of the companies and their attributes.

Next, box plot diagrams were analysed for each of the variables to obtain a visual representation of the above-mentioned statistical measures. These were particularly used for the identification of any outliers in the data. All outliers were investigated through cross-referencing of their values to either the integrated report or the annual financial statements of the company to verify their accuracy.

Scatter plot diagrams plotting all the variables against each other were then analysed to obtain a visual representation of the interaction between the variables and the possible relationships that may emerge from them. The scatter plot analyses were split

into three categories – independent variables vs independent variable, dependent variables vs dependent variables, and independent variables vs dependent variables.

A correlation matrix correlating the dependent variables against each other and the independent variables against each other was analysed. This provided an indication of how each of the variables move in relation to each other and if any of the variables could potentially be collapsed into one if they behave similarly.

Kernel density plots of each of the variables were analysed to get a visual representation of the distributions of the variables, in particular whether or not they are normally distributed. The properties of the distributions such as the symmetry and kurtosis were considered in identifying any variables not normally distributed.

3.6.3 Testing of Assumptions

The statistical technique used to perform a multiple regression analysis is known as a Multivariate Analysis of Variance (MANOVA), more specifically Multivariate Analysis of Covariance (MANCOVA) for a multiple multivariate regression analysis (Tabachnick & Fidell, 2013). For the multivariate test procedures of MANOVAto be valid, the following eight assumptions must be met (Tabachnick & Fidell, 2013):

3.6.3.1 Unequal Sample Sizes, Missing Data and Power

The sample size for each of the variables must be equal and there must not be any missing data in the dataset.

Further, there must be more observations than there are dependent variables in the dataset.

These two criteria will be investigated through VLOOKUP function on Microsoft Office Excel that identifies missing data.

3.6.3.2 Absence of Outliers

The MANOVA is sensitive to extreme outliers as significant deviations may result in either a Type I or Type II errors. A type I error is the rejection of a true null hypothesis, while a type II error is retaining a false null hypothesis (Hair et al., 2006). The dataset is therefore assumed to be free of material outliers.

Leverage-versus-residual-squared plots (LVR2 Plots) were used to identify the extent of deviation of observations across the dependent variables.

3.6.3.3 Homogeneity of Variance-Covariance Matrices

The covariance matrices across the dependent variables are assumed to be equivalent in a MANOVA.

Box's M test was used to test the equivalence of the covariance matrices.

3.6.3.4 Multivariate Normality

The significant tests for the MANOVA are based on the multivariate normal distribution. Multivariate normality implies that the sampling distributions of the means of the dependent variables and all linear combinations of them are normally distributed.

Kernel density plots were used to compare the distributions of the residuals with that of a normal distribution to assess any deviation from normality.

3.6.3.5 Linearity

A linear relationship is assumed between all pairs of dependent variables, all pairs of covariates, and all dependent variable-covariate pairs in each cell. If this assumption is violated, the linear regression will try to fit a straight line to data that does not follow a straight line.

Plots of standardised residuals against each independent variable were analysed for evidence of nonlinearity.

3.6.3.6 Homogeneity of Regression

If Roy-Bargmann stepdown analysis is used, it is assumed that the regression between covariates and dependent variables in one group is the same as the regression in other groups so that using the average regression to adjust for covariates in all groups is reasonable.

The Roy-Bargmann stepdown analysis is a procedure used to test the significance of the main effects acting on the dependent variables in order to prevent the inflation of Type I errors (Hair et al., 2006).

The Roy-Bargmann stepdown analysis was not used in the model therefore this assumption will not be tested.

3.6.3.7 Reliability of Covariates

If the Roy-Bargmann stepdown analysis is used, the covariates are assumed to be reliable in order for the F test for mean differences to be powerful, otherwise, increased Type I or Type II errors can occur.

The Roy-Bargmann stepdown analysis was not used in the model therefore this assumption will not be tested.

3.6.3.8 Absence of Multicollinearity and Singularity

The level of correlation among the dependent variables is assumed to be low. When the correlations among dependent variables are high, one dependent variable is a near-linear combination of other dependent variables, therefore the dependent variables provide information that is redundant to the information available in one or more of the other dependent variables.

The variance inflation factor test was used to test for the absence of multicollinearity and singularity.

3.6.4 Data Analysis

Two statistical commands were performed on STATA to test the model. The first is the Multivariate Analysis of Variance (*MANOVA*) which determines whether the model is statistically significant (Stata Corp LLC, 2017).

The second command the Multivariate Regression (*MVREG*) which provides the statistical information regarding the coefficients to the independent variables in the model (Stata Corp LLC, 2017).

3.7 Ethical Considerations

The University of Cape Town Commerce Ethics in Research handbook (University of Cape Town, 2018) was consulted to determine the ethical considerations relevant to this research. The research does qualify for ethical clearance as:

a. The research does not make use of human participants as a source of data
b. There is no possibility that the research could cause harm to a third party
c. The research does not involve the participation of communities
d. The research does not involve providing a service to a community
e. The research does not give rise to a potential conflict of interest
f. The research is not in the field of health

No other potential ethical issues outside the scope above-mentioned considerations were noted.

3.8 Validity and Reliability

This section will discuss the considerations made to determine whether or not the data used to describe the dependent and independent variables is valid and reliable.

3.8.1 Dependent Variables

Each of the adjudicators are professors at the University of Cape Town's College of Accounting with extensive experience in the field of financial reporting . They all have been part of the EY Excellence in Reporting Awards since they were introduced. As explained in section 3.5 the adjudication process is very robust, particularly in that each of the integrated reports are independently judged by each adjudicator. Ernst & Young's Professional Practice Group also provide oversight over the process to ensure its integrity (Ernst & Young, 2017).

3.8.2 Independent Variables

As described in section 3.5, the financial information was obtained from the Bloomberg Professional Service. Bloomberg is one of the top financial services software in the world with a reputable standard since 1998. The information supplied by Bloomberg is obtained from the companies' annual financial statements. This information can be assumed to be reliable as all the companies in the sample were independently audited.

3.9 Limitations

The following are the inherent limitations of the multivariate regression analysis model which must be considered when analysing the results (S. Lim, Matolcsy, & Chow, 2007):

a. The outcome of the model cannot attribute the causality of the dependent variable from the independent variable. Due to the nature of the statistical modelling, only an associative relationship can be inferred from the results. Any investigations into the causal nature of the respondents would require a different test.
b. The choice of variables is not a matter of statistics but rather one of logic and research design. The success of the model depends on the variables chosen but these were selected arbitrarily and not by any statistical means, hence the model has no bearing over that aspect of the research design.

c. There is a limit to how much the generalisation can be applied to the results of the MANOVA. The conclusions from the study can only be applied to the population from which the sample was extracted.

With regards to evaluating the results, a more conservative approach could be taken by dividing the significance level by the number of independent variables as there is joint significance (Stata Corp LLC, 2017).

While this would add further robustness to the results, this study will make use of the regular significance level of 5%. A more conservative approach can be taken in a further study when the model has been refined by reducing the number of independent variables the ones that are statistically significant (Hair et al., 2006).

3.10 Chapter Summary

A positivist paradigm is the most appropriate approach to answering the research question given the quantitative nature of the data and the variables being measured. The research question required the simultaneous analysis of multiple dependent and independent variables. A multiple multivariance regression analysis was thus selected as the best way to test the hypothesis. The data used for the study was found to be valid and reliable considering the methods that were used to obtain measures for the variables. Lastly, the nature of the research was not found to pose an ethical risk to the broader society.

4. RESULTS

4.1 Introduction

This chapter will present the results of the procedures carried out as discussed in chapter 3, pursuant to answering the research questions.

A discussion of descriptive statistics will begin the discussion in this chapter, where the key statistics that provide an overall understanding of the data and its variables will be presented. The procedures performed to test the assumptions of the model, as well as the outcomes of these tests will be discussed. This will be followed by the outputs from the two regression commands used to test the null hypothesis, the *MANOVA* and the *MVREG.* A discussion of all the significant findings will then conclude the chapter.

4.2 Descriptive Statistics

4.2.1 Output Summary

The dataset consists of 10 independent variables, one of which is categorical, the remaining being continuous. The categorical variable is *Sector* whose output summary is shown below in *Table 3*:

Table 3: Output Summary: Categorical Variables

Sector	Freq.	Percent	Cum.
Financials	35	35.00	35.00
Industrials	42	42.00	77.00
Resources	23	23.00	100.00
Total	100	100.00	

The Sector variable has three categories, *Financials*, *Industrials* and *Resources*. There are 35 companies from the sample that fall into the financials category thus making up 35% of the sample. The industrials category has the largest proportion of the sample at 42% comprising of a total of 42 companies. The resources category has the smallest proportion at 23% of the sample with 23 companies. The cumulative frequency for the Sector variable is 100, same as the sample size.

The remaining independent variables are continuous, and their output summaries are shown in *Table 4* below:

Table 4: Output Summary: Continuous Variables

variable	N	mean	sd	min	p50	max
Assets	100	1.46e+11	4.66e+11	2.74e+08	3.15e+10	3.88e+12
stdAssets	100	5.96e-09	1	-.3139057	-.2467506	8.010854
ROE	100	.1897914	.4510245	-.347486	.133353	4.415161
DE Ratio	100	2.190182	4.35966	.0002	.87965	32.85
PE Ratio	90	22.82468	44.12759	.854	15.5498	401.5
Complex	100	.0908798	.1267577	0	.0366021	.5282838
Board Size	100	12.02	3.269016	5	11	24
Board Indep	100	.5765983	.1504235	.188	.6	.8571429
Board Div	100	.2086694	.1173893	0	.2	.6363636
SH Dispers~n	100	.371981	.2288021	0	.35895	.9412

All the variables have a frequency of 100 in line with the sample size with the exception of *PE Ratio*, which is the only variable where a blank response is a possible outcome, as discussed below.

The first variable is StdAssets, which is a standardization of *Asset*. Assets were standardized due to the wide variability of asset across various companies. The standardized metric provides for more meaningful statistical analysis.

Assets vary greatly ranging from a minimum of R274 million to a maximum of R3.88 trillion. The mean value of assets is R146 billion which is significantly higher than the median value of R31.5 billion showing that the distribution is skewed by few companies with very high asset values.

The variability in asset values is as a consequence of differences in the operation structures of companies in differing industries. Companies in asset-intensive industries such as mining and manufacturing are more likely to have a higher asset base that service-based industries.

This variability is addressed by standardising the metic to have a standard deviation of zero.

ROE, the variable representing return on equity is the next variable. ROE has a mean of 0.1897 showing that companies in the JSE Top 100 made a return on their shareholders' equity of 18.97% on average. The standard deviation of 0.4510 means that 68% of the ROE lies 45.1% on either side of the mean. This is a relatively wide dispersion, further supported by the wide range from a minimum of -34.75% to a maximum of 441.5%. The wide range of values for ROE is indicative of the varying financing structures of companies listed on the JSE.

DE Ratio provides us with insight into the debt-financing structures of companies in the sample. The mean *DE Ratio* of 2.19 shows that the average company on in the sample has financed its assets by debt 2.19 times relative to equity financing. Debt financing is therefore more prevalent that equity financing by a ratio of 2.19:1. The standard deviation is 4.35 thus showing a high level of variability in the levels of leverage that are employed by companies.

