Exploring segmental reporting in integrated reporting

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Professor Nirupa Padia

Dear Professor

I hereby declare that this research report is my own unaided work. It is submitted in partial fulfilment of the degree of Master of Commerce by Coursework and Research Report at the University of the Witwatersrand, Johannesburg.

This research has been carried out according to the ethical policies of the University of the Witwatersrand and has not been submitted elsewhere for the purpose of being awarded another degree or for examination purposes.

Yours faithfully

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Abstract

This paper explores the link between segmental disclosures in the integrated reports of the top 100 JSE-listed entities and integrated reporting quality (IRQ). A content analysis has been performed over 3 years to identify links between segmental disclosure in the integrated report and the annual financial statements. This paper analyses whether entities which have integrated segments throughout their reports achieve better IRQ. This paper also analyses whether the segmental disclosures within the integrated report point to the emergence of integrated thinking.

The findings indicate that the segmental disclosure in the integrated report mimics that in the annual financial statements. In addition, this thesis finds a correlation between segmental disclosure and IRQ. Companies which integrate segment disclosure throughout the integrated report are also found to achieve better IRQ. The findings suggest that segmental disclosures which are integrated provide further insight into the value creation process and are indicative of integrated thinking. Integrated thinking can be evidenced by management's understanding of the entity, disclosure consistency in the integrated reporting and annual financial statements and integration within the business model.

Keywords

Integrated Reporting Quality (IRQ), Segment reporting, Integrated Thinking

II: Table of abbreviations used in this study

Abbreviation	Description
JSE	Johannesburg Stock Exchange
IIRC	International Integrated Reporting Council
IFRS	International Financial Reporting Standards
IASB	International Accounting Standards Board
IRQ	Integrated Reporting Quality
IoDSA	Institute of Directors South Africa
EY	Ernst & Young
CODM	Chief Operating Decision Maker

III: List of tables and figures used in this study

1. Introduction

1.1. Statement of the problem

According to the IFAC (2015, p. 7)

> "The aim of Integrated Reporting is to communicate the full range of factors that affect an organization's ability to create value over time. With this in mind, the organization should understand how it defines and creates value before it can meaningfully define report content."

Integrated reporting is a process founded on integrated thinking. Integrated reporting allows management to communicate the business strategy and how it will lead to value creation in the short-, medium- and long-term (Adams, 2017; De Villiers, Pei-Chi, & Maroun, 2017; Dumay & Dai, 2017; Guthrie, Manes-Rossi, & Orelli Rebecca, 2017; IIRC, 2016; Stubbs & Higgins, 2014). However, there is limited empirical research on the factors which drive integrated reporting quality (IRQ) and integrated thinking (Velte & Stawinoga, 2017).

According to De Villiers, Pei-Chi, et al. (2017), some of the possible drivers of integrated reporting include pressure exerted by institutions and stakeholders. Lueg, Lueg, Andersen, and Dancianu (2016) also found that external pressures from shareholders, customers and external authorities have been possible drivers of integrated reporting quality. By using an integrated report, management can strengthen the legitimacy and reputation of the entity (De Villiers, Pei-Chi, et al., 2017; Farooq, Ahmed, & Nadeem, 2018).

External assurance has been used as a means to enhance the reliability of integrated reports (Malola, 2019; Simnett, Vanstraelen, & Chua, 2009 2009). Further studies have found that possible drivers of integrated reporting quality are the size of an organisation and the social and environmental impact of an entity (De Villiers, Venter, & Hsiao, 2017 2017; Malola, 2019). Having special committees dedicated to sustainability and the overseeing of the preparation of integrated reports and compliance with GRI has also proven to be a possible driver (Malola, 2019). This thesis will add to these factors by considering the integration of segment disclosure within the business process in the integrated report as a possible driver of integrated reporting quality and integrated thinking.