The p50 value is however, quite far off from the mean being much lower at 0.88. This means that the median company has a higher level of equity financing at a ratio of 0.88:1. This suggests that there are a few companies with large *DE Ratio* values pulling the mean up. The normal distribution plots will be inspected to investigate this further. There are extreme minimum and maximum values ranging from 0.0002 up to 32.85. These extremes are expected given the financing structures of different companies where they may be funded almost exclusively by debt (e.g. banks) or equity (retailers).

The *PE Ratio* variable is the only one with a frequency not equal to the sample size, 90. This is due to the nature of the interpretation of the Price-Earnings Ratio i.e. the market value of a company relative to the earnings returned. Companies which due not return any earnings (i.e. make a loss) therefore cannot have a valid *PE Ratio*. It is noteworthy that a *PE Ratio* of zero is different from a blank *PE Ratio*.

Complex measures the proportion of total assets that are intangible. The mean is 9.09% while the p50 value is 3.6%. The small difference suggests a possible skewness in the distribution, which will be investigated by having a look at the distribution of the sample. The minimum value is nil while the maximum value is 52.83%. There is low variability with a standard deviation of 12.68%.

It is worth noting that due to the recognition requirements of IFRS38: Intangible Assets, intangible assets cannot be recognised in the financial statements if they are internally generated. This measure thus may not capture all the intangible assets owned by companies, but rather only those which are actually recognisable.

The *Board Size* metric measures the number of directors on the board of a company. There is a mean of 12.02 which is not far off from the p50 value of 11. The mean may have been pulled up by some companies with particularly big boards such as those in the financial services sector. The dispersion is small with a standard deviation of 3.27 meaning that 68% of the companies have board sizes between 9 and 15. This is expected given the number of directors that are required to fill the composition requirements of each of the committees required by the JSE Listing Requirements.

The minimum board size is 5, which is the minimum number of directors a public company can have to comply with the Companies Act, while the maximum is 24.

Board Indep measures the proportion of directors who are independent. The mean independence is 57.66%, very close to the p50 value of 60%. This value is highly influenced by the King IV Report which requires the majority of non-executive directors to be independent. There is a moderate standard deviation of 15.04% evidenced by the fact that, although the minimum level of independence is prescribed by the Companies Act and the King IV Report through the JSE Listing Requirements, there is significant subjectivity beyond that point. The minimum value is 18.8%, while the maximum is 85.71%.

The proportion of females on the board, measured by the *Board Div* variable, ranges from 0% to 63.64%. This measure shows a moderate level of dispersion at a standard deviation of 11.74%. This is because while efforts are being made to increase board diversity, there aren't any enforceable levels of female membership on boards. The mean is also very close to the standard deviation at 20.87% and 20% respectively suggesting that the data may be normally distributed in a neat fashion.

SH Dispersion measures that proportion of shares held by significant shareholders i.e. shareholders who own more than 10% of the outstanding shares. The variable is widely dispersed ranging from 0% for companies mostly owned by institutional shareholders to 94% for companies which may have significant ownership by parent companies.

The dependent variables are summarised by the output summary below:

Table 5: Output Summary - Dependent Variables

variable	N	mean	sd	min	p50	max
Value Crea~n	**100**	**4.85**	**2.163556**	**1**	**5**	**8.666667**
The Capitals	**100**	**4.27**	**2.387159**	**1**	**3.5**	**9.333333**
Guiding Pr~s	**100**	**35.58333**	**14.9551**	**7.666667**	**35.5**	**62**
Content El~s	**100**	**42.36667**	**15.82434**	**11**	**43.16667**	**70.66667**

Value Creation is a measure of how well an integrated reports the company's value creation process. This score has a lower and upper limit and 1 and 10 respectively. The minimum and maximum values follow that with a minimum of 1 and a maximum value of 8.67. The mean is 4.85 near the median of the data of 5.

The Capitals is a measure of how well an integrated report explains the capitals that form part of a company's value creation process. There is also an upper and lower limit of 1 and 10 respectively. The mean and p50 value are lower for this measure at 4.27 and 3.5 respectively. The two measures have similar standard deviations of 2.16 and 2.39 respectively.

Guiding Principles is a measure of how well the integrated report uses the guiding principles laid out in the Integrated Reporting Framework. The score has a lower limit of 7 (Given that it is an aggregate of seven scores) and an upper limit of 70. The minimum value is just above the lower limit at 7.67 and the maximum value is 62. The mean is very close to the p50 value at 35.58 and 35.5 respectively. The variable has a moderate amount of dispersion in data with a standard deviation of 14.96.

The final variable, *Content Elements*, measures how well an integrated report demonstrated the use of the content elements prescribed by the Integrated Reporting Framework. This measure is an aggregate of 8 scores, so it has a lower limit of 8 and upper limit of 80. The mean and the p50 are slightly higher than those of the *Guiding Principles* variable given the higher lower and upper. The dispersion is proportionally higher at 15.82.

4.2.2 Kernel Density Plots

The Kernel Density Plots in Appendix B and C show the distributions of the dependent and independent variables. All the independent variables exhibit a normal distribution as their K Density distributions exhibit a shape that is comparable to the normal distributions within the graphs. Although normally distributed, some of the variables display noteworthy properties.

The *ROE*, *DE Ratio* and *Complex* variables display a high a very sharp peak. This shows that a large proportion of the values lies around the mean of the distribution. The likelihood of an *ROE* or *DE Ratio* close to the mean is therefore more likely that other values and their outliers.

The *Complexity* and *SH Dispersion* plots show that the distributions are positively skewed. This means that the mode and the median are lower than the mean for these distributions. This is as a result of a few companies with high *Complex* and *SH Dispersion* values pushing the mean upwards and thus resulting in the skewness.

The distributions for *Value Creation* display a shallow peak. This means that there few observations around the mean that there would be for a perfectly normal distribution. The distribution thus appears to be fat tailed with more potentially outlying values than the standard bell curve.

The Capitals variable has a distribution that is characterised by what appears to be two peaks. This happens when there are two values around which a lot of the observations lie, thus appearing to be two modes. This shows a potential dichotomy in the scoring where the integrated reports either scored very well or not well at all.

Overall, the descriptive statistics show characteristics that are explainable for each variable.

The box plots, scatter plots and correlation matrices are not included as an appendix as it would result in the disclosure of information disaggregated to a level that violates the confidentiality agreement with the adjudicators of the EY Excellence in Reporting Awards.

4.3 Regression Assumptions

4.3.1 Unequal Sample Sizes, Missing Data and Power

The VLOOKUP function of Microsoft Office Excels did not return any unequal sample sizes or missing data. The values for all the variables were present in the populations.

The assumption of equal sample sizes and no missing data is thus accepted.

4.3.2 Absence of outliers

The Nicholas Cox command on Stata was used to obtain a list of potential outliers characterised by extreme low or high values. The output identified nine companies which are potential outliers. Normalised LVR2 plots, shown in appendix H, were used to get a visual representation of the potential outliers in relation to each dependent variable. The LVR2 plot for the total IR score (A sum of all the dependent variables) is shown in appendix D.

The two lines on the chart show the average values of leverage and the normalised residuals squared. The points above the horizontal line thus have higher than average leverage while points to the right of the vertical line have larger than average residuals. All the observations which are either on or beyond the line in the LVR2 plots were identified as potential outliers.

The data relating to these observations was inspected again to ensure that there are no inputting or coding errors. The regression was then run again without the outliers to determine if the results were substantially different. The output did not reveal any change in the significance of the variables in the model. The outliers were concluded to not lay too far off from the mean residuals and leverage enough to violate the outlier assumption. The observations were thus retained to maximise the regression as the model without the potential outliers had a lower explanatory power.

4.3.3 Homogeneity of Variance-Covariance Matrices

Box's M Test is a parametric test that compares the covariance matrices in multivariate samples (Hair et al., 2006). The null hypothesis for the test is that the covariance matrices for the dependent variables are equal.

Table 6: Box's M Test

Modified LR chi2 = 25.86043

Box F(20,20634.8) = 1.21 Prob > F = 0.2345
Box chi2(20) = 24.21 Prob > chi2 = 0.2333

Both the F test (Box F) and the Chi-squared test (Box chi2) indicate statistical significance as the p value is greater than 0.05. The null hypothesis is thus not rejected and the covariance matrices can be assumed to be equal.

The assumption of homogeneity of variance-covariance matrices is thus accepted.

4.3.4 Multivariate Normality

Three graphs were used to assess the normality of the multivariate distributions – A Kernel density plot a standardised normal probability plot and a quantile distribution plot. These plots were analysed for each of the dependent variables and for the model, shown in appendix E.

The Kernel density plot was inspected to analyse the shape of the multivariate distributions in comparison to a normal distribution curve. All the curves for each of the dependent variables have the characteristics of a normal distribution. In the Kernel density plot above, the distribution curve is slightly skewed to the right, which is a consequence of the skewness of the distribution of the Guiding Pri~s as discussed in section 4.2.

The normal quantile plot is used to analyse the normality of the data in the middle range of the data while the standardised normal probability plot assessed normality near the tails of the normal distribution. Both the plots do not show signs of non-normality as a straight line can be drawn along the points with sufficient closeness.

The assumption of multivariate normality is thus accepted.

4.3.5 Linearity

A plot of the standardised residuals against each independent variable was analysed to assess linearity. The evidence of any nonlinear relationship in the plot would show a possibility of a nonlinear relationship between the variables. Appendix F shows the plot for the linear prediction vs the standardised residuals.

The residuals in the plot above appear to be randomly distributed across the linear predictions. No other nonlinear relationship can be observed from the plot. The same

observation was made for the residuals of all the independent variables. The assumption of linearity is therefore not violated.

4.3.6 Multicollinearity and Singularity

The variance inflation factor test was used to test for the absence of multicollinearity and singularity. Table 7 below is the output for the test:

Table 7: Variance Inflation Factor Test

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Assets	1.25	1.12	0.7975	0.2025
ROE	1.08	1.04	0.9288	0.0712
DE_Ratio	1.15	1.07	0.8710	0.1290
Complex	1.08	1.04	0.9270	0.0730
Board_Size	1.24	1.11	0.8048	0.1952
Board_Indep	1.17	1.08	0.8563	0.1437
Board_Div	1.08	1.04	0.9230	0.0770
SH_Dispersion	1.19	1.09	0.8392	0.1608
Mean VIF	1.16			

A variable whose VIF value is greater than 10 may potentially have a significant degree of multicollinearity. All the variables have a VIF value below 1.25 and the average VIF is 1.16. There is therefore a small change of multicollinearity being an issue.

The assumption of the absence of multicollinearity is thus accepted.

4.4 Regression Output

A multivariate multiple regression analysis was used to analyse the association between the dependent and the independent variables. The MANOVA output was used to determine if all the equations, taken together, are statistically significant. The MVREG output was then used to obtain the coefficients for all the significant variables.

4.4.1 MANOVA

Four multivariate criterions are calculated by the MANOVA – Wilks' lambda, Lawley-Hotelling trace, Pillai's trace, and Roy's largest root. Wilks' lambda tests if there are differences between group means for a particular combination of dependent variables (UCLA: Institute for Digital Research and Education, 2018). The Lawley–Hotelling trace and Pillai's trace is used to test the equality of mean vectors of k p-variate normal distributions with common but unknown covariance matrix (UCLA: Institute for Digital

Research and Education, 2018). Roy's largest root gives an upper bound for the F statistic (UCLA: Institute for Digital Research and Education, 2018). The F values and the p values for each of the criterion are used to determine whether the equations that make up the model are statistically significant.

The MANOVA output is shown below in *Table 8* below*:*

Table 8: MANOVA Output

Number of obs = **90**

W = Wilks' lambda L = Lawley-Hotelling trace P = Pillai's trace R = Roy's largest root

Source	Statistic		df	F(df1,	df2) =	F	Prob>F
Model	W	**0.3397**	**11**	**44.0**	**288.9**	**2.14**	**0.0001**
	P	**0.9040**		**44.0**	**312.0**	**2.07**	**0.0002**
	L	**1.3128**		**44.0**	**294.0**	**2.19**	**0.0001**
Residual	R	**0.6293**		**11.0**	**78.0**	**4.46**	**0.0000**
							78

The p value for each of the four multivariate criterions for is significantly less than 0.05. This means that all the four multivariate equations, taken together, are statistically significant. We can conclude from this outcome that there is an association between each of the four measures of integrated reporting quality and the independent variables fitted into the model.

The MANOVA assesses joint significance and thus does not provide coefficients for each of the independent variables. The MVREG outputs will be used to assess the significance of the individual equations and the independent variables.

4.4.2 MVREG

The MANOVA has established the joint significance of the four multivariate equations. The MVREG will assess the significance of the individual equations and the independent variables that are associate with it.

The first output in *Table 8* below assesses the significance of each of the four regression equations. *Equation* is the dependent variable for which the model is tested and *Parms* is the number of parameters in each model. *RMSE* is a measure of the standard deviation of the unexplained variance, which is an absolute measure, while "*R-sq*" is a measure of how much of the variance is explained by the model. *F* is the F statistic for the model while *P* is the P value which measures significance.

Table 9: MVREG Output 1

Equation	Obs	Parms	RMSE	"R-sq"	F	P
Value Creation	**90**	**12**	**1.934357**	**0.3187**	**3.317483**	**0.0009**
The Capitals	**90**	**12**	**2.224322**	**0.2638**	**2.540634**	**0.0085**
Guiding Principles	**90**	**12**	**13.90219**	**0.2543**	**2.418285**	**0.0121**
Content Elements	**90**	**12**	**14.58982**	**0.2700**	**2.622987**	**0.0067**

All the equations are statistically significant as the P < 0.05 for each of the dependent variables. Each of the models explain a significant portion of the variance ranging from 25.43% for *Guiding Principles* to 31.87% for *Value Creation*.

The MANOVA has established the joint significance of the four equations, and the MVREG has established the individual significance of each of the equations. This means that the coefficients for the independent variables are not all zero for all the four equations.

The output from table 10 below assess the significance of each of the independent variables and the related coefficient.

Coef. is the coefficient related to each of the independent variable in the model, *Std. Err*. is the standard error estimate, while t is the t statistic for each independent variable. *P*>|*t*| is the p value which determines whether the coefficient is statistically significant, while [*95% Conf. Interval]* provides the interval where the coefficient lies with 95% certainty.

Table 10: MVREG - Value Creation

Value Creation	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
stdAssets	**1.137508**	**.4219809**	**2.70**	**0.009**	**.2974083**	**1.977607**
ROE	**-.5620794**	**.4674631**	**-1.20**	**0.233**	**-1.492727**	**.3685682**
DE Ratio	**-.0464506**	**.0513828**	**-0.90**	**0.369**	**-.1487458**	**.0558446**
PE Ratio	**-.0002965**	**.0047874**	**-0.06**	**0.951**	**-.0098274**	**.0092344**
Complex	**-.7373402**	**2.058381**	**-0.36**	**0.721**	**-4.835262**	**3.360581**
Board Size	**.0644757**	**.0755387**	**0.85**	**0.396**	**-.0859102**	**.2148617**
Board Indep	**2.197573**	**1.558841**	**1.41**	**0.163**	**-.9058405**	**5.300987**
Board Div	**5.163528**	**1.781857**	**2.90**	**0.005**	**1.616124**	**8.710932**
SH Dispersion	**1.663913**	**1.026219**	**1.62**	**0.109**	**-.3791333**	**3.706959**
Sector						
Industrials	**.6412108**	**.6097169**	**1.05**	**0.296**	**-.5726423**	**1.855064**
Resources	**1.313359**	**.6761499**	**1.94**	**0.056**	**-.0327524**	**2.65947**
cons	**1.007934**	**1.556676**	**0.65**	**0.519**	**-2.091169**	**4.107037**

For *Value Creation* two independent variables are statistically significant - *stdAssets* with p = 0.009 and *Board Div* with p = 0.005. The coefficient for *stdAssets* is 1.14 meaning that holding all other variables constant, for every 1 unit increase in standardised assets, the score for value creation increases by 1.14 out of 10. *Board Div* has a coefficient of 5.16 so for every 1% increase in board diversity, the value creation score is associated with an increase of 0.0516 out of 10, holding all other variables constant.

Although not qualifying, it is worth noting that for *Sector*, the p value for Resources is just above the statistically significance level at 0.056.

Table 11: MVREG - The Capitals

The Capitals	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
stdAssets	**1.264366**	**.4852369**	**2.61**	**0.011**	**.2983338**	**2.230399**
ROE	**-.2549967**	**.537537**	**-0.47**	**0.637**	**-1.325151**	**.8151573**
DE Ratio	**-.0560707**	**.0590852**	**-0.95**	**0.346**	**-.1737003**	**.0615588**
PE Ratio	**-.0016443**	**.005505**	**-0.30**	**0.766**	**-.0126039**	**.0093153**
Complex	**.7013017**	**2.366937**	**0.30**	**0.768**	**-4.010908**	**5.413512**
Board Size	**-.0055765**	**.0868621**	**-0.06**	**0.949**	**-.1785057**	**.1673527**
Board Indep	**3.63951**	**1.792515**	**2.03**	**0.046**	**.0708862**	**7.208133**
Board Div	**4.338046**	**2.048962**	**2.12**	**0.037**	**.2588764**	**8.417215**
SH Dispersion	**2.243212**	**1.180052**	**1.90**	**0.061**	**-.1060921**	**4.592515**
Sector						
Industrials	**.3480317**	**.701115**	**0.50**	**0.621**	**-1.047781**	**1.743844**
Resources	**1.022049**	**.7775064**	**1.31**	**0.193**	**-.5258479**	**2.569945**
cons	**.3832906**	**1.790025**	**0.21**	**0.831**	**-3.180376**	**3.946957**

Three independent variables are statistically significant for *The Capitals* dependent variable – *stdAssets*, *Board Indep* and *Board Div* with p values of 0.011, 0.046 and 0.037 respectively. The score for the *The Capitals* is associated with an increase of 1.26 out of 10 for every unit increase in standardised assets. A 1% increase in board diversity increases *The Capitals* by 0.043 while a percentage increase in board independence is associated with a 0.036 increase.

Although not statistically significant, the p value for *SH Dispersion* is close to qualifying at 0.061 just below the 0.05 threshold.

Table 12: MVREG - Guiding Principles

Guiding Principles	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
stdAssets	**6.891047**	**3.032769**	**2.27**	**0.026**	**.8532672**	**12.92883**
ROE	**-1.150787**	**3.359649**	**-0.34**	**0.733**	**-7.839335**	**5.537761**
DE Ratio	**-.2517178**	**.369287**	**-0.68**	**0.497**	**-.9869117**	**.4834762**
PE Ratio	**.0096343**	**.0344067**	**0.28**	**0.780**	**-.0588641**	**.0781328**
Complex	**.6761373**	**14.79355**	**0.05**	**0.964**	**-28.77555**	**30.12783**
Board Size	**.4428196**	**.5428951**	**0.82**	**0.417**	**-.6380015**	**1.523641**
Board Indep	**14.44486**	**11.20336**	**1.29**	**0.201**	**-7.859325**	**36.74904**
Board Div	**28.79982**	**12.80617**	**2.25**	**0.027**	**3.30469**	**54.29496**
SH Dispersion	**10.71144**	**7.375421**	**1.45**	**0.150**	**-3.971893**	**25.39478**
Sector						
Industrials	**4.874195**	**4.382024**	**1.11**	**0.269**	**-3.849746**	**13.59814**
Resources	**10.07403**	**4.859477**	**2.07**	**0.041**	**.3995563**	**19.74851**
cons	**9.285261**	**11.1878**	**0.83**	**0.409**	**-12.98794**	**31.55846**

With a p value of 0.026, *stdAssets* is statistically significant increasing *Guiding Principles* by 6.89 for every corresponding one unit increase. Board diversity is also a predictor with statistical significance where every percentage increase corresponds with an increase of 0.288 in the score out of 70. The Resources variable is also statistically significant with a p value of 0.041. Relative to the Financials sector, resources has a score of 10.07 higher in the *Guiding Principles* category.

Table 13: MVREG - Content Elements

Content Elements	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
stdAssets	**6.61959**	**3.182776**	**2.08**	**0.041**	**.2831693**	**12.95601**
ROE	**-2.704188**	**3.525824**	**-0.77**	**0.445**	**-9.723565**	**4.315189**
DE Ratio	**-.2257234**	**.3875527**	**-0.58**	**0.562**	**-.9972815**	**.5458348**
PE Ratio	**.0282299**	**.0361085**	**0.78**	**0.437**	**-.0436566**	**.1001165**
Complex	**.4921829**	**15.52527**	**0.03**	**0.975**	**-30.41625**	**31.40061**
Board Size	**.6439091**	**.5697478**	**1.13**	**0.262**	**-.4903716**	**1.77819**
Board Indep	**16.13533**	**11.7575**	**1.37**	**0.174**	**-7.272058**	**39.54272**
Board Div	**31.38339**	**13.43959**	**2.34**	**0.022**	**4.627219**	**58.13957**
SH Dispersion	**9.311551**	**7.740224**	**1.20**	**0.233**	**-6.098052**	**24.72115**
Sector						
Industrials	**3.233541**	**4.598768**	**0.70**	**0.484**	**-5.921904**	**12.38898**
Resources	**11.9684**	**5.099837**	**2.35**	**0.021**	**1.815405**	**22.1214**
cons	**12.71715**	**11.74117**	**1.08**	**0.282**	**-10.65773**	**36.09203**

The statistically significant variables for *Content Elements* are same as the ones for *Guiding Principles – stdAssets*, *Board Div* and *Resources* with p values of 0.041, 0.022 and 0.021 respectively. A unit increase in stdAssets is associated with 6.61 increase in *Content Elements* out of 80. *Content Elements* increases by 0.31 for every percentage increase in board diversity. With Financials as a reference, *Resources* has a score which is 11.97 higher, all else equal.

4.5 Chapter Summary

The descriptive statistics presented metrics that were expected for the variables being measured. The assumptions of the multiple multivariate regression were then tested

and there were no findings that conclude on any violations. Assurance was then obtained over the results of the model.

Two regression commands were performed, MANOVA and MVREG, to test the hypothesis of the research. The model was found to be statistically significant thus rejecting the null hypothesis that the corporate characteristics do not influence integrated reporting quality. Four characteristics were found to have coefficients that were statistically significant – firm size, board independence, board diversity, and the resources industry.

5. DISCUSSION

Four dependent variables (size, board independence, board diversity and industry) out of the ten showed a significant relationship with various measures of integrated reporting quality. These variables are discussed below as well as the possible conclusions that can be drawn between each of the relationships.

5.1 Size

A positive relationship was observed between a company's size and the quality of its integrated report in agreeance with Sierra-García, Zorio-Grima and García-Benau (2015b), and Wild & Van Staden (2013). This positive relationship was observed among all the four components of the integrated reporting score.