The allocation of resources and the evaluation of the performance of operating segments may indicate whether or not an entity has the ability to create value over time (IASB, 2016a; IIRC, 2013; Mardini, Crawford, & Power, 2012; Nichols, Street, & Cereola, 2012). For example, disclosure of operating segments in the integrated report may indicate more mature and better integrated thinking (Adams, 2017; De Villiers, Pei-Chi, et al., 2017; Dumay & Dai, 2017; Warwick & Tuyana, 2015). Segment disclosure allows those charged with governance to disclose and faithfully represent the activities of the organisation and be held accountable (Abeysekera, 2013; IASB, 2016a). IFRS 8 requires firms to identify and disclose segments according to the firms' internal organisational structure and in the manner in which the Chief Operating Decision Maker (CODM) allocates resources and evaluates the performance of the firm (Kajüter & Nienhaus, 2017). As a result, segment reporting is inextricably linked to the integrated reporting philosophy as it allows transparency and responsible business management (consider De Villiers, Pei-Chi, et al., 2017; Tirado-Valencia, Cordobés-Madueño, Ruiz-Lozano, & De Vicente-Lama, 2019).

1.2. Purpose

This study explores segmental disclosures in the integrated reports of a sample of companies listed on the JSE[1] over 3 years. This study also evaluates the correlation between IRQ and segmental disclosures by testing for consistency in the way the business models have been disaggregated and disclosed for each segment in the integrated reports and financial statements. When implementing integrated reporting, management needs to develop new ways to measure and disclose information to engage in integrated thinking (De Villiers, Pei-Chi, et al., 2017).

According to Adams (2017), integrated thinking is the key driver of quality integrated reporting in organisations. Integrated thinking and integrated reporting are considered by the IIRC to be mutually reinforcing factors (IIRC, 2013; WICI, 2013). As a result, the consistency in segment disclosure in both the annual financial statements and an integrated report will also serve as an indicator of integrated thinking.

The following research questions will be addressed:

1. How do JSE-listed companies disclose their operating segments in integrated reports?
2. Is the IRQ, *measured according to the EY Excellence in Integrated Reporting Awards*, of more quality when companies disclose the same segments in their annual financial statements and integrated report?
3. Do the segmental disclosures in the integrated report point to the emergence of integrated thinking?

1.3. Significance of the study

At the theoretical level, this research will answer a call by De Villiers, Pei-Chi, et al. (2017) for more research on different factors and unexplored research questions relating to influences around integrated reporting. It will contribute to the limited body of research on the factors

[1] Johannesburg Stock Exchange

which may be influencing the nature and extent of disclosures found in an integrated report (Institute of Directors, 2016; Moolman, Oberholzer, & Steyn, 2016). It can also address the need for a more detailed analysis of what companies are reporting on their business models (Sukhari & De Villiers, 2018; Tweedie, Nielsen, & Martinov-Bennie, 2018). This thesis will respond to the call by C. A. Adams and McNicholas (2007) for further research on the drivers of organisational change and sustainable performance.

At the empirical and practical level, the findings of this report may be useful for managers, practitioners, standard-setters, regulators, and investors as they evaluate the merits of high-quality integrated reporting and segment reporting (Barth et al., 2017). The merits of good quality integrated reporting include advancements in corporate reputation, a reduction in reputational risk and improved stakeholder relationships (De Villiers, Pei-Chi, et al., 2017; Lodhia, 2015; Steyn, 2014; Velte, 2019). High-quality integrated reporting is useful in signalling the ability of an entity to manage economic, social and environmental concerns effectively (Barth, Cahan, Chen, & Venter, 2017; Churet & Eccles, 2014; Malola, 2019). Finally, the preparation of good quality integrated reports has proven to be a challenge (De Villiers, Pei-Chi, et al., 2017). By considering the role of segmental disclosures in improving IRQ, this research may add to considerations which preparers of integrated reports must be cognisant of when preparing their reports.

1.4. Assumptions, limitations and delimitations

This paper is limited to South African companies listed on the JSE. South Africa is one of the first countries formally to introduce integrated reporting through the King Code (IOD, 2009a). The JSE listing requirements require companies to compile an integrated report using the IIRC Framework or to provide an explanation explaining why they have not done so (de Villiers, Rinaldi, & Unerman, 2014; Malola, 2019). Therefore, non-listed companies were not examined as they have no obligation to prepare integrated reports.

The research will focus on the companies included in the *EY Excellence in Integrated Reporting* Awards (EY, 2015, 2016, 2017). A study performed by Barth et al. (2017) indicated that the score sheets used in the reports by the adjudicators were found to be consistent with the IIRC Framework, resulting in the scores being appropriate to use as a basis for measuring IRQ.