Contrary to Hallgren & Johansson (2016) who attributed a lower quality of disclosure with larger firms to the complexity of their operations due to their size, the size of a firm is associated with a higher score for value creation. This means that the larger the firms are the better they are at explaining how their business model enables them to create value for stakeholders. Further, no relationship was found between the firm complexity and the score for value creation suggesting the difficulty in describing their operations is not significant.

The absence of a significant inverse relationship between organisational complexity and integrated reporting quality may be an indicator that the IIRC have achieved their goal of making the value creation process simple to describe for various preparers through the use of the widely applicable six capitals. Making integrated reporting as relevant to as many different companies as possible across the complexity scale is crucial for the adoption of the reporting regime.

The preparation of integrated reports with poor disclosure quality could then be attributed to other factors other than a lack of guidance from the IIRC regarding the best way in which to describe a given company's operations.

The score for The Capitals was also positively associated with firm size showing that larger companies are able to describe all the stocks of values that make up the value creation process and how they flow and transform, as was also found by Richards & van Staden (2015). Larger firms face a larger degree of scrutiny and social pressure from stakeholders (Bewley & Li, 2000). This may in turn incentivise them to describe

how the six capitals are used to create not just financial value but rather inclusive capital for all stakeholders, thus resulting in an increased score for The Capitals (Vanstraelen et al., 2003).

Firm size was positively associated with the adherence to the Guiding Principles of the Integrated Framework. This demonstrates a commitment from larger firms to produce an integrated report that aligns with the guidelines of the Framework. Larger firms have a higher inclination to place a high importance on the quantity and quality of information they disclose as it impacts the relationships they have with their stakeholders (García-Sánchez et al., 2013).

Lastly, larger firms were found to be more likely to include all the Content Elements required from the Integrated Reporting Framework. There are a lot of resources, financial and otherwise, which are required to report on all the Content Elements. The positive relationship between size and the score for Content Elements may thus be due to the greater availability of resources associated with larger companies that enable to invest in the required reporting mechanisms (Oliveira et al., 2010). There was however, no relationship found between profitability and quality of disclosure in this study.

5.2 Board Independence

Board independence was found to be positively associated with one component of the quality of integrated reporting, that is, how well the integrated report explained how they used The Capitals. This was in line with the findings made by Pavlopoulos et al. (2017).

Jizi et al., (2014) explained that independent directors are more likely to consider the interests of shareholders and broader stakeholders in the decision-making thus influencing the reporting. These board members thus encourage the disclosure of all the capitals in order to improve relations with stakeholders by disclosing how it is the different capitals affect them throughout the value creation process.

This finding suggests that independent directors do place a value on the capitals that are used by entities as well as the ways in which they are enhancing these capitals for all the relevant stakeholders.

A distinctive feature of The Capitals models is the acknowledgement that not all the capitals that are used by an entity actually belong to that entity (International Integrated Reporting Council, 2013). There is thus an indication that independent directors play a significant role in pushing the accountability towards the use of these capitals.

Independent directors do not have a direct interest in the operations of the company therefore the increased disclosure (Fuente et al., 2017) of the capitals is encouraged regardless of whether the information is positive or not thus improving the quality of the disclosure.

There is an inherent financial risk (either directly or indirectly) that is associated with disclosing corporate information (Velte & Stawinoga, 2016). It is therefore expected that directors with a financial interest in a specific entity would be reluctant to disclose more information than is legally required.

The positive association between board independence and disclosure quality relating to the capitals is thus another indication of the influence that these directors may have in advocating for sufficient and appropriate disclosure.

Despite the fact that independent directors do not have a material financial interest in the companies in which they direct, there does not appear to be a significant downside with regards to the disclosure of the capitals especially given that the adoption of integrated reporting is priced positively by the users of the report (Arguelles et al., 2015).

In South Africa, the independence of directors is not only mandated by the King Code but also by the Companies Act (Parliament of the Republic of South Africa, 2008) which requires the audit committee to provide supervision of a company's reporting practices.

This positive relationship between board independence and the disclosure quality of the six capitals thus not only demonstrates the directors' commitment to legislation and the governance standards, but also a commitment to the spirit to communicating to the various stakeholders about their contributions and share in the inclusive capitals used by all organisations.

This finding also affirms the conclusion reached by Jizi et al. (2014) who stated that the independent directors may play a crucial role in the custodianship of internal reporting mechanisms.

This level of involvement by the independent directors in the reporting mechanisms from which integrated reporting is prepared would be a boon to the proponents of integrated reporting as the key assumptions of integrated reporting by both the IIRC (International Integrated Reporting Council, 2013) and the King Committee (Insititute of Directors Southern Africa, 2009) is that it is initiated and monitored at the board level.

5.3 Board Diversity

Board diversity was found to be positively associated with all four components of integrated reporting quality in concurrence with Rao & Tilt (2016). The positive association with all four components suggests an even bigger influence than board independence.

This is contrary to the findings of a study by Abdul Rashid et al (2012) who had a focus on sustainability reporting as opposed to integrated reporting.

The association between board diversity and how well companies are able to explain their Value Creation process may be attributed to the increased performance and discussion that is characterised by diverse boards due to wider array of attributes that they contribute to the board (van Knippenberg et al., 2004).

The findings suggest that for less diverse boards, it may be more difficult to explain how it is that the companies create value, especially that the integrated reporting framework (International Integrated Reporting Council, 2013) describes value in a much broader sense than financial value alone.

The lessened proficiency in describing the value creation process may not only be as a result on the integrated reporting process, but rather it may serve as an indication of insufficient consideration of the various forms of values that an entity should aim to create outside of financial value.

Companies with diverse boards were also better able to describe all The Capitals that form part of their value creation process both as an input and as an output. The

increase in the diversity of boards possibly results in an increased effort to form stronger relationships with the various stakeholders of the companies as more diverse boards are characterised by different perspectives (Miller & del Carmen Triana, 2009).

The importance of the interactions between the firms and all the interest groups in the value is creates is thus more emphasised in diverse groups. This reinforces the one of the key aims of having diverse boards in the first place which is ensuring that all the various stakeholders are adequately represented (M. E. King & Roberts, 2013).

The score for Guiding Principles increased with the level of diversity in boards, which shows a higher propensity to adhere with the requirements of the Framework. This is a characteristic of diverse boards because the performance of boards is higher with an increase in diversity, with a particular emphasis on reporting (Rose, 2007).

The quality of disclosure of the Content Elements increased with board diversity which shows a commitment from diverse boards to clearly disclose increasing levels of information in order to achieve good reporting. This provides additional evidence that diverse boards do not conform to the status quo of withholding reporting voluntary information (Nielsen, 2009).

5.4 Industry

The industry that a firm forms part of was found to be associated with two components of the integrated reporting score – the Guiding Principles and the Content Elements. This is in line with Wild & Van Staden (2013), although they did not stipulate which component of integrated reporting quality they performed best in.

Using *Financials* as a benchmark, firms in the Resources sector were found to perform better at adhering to the Guiding Principles of the Integrated Reporting Framework. Firms in the Resources sector, which is dominated by mines in the South African context, face a higher level of pressure from their various stakeholders regarding social and environmental issues due to the nature of their operations (Ali et al., 2017).

The result of these pressures may be that they are incentivised to provide good disclosure in order to show their response to these issues.

In relation to firms in the *Financials* sector, these firms also scored higher in the Content Element component suggesting that they disclosed more information in line with the recommendations of the Integrated Reporting Framework. Firms in the

Resources sector are highly regulated in relation to what they should disclose regarding their operations (Federica et al., 2016) which may result in it being easier for them to report the Content Elements as all the reporting mechanisms are already in place.

5.5 Other Variables

No significant relationship was found between the quality of integrated reporting and the other independent variables investigated. A close relationship was observed between Resources and Value and Value Creation as well as between Shareholder Dispersion and The Capitals. A deeper investigation may reveal a relationship.

6. CONCLUSION

6.1 Conclusion

The corporate reporting arena has experienced significant benefits since the introduction of integrated report characterised by decreased information asymmetry for both internal and external decision-makers. There are however, challenges facing integrated reporting as it continues to gain traction around the global reporting atmosphere, one of which is the quality of the integrated reports currently being prepared.

Systematic issues such as the lack of understanding and a muted buy-in in integrated reporting have been shown to be a contributing factor to the quality of integrated reports issued. These factors can be addressed by the IIRC as time goes by, but many other company-specific factors have been proposed by multiple studies as having been influential to integrated reporting quality.

Of these company characteristics, this study has found that firm size, board independence, board diversity and industry are all determinants in the quality of the integrated report.

These characteristics either point to the relative ease with which different firms can access the information required to produce good quality integrated reports, pressure from society, or a greater impetus from those charged with governance to improve stakeholder relations.

There appears to be a strong indication that governance plays a big role in the quality of the integrated reports that are produced by companies. Two of the four significant variables (board independence and board diversity) are characteristics that relate to the governance characteristic of a firm.

6.2 Recommendations

Following the findings of this study, the following recommendations are made to maximise the potential benefits to all stakeholders from integrated reporting:

1. To the IIRC, a greater level of participation with all interest groups in the integrated reporting project is encouraged. This would serve two objectives – firstly to communicate the benefits of integrated reporting to all relevant parties thus increasing the enthusiasm to adopt the practice and perform it well.

Secondly, crucial feedback would be obtained from these users and preparers of integrated reports as to how best the concept of integrated reporting can be made to meet their reporting capabilities and needs.

2. To the preparers of integrated reports, a greater investment in the reporting mechanisms required to produce good quality integrated reports is encouraged as there are benefits to be reaped by both internal and external stakeholders. The board of directors was shown to be particularly influential in the quality of the integrated report as they have power to set the tone as to how reporting throughout the entity should be conducted.

3. To shareholders, there have been many benefits that have been associated with board independence and board diversity in the context of board performance. These benefits trickle down to many performance aspects of the organisations themselves, including the quality of reporting, as shown in this study. Greater consideration is therefore recommended when making board appointments to include an increasing number of independent directors, as well as increasing the diversity of these boards.

4. To the users of integrated reports, a greater level of interaction with the information contained in the integrated reports is encouraged. This is to ensure that one of the key objectives of integrated reporting i.e. the achievement of efficient capital allocation is met. If the integrated reports are used as an additional basis for investment decisions, then those companies with the potential to create the greatest value for all stakeholders will be identified, thus increasing inclusive growth.

5. To providers of assurance, increased participation with the IIRC and other standard-setting bodies is encouraged in order to develop effective ways of providing assurance over non-financial information contained in integrated reports. This will provide users of integrated reports with increased confidence thus improving their decision-making processes.

6.3 Further Studies

The following studies can be made to address related research questions in the field of integrated reporting:

1. *Does the quality of a company's integrated report affect the cost of its capital?* The literature reviewed has shown that the information processing costs of investors decrease with greater quality of integrated report. The increasing quality of an integrated report could thus be expected to reduce the cost of capital.

2. *How involved is the board of directors in the integrated reporting process?* A qualitative or quantitative study into the participation of the board of directors in the integrated reporting process would enable the analysis of how well the goal of the IIRC to achieve integrated thinking is being achieved.

3. *What factors influence the voluntary adoption of integrated reporting?* The companies studied in this survey are the ones which were required by the JSE to adopt integrated reporting. An analysis into the motivating factors that influence the adoption of integrated reporting could provide further insight into the areas the IIRC could improve to make the project more beneficial.

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APPENDICES

Appendix A: List of JSE Top 100 Companies

1	Aeci Limited
2	African Rainbow Min Ltd
3	Anglo American Plat Ltd
4	Anglo American Plc
5	Anglogold Ashanti Ltd
6	Anheuser-Busch Inbev Sa
7	Arcelormittal Sa Limited
8	Aspen Pharmacare Hldgs L
9	Assore Ltd
10	Attacq Limited
11	Avi Ltd
12	Barclays Africa Grp Ltd
13	Barloworld Ltd
14	Bhp Billiton Plc
15	Bid Corporation Ltd
16	Bidvest Ltd
17	Blue Label Telecoms Ltd
18	Brait Se
19	British American Tob Plc
20	Capital&Counties Prop Pl
21	Capitec Bank Hldgs Ltd
22	Clicks Group Ltd
23	Compagnie Fin Richemont
24	Coronation Fund Mngrs Ld
25	Curro Holdings Limited
26	Discovery Ltd
27	Distell Group Ltd

28 Eoh Holdings Ltd
29 Exxaro Resources Ltd
30 Famous Brands Ltd
31 Firstrand Ltd
32 Fortress Inc Fund Ltd B
33 Glencore Plc
34 Globe Trade Centre S.A.
35 Gold Fields Ltd
36 Growthpoint Prop Ltd
37 Hammerson Plc
38 Harmony Gm Co Ltd
39 Hosken Cons Inv Ltd
40 Hyprop Inv Ltd
41 Impala Platinum Hlgs Ltd
42 Imperial Holdings Ltd
43 Intu Properties Plc
44 Investec Plc
45 Italtile Ltd
46 Jse Ltd
47 Kap Industrial Hldgs Ltd
48 Kumba Iron Ore Ltd
49 Liberty Holdings Ltd
50 Life Healthc Grp Hldgs L
51 Massmart Holdings Ltd
52 Mediclinic Int Plc
53 Mmi Holdings Limited
54 Mondi Plc
55 Mr Price Group Ltd
56 Mtn Group Ltd
57 Nampak Ltd

58 Naspers Ltd -N-
59 Nedbank Group Ltd
60 Netcare Limited
61 New Europe Prop Inv Plc
62 Northam Platinum Ltd
63 Oakbay Resources and Energy
64 Oceana Group Ltd
65 Old Mutual Plc
66 Omnia Holdings Ltd
67 Pick n Pay Stores Ltd
68 Pioneer Foods Group Ltd
69 PSG Group Ltd
70 Rand Merchant Inv Hldgs
71 Redefine International P
72 Redefine Properties Ltd
73 Reinet Investments S.C.A
74 Remgro Ltd
75 Resilient Reit Limited
76 Reunert Ltd
77 Rmb Holdings Ltd
78 Rockcastle Global Real E
79 Sa Corp Real Estate Ltd
80 Sanlam Limited
81 Santam Limited
82 Sappi Ltd
83 Sasol Limited
84 Shoprite Holdings Ltd
85 Sibanye Gold Limited
86 South32 Limited
87 Standard Bank Group Ltd

88 Steinhoff Int Hldgs N.V.

89 Super Group Ltd

90 Telkom Sa Soc Ltd

91 The Foschini Group Limit

92 The Spar Group Ltd

93 Tiger Brands Ltd

94 Tongaat Hulett Ltd

95 Truworths Int Ltd

96 Tsogo Sun Holdings Ltd

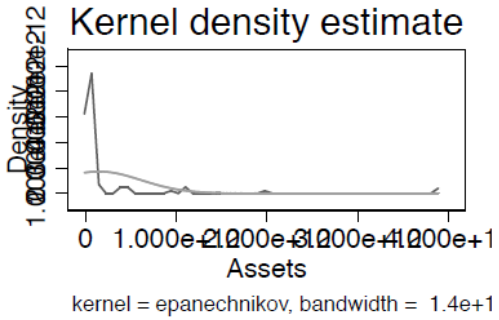
97 Vodacom Group Ltd

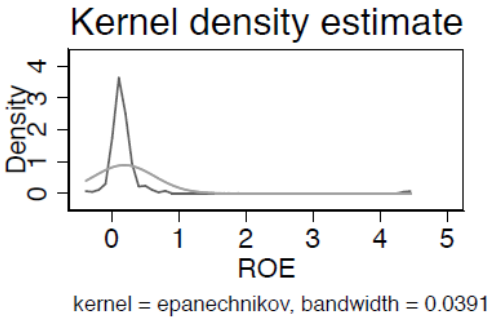
98 Vukile Property Fund Ltd

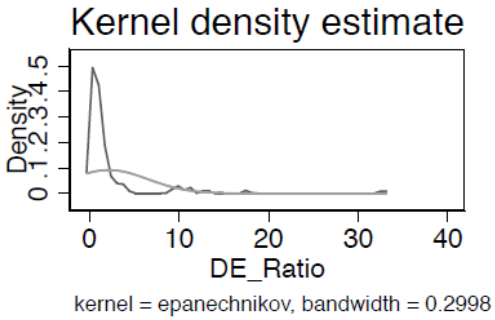
99 Woolworths Holdings Ltd

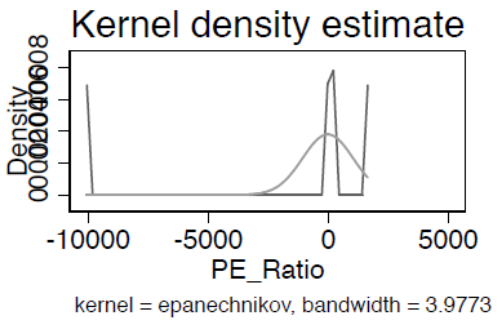
100 Zeder Inv Ltd

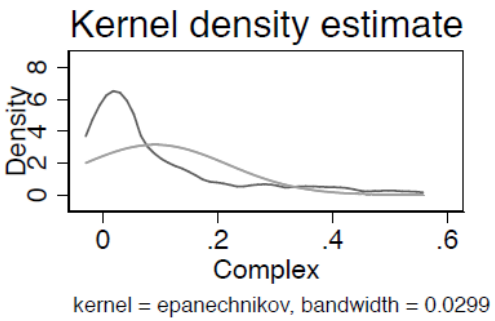
Appendix B: Kernel Density Plots – Independent Variables

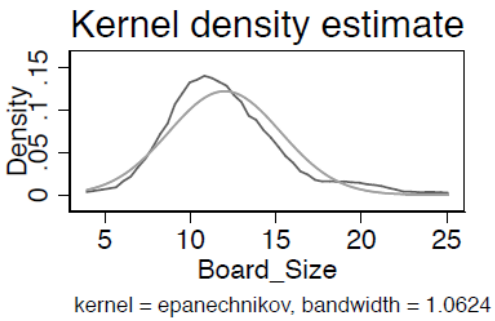


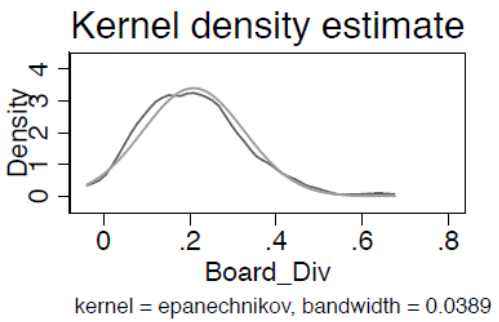


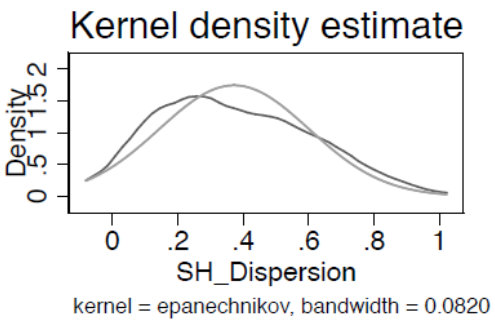




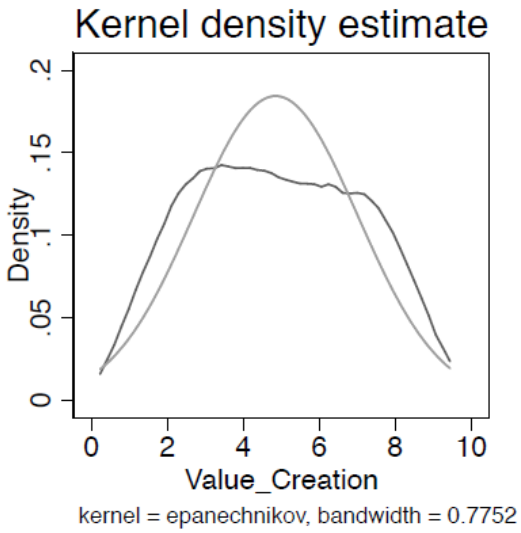


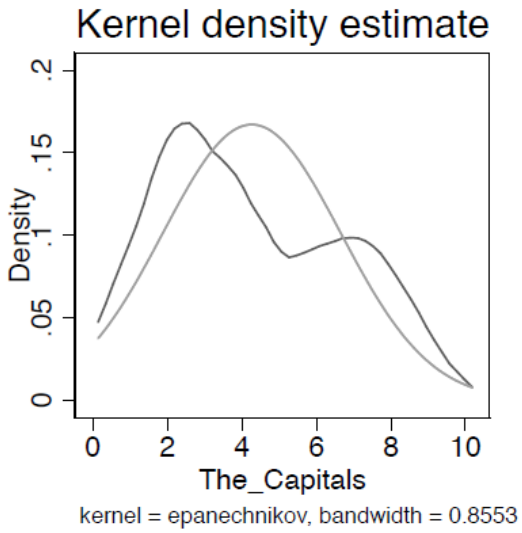


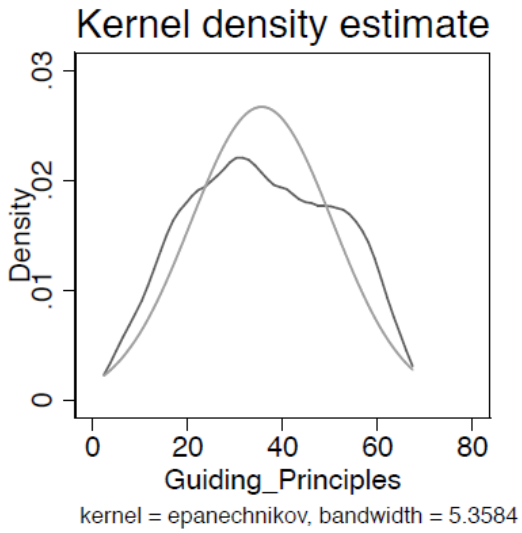


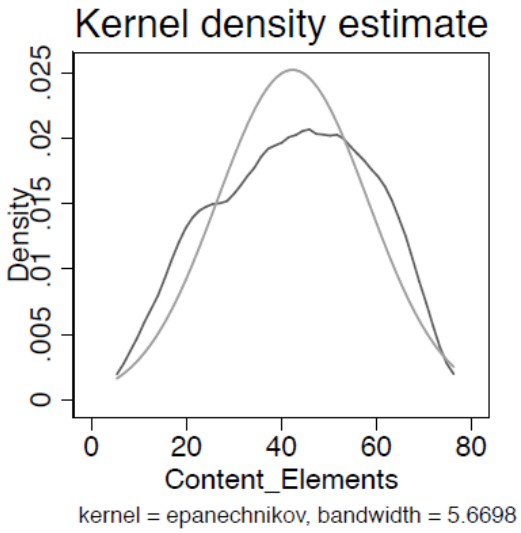


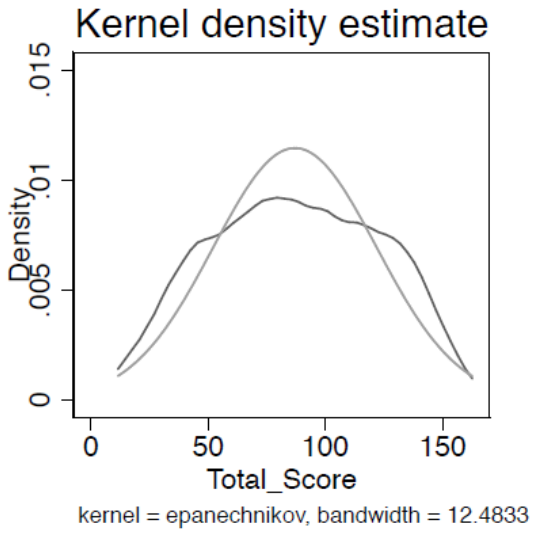
Appendix C: Kernel Density Plots – Dependent Variables