Finally, this thesis will only look at the extent to which operating segments are disclosed in the integrated reporting and whether or not there is a correlation between segmental disclosure and IRQ. It will not evaluate the causal effects which segmental reporting in the integrated report has on IRQ and this paper will not look at other factors which might result in better IRQ.

The researcher acknowledges that the analysis process is inherently subjective when looking at IFRS 8 disclosures in the integrated report. This subjectivity is a characteristic of interpretive-inspired research and, far from being a threat to validity and reliability, was essential for evaluating qualitative or narrative disclosures typically included in the integrated reports being reviewed (Maroun & Jonker, 2014; Tregidga, Milne, & Kearins, 2014). The analysis of the results is also subjective but the statistics were reperformed three times to ensure the same results were reached. The extent to which companies comply with the IIRC framework is not considered. Similarly, the impact of primary listing status is not addressed by this research. These are inherent limitations of the thesis. Therefore, dual-listed entities that are included in the EY Excellence in Integrated Reporting Survey have not been analysed separately but this could be an area of future research.

2. Segmental disclosure and the construction of the data collection instrument

2.1 Integrated reporting

The purpose of integrated reporting

The need for integrated reporting arises from the recognition of the shortfall of existing reporting models such as sustainability reporting (Del Baldo, 2017; Guthrie et al., 2017). This has driven a demand by stakeholders for more effective reporting on crucial information which links the society, environment and global economy (IRCSA, 2011).

According to the King Code of Governance Principles for South Africa 2009 (King III):

> "current incremental changes towards sustainability are not sufficient - we need a fundamental shift in the way companies and directors act and organise themselves (IOD, 2009a, p. 11)".

The recommendation made by the IOD (2009a) that organisations should adopt integrated reporting has represented a 'fundamental shift' in South Africa's corporate reporting practices (IRCSA, 2011). This shift has also been driven by the inadequacies of existing reporting models in linking the three interdependent sub-systems, namely, the society, the environment and the economy (IRCSA, 2011). In order to achieve this fundamental shift, integrated reporting must be implemented (IOD, 2009a; IRCSA, 2011). Integrated reporting can provide a fundamental shift as it is promoted by the Integrated Reporting Framework (Busco, Frigo, Paolo, & Angelo, 2013; García-Sánchez, Rodríguez-Ariza, & Frías-Aceituno, 2013; Silvestri, Veltri, Venturelli, & Petruzzelli, 2017). The fundamental shift is created through integrated reporting providing holistic, strategic, relevant and material information to users (Adams & Simnett, 2011; Dumay & Dai, 2017).

According to the IIRC (2013, p. 13);

> "An integrated report is intended to be more than a summary of information in other communications (e.g., financial statements, a sustainability report, analyst calls, or on a website); rather, it makes explicit the connectivity of information to communicate how value is created over time".

Although the purpose of integrated reporting has been defined, there is no prescribed reporting format. There are a number of frameworks such as the IIRC (2013), IFAC (2015) and the GRI (2012) but no prescribed minimum disclosure. Instead, the development of integrated reporting arose from the link between social and environmental factors which influence financial reporting (de Villiers et al., 2014). Integrated reporting represented an evolution in the format in which the interconnectedness of these social, environmental and economic factors are presented (De Villiers, Pei-Chi, et al., 2017; Solomon & Maroun, 2012).

Integrated reporting is a developing framework which is influenced by the environment and social influence on an organisation (Hopwood, 1987; McNally, Cerbone, & Maroun, 2017). Although integrated reporting was introduced because of a need for a better reporting framework, it has evolved to allow for more management intervention in finding the connection between financial and non-financial information (Adams & Frost, 2008; Doni, Martini, Corvino, & Mazzoni, 2019). According to Guthrie et al. (2017), the adaptation of integrated reporting can be attributed to morphostatic change or morphogenetic changes.

Morphostatic change refers to environmental changes which do not result in a direct change in an organisation. As the environment changes, the reporting structure in an organisation remains unchanged (Guthrie et al., 2017). This may be because of management rebutting the changes (Laughlin, 1991). Morphogenetic changes are environmental changes which have a direct impact on the reporting of an organisation (Guthrie et al., 2017). This change is caused by organisations being under pressure to respond to environmental changes, changes in organisational culture and processes (Gray, Kouhy, & Lavers, 1995; McNally et al., 2017).

Introduction of integrated reporting in South Africa

In a South African setting, there was a need for a shift in the way those charged with governance were communicating information to the users of financial statements (IOD, 2009). The approach of integration of financial and non-financial information had been suggested by the IIRC (2013). The need for these additional disclosures also arises because of the agency problem where the shareholders and other stakeholders cannot direct the activities of management and cannot dictate how management runs the organisation on a day-to-day basis (Turner & Coote, 2018; Watts & Zimmerman, 1983). Because of the agency problem, the power imbalance between the shareholder and management of an organisation had to be corrected in other ways. These include accounting standards which prescribe certain financial statement disclosures (Abeysekera, 2013; Baker & Wick, 2019). These disclosures allow for stakeholders to hold management accountable (Whittington, 2008).

The additional financial statement disclosures which have been prescribed by standard-setting boards, such as the IASB, ensure that the organisation is able to demonstrate how corporate strategy links with the financial information disclosed to users. This allows the capital market participants to have a full understanding of how the corporate strategy affects the performance of the organisation and, ultimately, results in value creation (KPMG, 2011).

Over the past two decades, these social and environmental factors have been reported in stand-alone reports such as sustainability or environmental and social reports (Abeysekera, 2013). The past social and environmental disclosures originated in managements' desire to communicate information to stakeholders who had influence and perceived the information to be important (de Villiers et al., 2014; Naynar, Ram, & Maroun, 2018). Although these social and environmental disclosure reports are primarily focused on communicating information important to stakeholders and they have resulted in increased volume and complexity of the information which should be communicated (de Villiers et al., 2014; McNally & Maroun, 2018).

The implementation of integrated reporting in South Africa can be traced back to the first King Code of corporate governance issued in 1994 (Eccles, Krzus, & Ribot, 2015; Guthrie et al., 2017; Malola, 2019). This emphasis on the implementation of integrated reporting continued to gradually develop with the development of the Codes of corporate governance (King Report, 1994; King Report ('King II'), 2002; King Report ('King III'), 2009; King Report ('King IV'), 2016). King II introduced the concept of triple-bottom-line reporting through integrated sustainability reporting and King III (IOD) introduced the concept of integrated reporting and placed an emphasis on integrated thinking. This resulted in the Johannesburg Stock Exchange (JSE) requiring listed entities with a financial year starting on or after 1 March 2010 to prepare an integrated report.

According to du Toit (2017), there has always been a misconception with regards to integrated reports being mandated by the JSE, which is not the case. The implementation of integrated reporting still allows for significant judgement from management (du Toit, 2017; Setia, Abhayawansa, Joshi, & Huynh, 2015) regardless of the JSE's 'apply and explain' requirement and the guidance provided by the IRCSA (2011) and the IIRC (2013). The principle-based approach used in the preparation of an integrated report also accommodates different circumstances which can arise in an organisation (Malola, 2019).

This drives the purpose of integrated reporting, which is to provide the same valuable information relating to the social and environmental disclosures in a more concise report which also incorporates the integrated nature of these factors (Abeysekera, 2013; De Villiers, Pei-Chi, et al., 2017; de Villiers et al., 2014; Malola, 2019). De Villiers, Pei-Chi, et al. (2017) summarised the purpose of integrated reporting as the improvement in the quality of the information provided to the providers of capital on how the organisation creates value over time (IIRC, 2013). The implementation of integrated reporting acts as a communication tool for management by breaking down any barriers in internal communication (De Villiers, Pei-Chi, et al., 2017). Furthermore, integrated reporting promotes communication through the creation of a clear value creation pathway that is communicated to senior management (Mio, 2016).