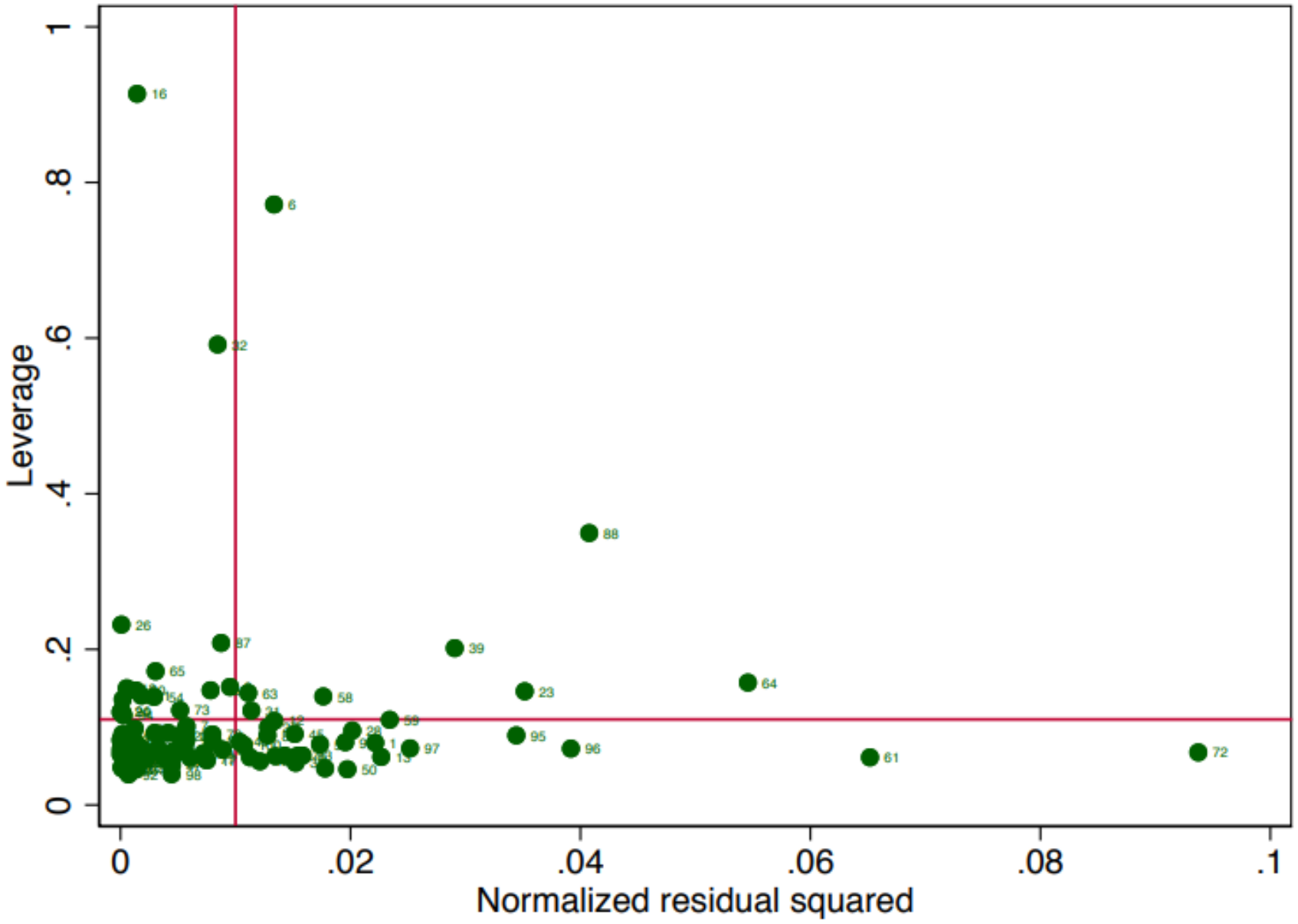




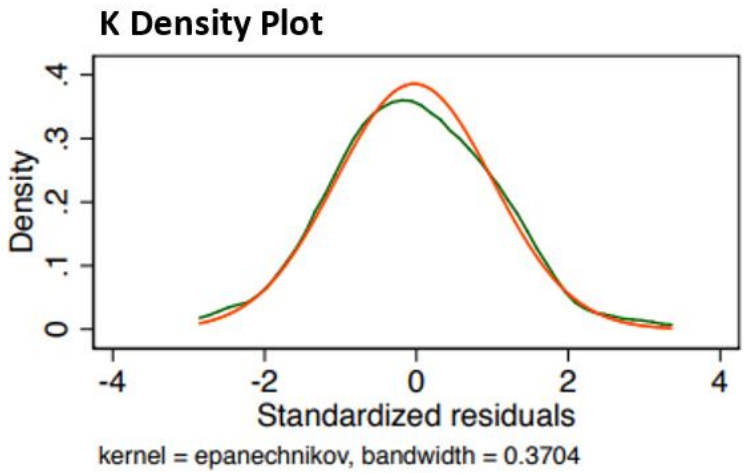


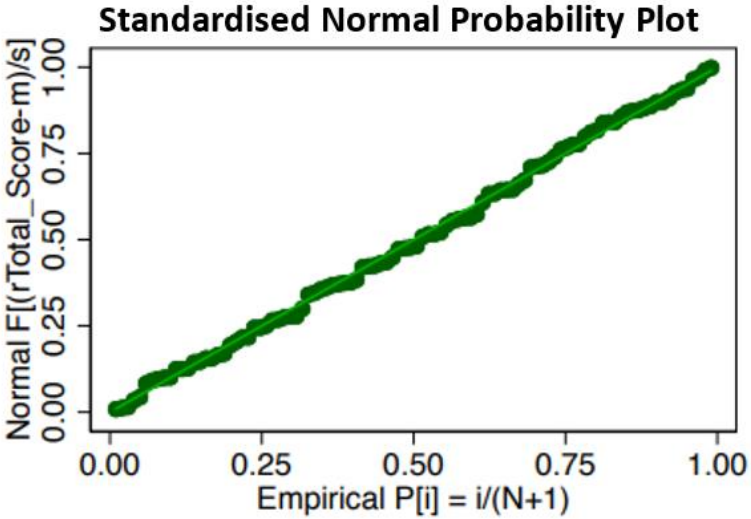


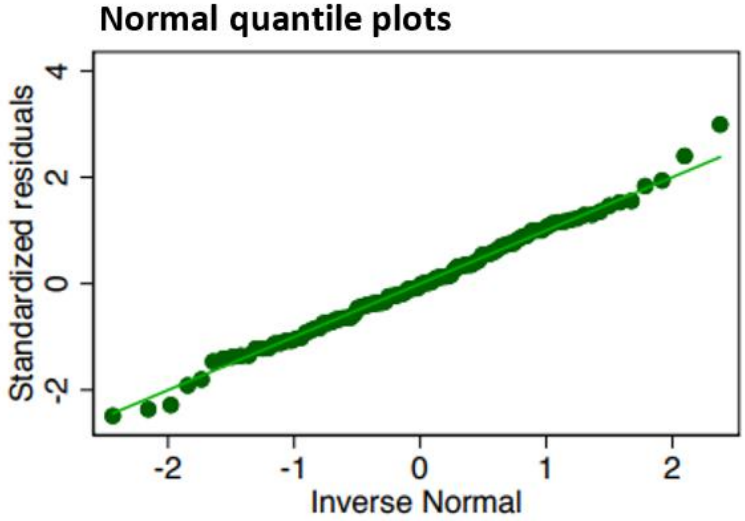
Appendix D: Lvr2 Plots



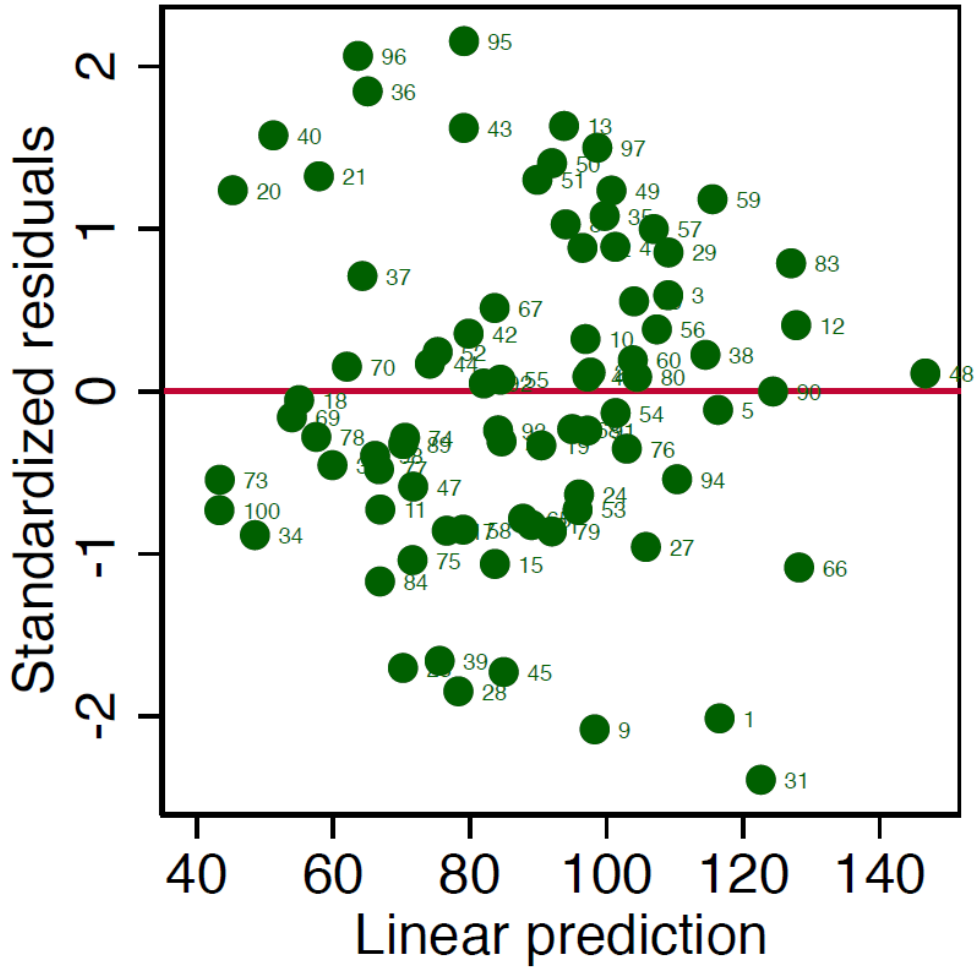
Appendix E: Normality Plots



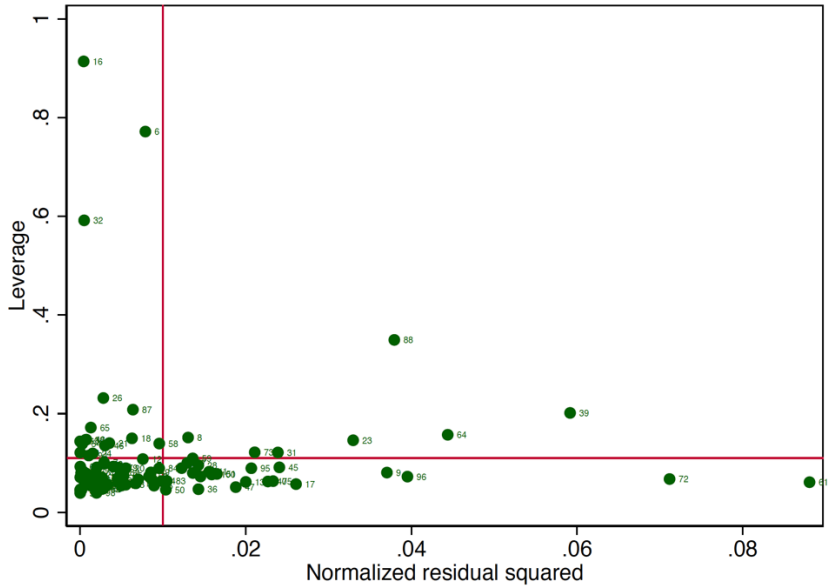


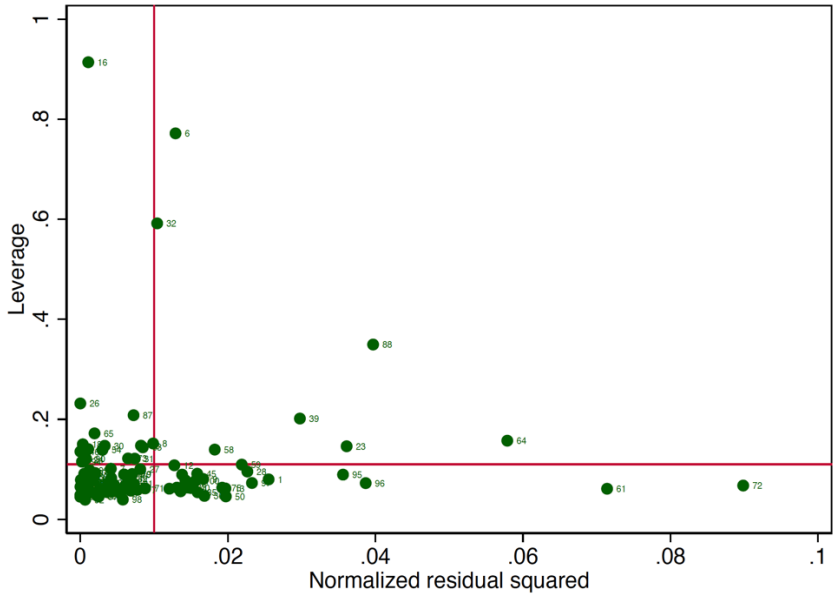