Limitations of existing corporate reports

According to the IIRC (2013), integrated reporting aims to improve the quality of information provided to users of financial statements. The IIRC (2013) seeks to do this by incorporating financial and non-financial information in a single report. This report will be used to inform the users of the integrated report of the manner in which all different types of capitals are managed in the organisation in order to generate sustainable returns (McNally et al., 2017; Nielsen, 2019; Solomon & Maroun, 2012). This approach developed as a result of annual financial statements providing an inadequate account of the performance of the organisation by only focusing on financial information (IOD, 2016; IRCSA, 2011; Mohamed, Allini, Ferri, & Zampella, 2019). This approach also developed because of the inherent limitations of sustainability reports (Gray, 2010; IRCSA, 2011).

Part of the limitations of sustainability reporting is caused by the presentation of financial information which shows no consistency or link with the long-term objectives of the organisation (Abeysekera, 2013). Information is presented in silos, so there is no disclosure of how the activities undertaken by the organisation are connected (Abeysekera, 2013) to one another in order to create value. According to Dumay and Dai (2017), there has been an increased recognition in academia and industries of the incorporation of sustainability with the strategy and operations by linking it to the financial outcomes of an entity.

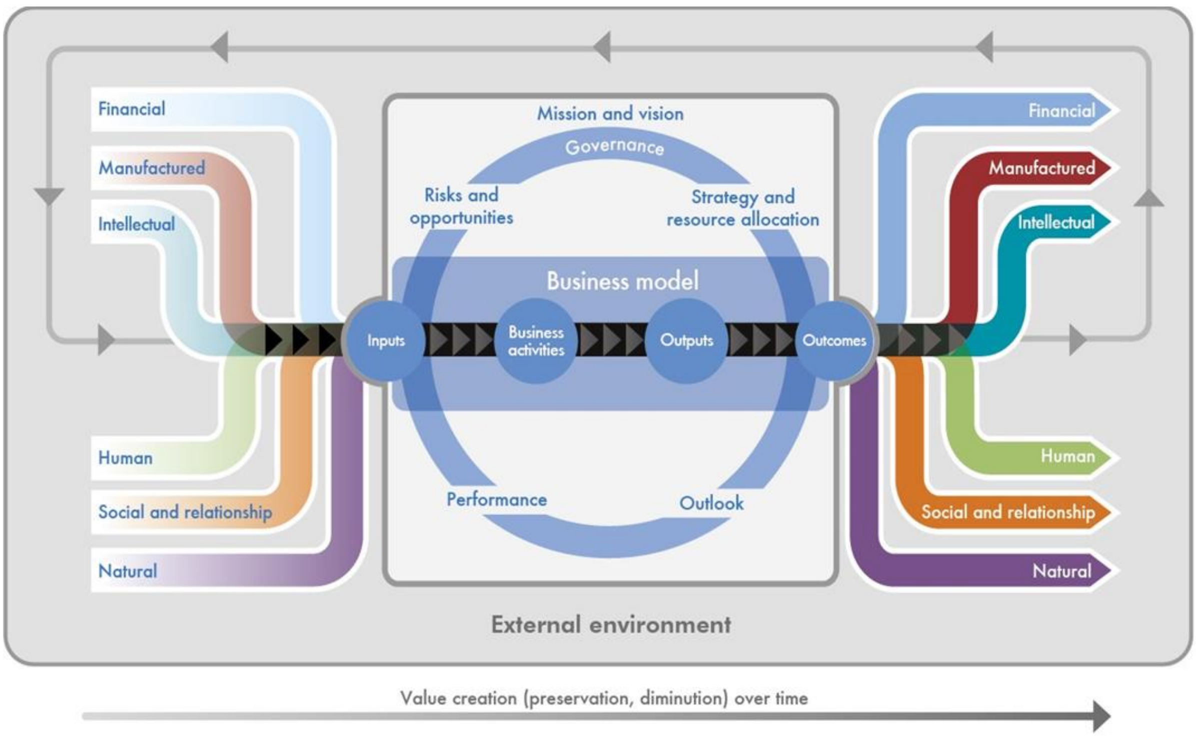
This further illustrates the weakness in sustainability reporting caused by the separation of Corporate Social Responsibility (CSR) disclosure and information disclosed in the annual reports (Dumay & Dai, 2017; J. C. Jensen & Berg, 2012). Integrated reporting fills the gap by focusing on the interconnectedness of capitals (IIRC, 2013) to ensure that users have a better understanding of the business model and strategy in order to contribute to the sustainability of the organisation (C. A. Adams, Potter, Singh, & York, 2016; Cahan, De Villiers, Jeter, Naiker, & Van Staden, 2016; De Villiers & Marques, 2016; Eccles & Krzus, 2010; McNally et al., 2017).

Disadvantages of integrated reporting

Part of the limitations of integrated reporting is the restriction of certain types of information into specific sections (De Villiers, Pei-Chi, et al., 2017). Organisations struggle to interpret and apply a principles-based reporting framework and this limits the quality of the integrated report (IOD, 2016; McNally et al., 2017). According to du Toit (2017), managers have struggled to improve the quality of integrated reports as a reduction of information in a report does not necessarily enhance the quality (De Villiers, Pei-Chi, et al., 2017).

External pressures to prepare an integrated report may result in managements' resistance to improving the quality of integrated reports produced by organisations (Malola, 2019; Stubbs & Higgins, 2014). A further challenge faced by organisations includes management providing information related to environmental issues which is both repetitive and generic (McNally et al., 2017; Solomon & Maroun, 2012). Although management provides qualitative information which is crucial to the users' understanding (Malola, 2019), management struggles to quantify certain information such as risk exposure to non-financial capital (McNally et al., 2017; PwC, 2015; Raemaekers, Maroun, & Padia, 2016).

Figure 1. Value creation process



(IIRC, 2013)

The value creation process

The IIRC (2016) has indicated that the best way for an organisation to report its value creation is by providing both financial and non-financial disclosure. The purpose of the integrated report is not to summarise information which has already been disclosed but to explain the interconnectivity among the different capitals in the context of the organisation's external environment and business model (IIRC, 2013). The IIRC has determined that the integration of financial and non-financial information results in a clear, concise and comparable format of communicating information to stakeholders about material information within the entity such as the strategy, risk, governance and performance of management. De Villiers et al. (2014) suggest that organisations should integrate their approaches when reporting information to users, with the practices used to determine risks and opportunities internally.

Inputs

Illustrated in Figure 1 above is the value creation process. The value creation process is better explained to users through qualitative information disclosure (Malola, 2019). The value creation process is made up of six capitals. These capitals incorporate financial, manufactured, intellectual, human, social and relationship and natural capitals (IIRC, 2013). Integrated reporting exists to communicate the interdependency of the organisations social, environmental and economic resources with regards to the capitals and the impact the organisation has on the different types of capitals (de Villiers et al., 2014; IIRC, 2013; Nielsen, 2019). According to Parrot and Tierney (2012), when considering the reporting of capitals in the integrated report, a challenge faced by organisations is the difficulty in quantifying and measuring the different trade-offs among the various capitals. This has resulted in difficulties in balancing the interests of different stakeholders (De Villiers, Pei-Chi, et al., 2017).

Integrated reporting is considered a more effective way of reporting (IIRC, 2013) as it specifically focuses on value creation through the six capitals (as illustrated in Figure 1 above). Value is created when integrated reporting is used as a tool for integrated thinking by actively considering the relationship among the six capitals (Feng, Cummings, & Tweedie, 2017; IIRC, 2013).

According to de Villiers et al. (2014) and Silvestri et al. (2017), the current integrated reporting framework focuses more on the needs of current and potential investors. This indicates that the IIRC's user group are the users of financial statements. Capitals, specifically financial capital, are very important in the value creation process as these indicate how management use the resources provided by investors to produce the end product and ensure the organisation is profitable (de Villiers et al., 2014). Financial capital has become a more prevalent area of focus for users of financial statements, especially after the financial crisis

(Zhang & Andrew, 2014). The objective of providing quality information about how financial capitals are utilised is useful not only to current stakeholders but also to potential investors (Murphy & O'Connell, 2013). Regardless of the intended primary users, the integrated report is intended to be beneficial to all stakeholders interested in how the organisation creates value (IIRC, 2013; Silvestri et al., 2017). According to Ahmed Haji and Anifowose (2016), the difficulties in balancing the needs of different stakeholders has led to management disclosing a higher level of biased information with regards to the interrelationships between capitals. Objective information should be disclosed to users about all the capitals used by the organisation. This is crucial information to the users as these capitals are the inputs which, ultimately, affect the business process in order to generate outputs (Silvestri et al., 2017).