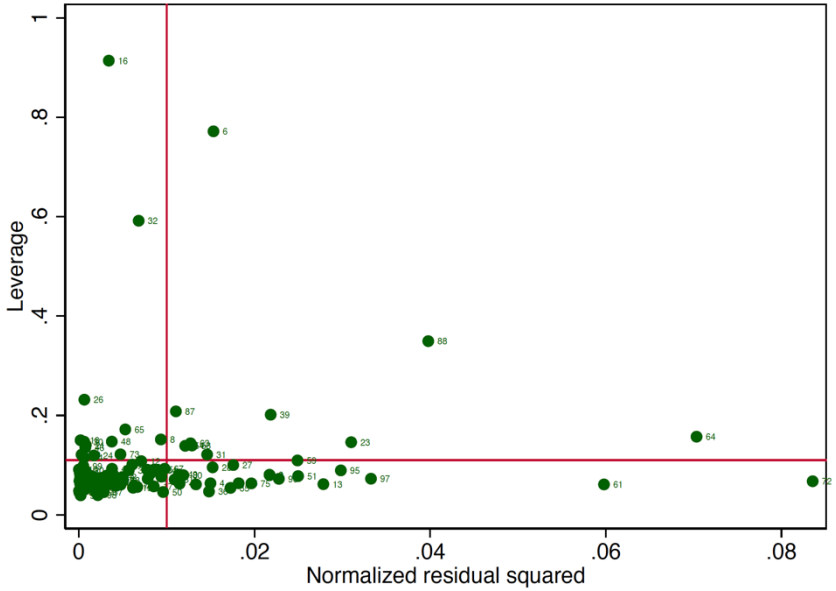
Appendix F: Linear Prediction vs Standardised Residuals Plots

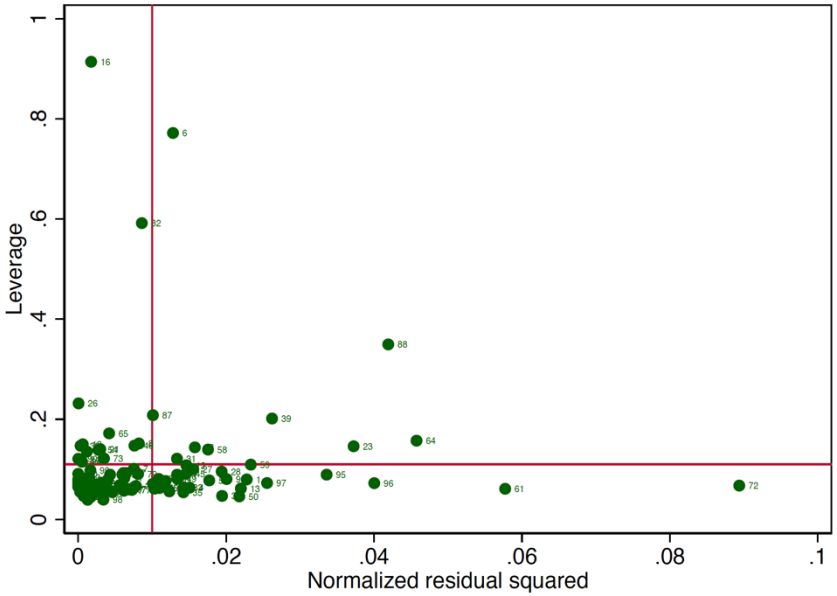


Appendix G: Leverage vs Residual Plots









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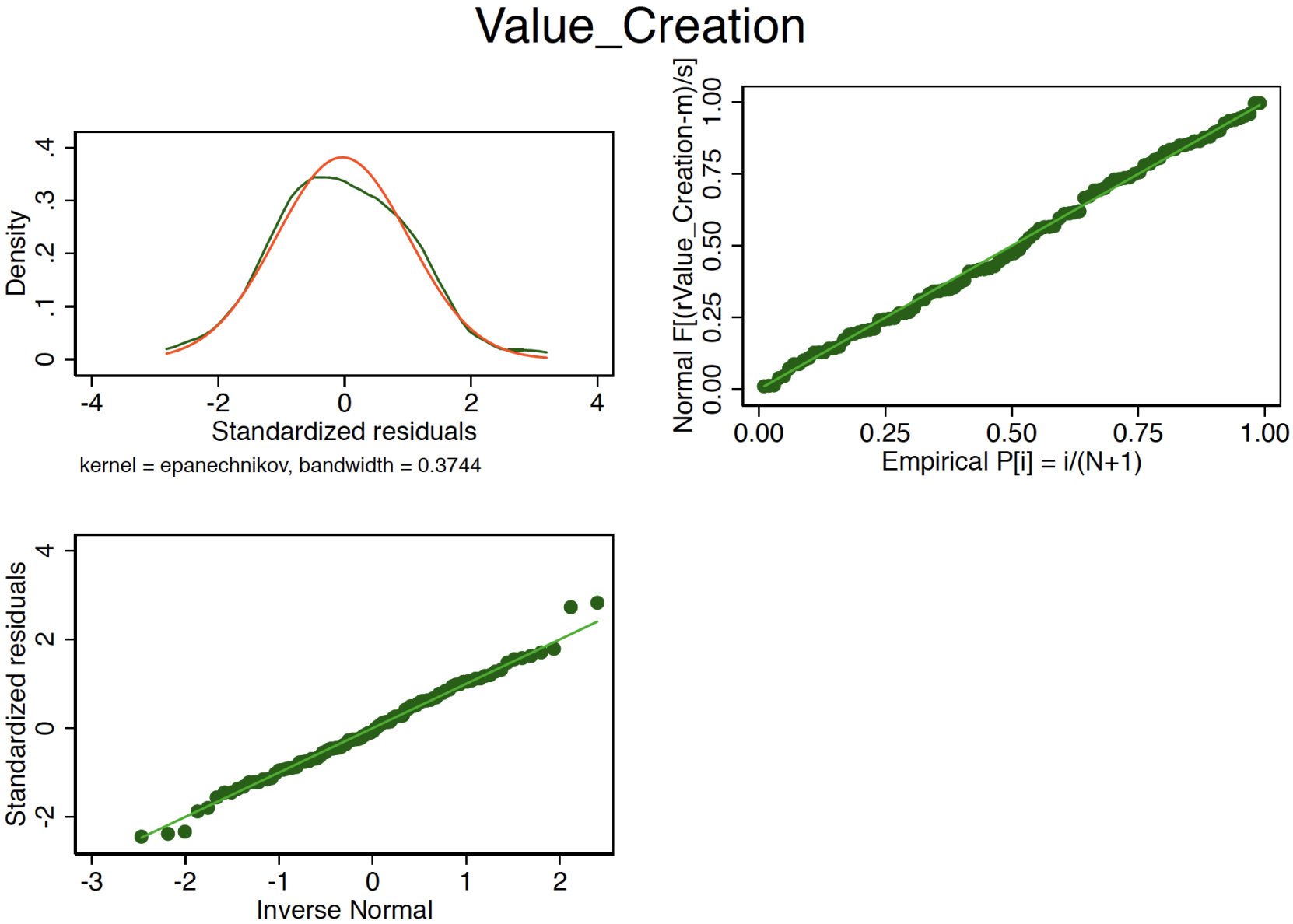
Appendix H: Normalised Residual Plots



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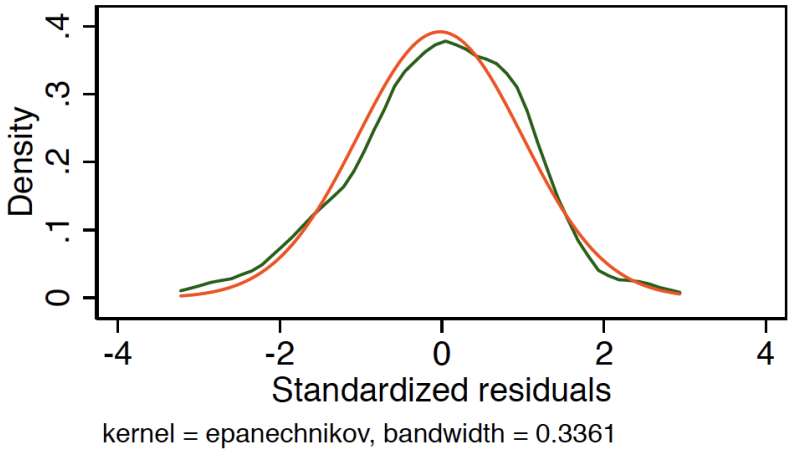
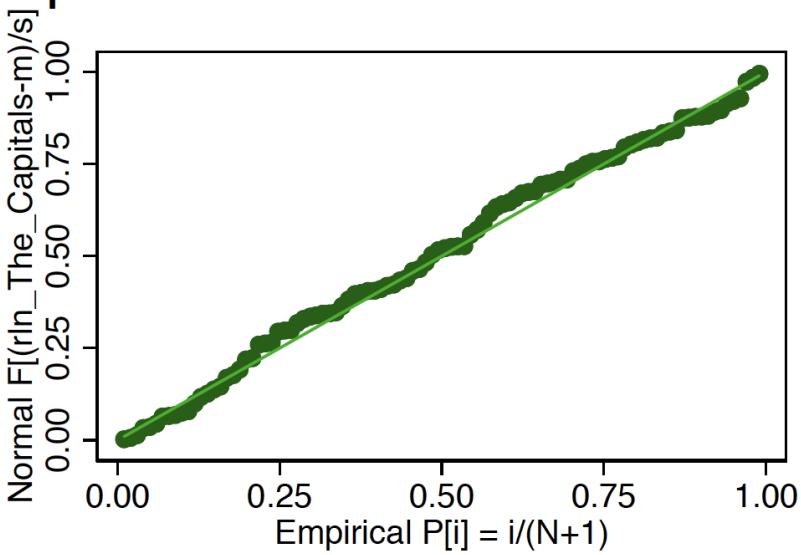
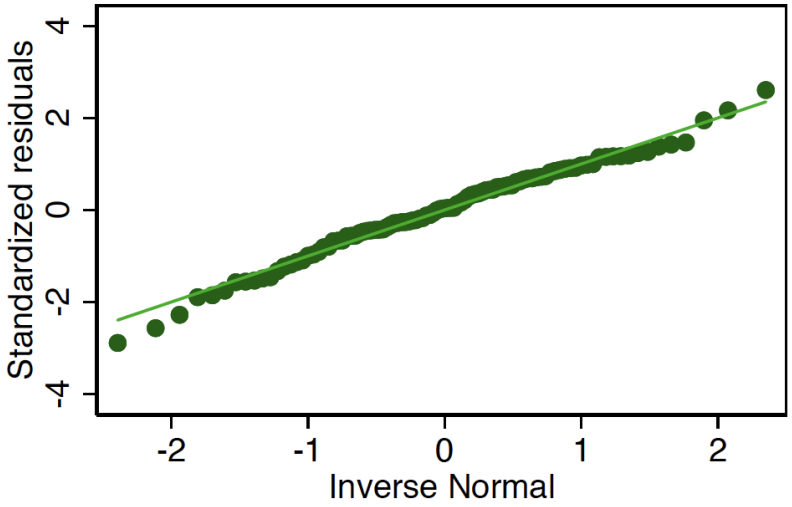
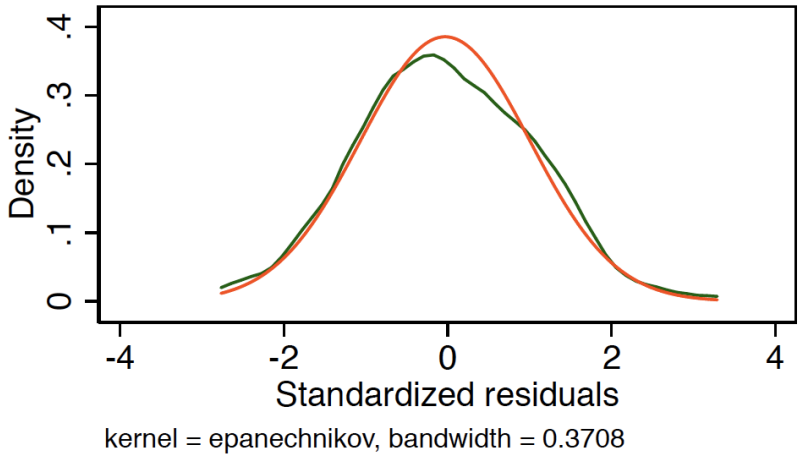
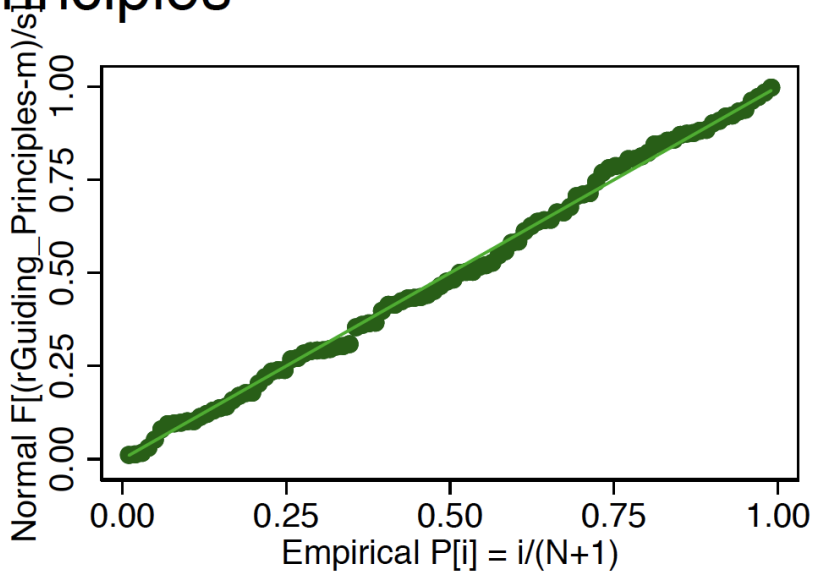


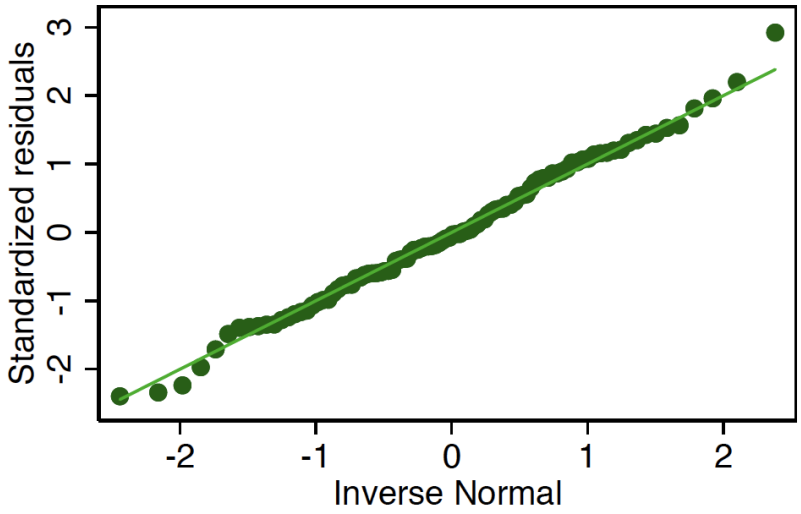




Guiding_Principles







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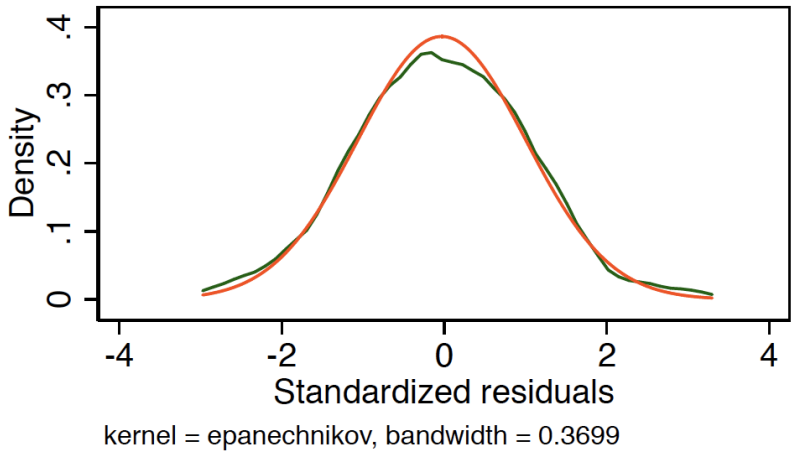

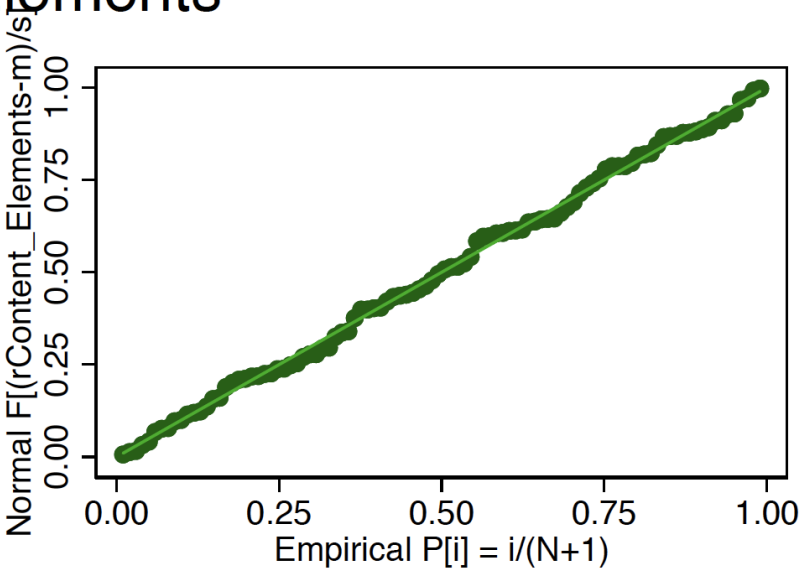

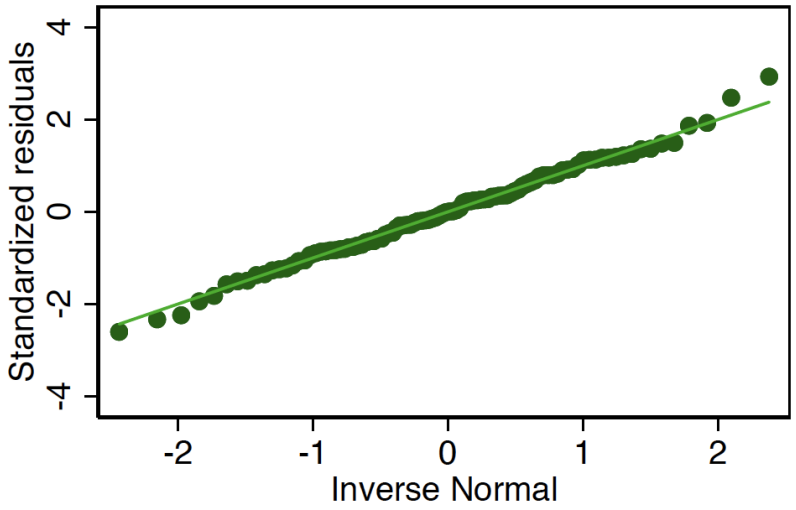

Appendix I: Standardized Residuals Plots