Business model

The disclosure by an organisation of the inputs and the effect these inputs have on the business process and outputs results in the business model disclosure. The business model is a system which comprises the inputs being the capitals and resources provided by users, the activities, being the process of converting these capitals and, lastly, outputs being the end product (du Toit, 2017). As a result of the relevance of different types of capitals of an organisation on the business model, integrated reporting should be considered as a natural part of the business process by management (McNally et al., 2017).

Integrated reporting provides diversified information, such as the business activities, which is necessary for analysing and evaluating an organisations' disclosure (de Villiers et al., 2014). According to the IIRC (2013), the business model is one of the essential elements of an integrated report as it illustrates how an organisation's business activities either create or destroy value through the managing of the six capitals. This has resulted in a growing preference for integrated reporting. This is because of the expectation created for the disclosure on the social impact of the business activities on the economy and the community in which the organisation operates (du Toit, van Zyl, & Schütte, 2017). Reporting on the business activities provides objective information when management discloses both negative and positive aspects of the business activities undertaken (Eccles & Saltzman, 2011; IOD, 2009a). This is beneficial to shareholders who cannot direct the business activities of management (Abeysekera, 2013).

The strategy of an organisation and how resources are allocated form part of the value creation process. An integrated report communicates the strategy of an organisation and how the strategy will lead to value creation in the long-term (de Villiers et al., 2014; IIRC, 2013). The disclosure of the strategy in the integrated report allows users to understand how the business strategy affects corporate performance and value (Abeysekera, 2013; KPMG, 2011).

Management's focus on strategy is an effective tool in understanding the relationship between the different elements of a business model and the external environment which allows for better performance (Silvestri et al., 2017).

To ensure that all relevant and important information is reported to users, the integrated report must incorporate both negative and positive information which is material to ensure the accuracy and reliability of the report (IIRC, 2013; IOD, 2016; McNally et al., 2017). There has been a power imbalance between shareholders and management which can be corrected by management providing relevant disclosures to shareholders (Abeysekera, 2013). Part of the disclosure which can be incorporated to ensure a balance in the information provided to users is the risk disclosure (McNally & Maroun, 2018). According to Raemaekers et al. (2016), the information provided in integrated reports does not always incorporate the material risks associated with the different capitals and how management is mitigating these risks. This is an indicator of generic and biased information disclosure.

Figure 1 illustrates that part of the value creation process is identifying the risks and opportunities of the organisation. Similar to the strategy, disclosure of the risk an organisation is exposed to is a core aspect of the integrated report (IIRC, 2013; McNally et al., 2017). The incorporation of risks and opportunities in the integrated report provides stakeholders with an overview of the organisation (IRCSA, 2011; McNally et al., 2017). The disclosure of risk further allows management to build stakeholder confidence by indicating how risk is managed to ensure better performance (Guthrie et al., 2017). The preparation of an integrated report with a focus on value creation and risk assessment indicates that management is focused on future actions and plans (Macias & Farfan-Lievano, 2017).

Outcomes

Lastly, Figure 1 indicates that part of the value creation process is the outcomes or outputs of an organisation. Atkins and Maroun (2015) emphasised the need for a more forward-looking reporting model which would measure the outputs of an organisation in order to provide a perspective on the future performance of the organisation. The disclosure of outputs in the integrated report allows management to be held accountable by stakeholders for the resources provided to the organisation (IOD, 2016; McNally et al., 2017). Integrated reporting should drive organisational change by ensuring that management focuses on outcomes which are sustainable (Del Baldo, 2017; Eccles & Krzus, 2010).

Management should take the necessary steps to ensure the sustainability of the business model in the short-, medium- and long-term, as this results in providing higher quality integrated reports to users (Alrazi, De Villiers, & Van Staden, 2015; Hidas et al., 2016; McNally et al., 2017; Pope, Annandale, & Morrison-Saunders, 2004). Ensuring sustainability also results in the organisation being seen as legitimate as societal expectations are then aligned with the organisation's strategy and business model which is disclosed in the integrated report (Farooq et al., 2018; O'Donovan, 2002).

Integrated reporting has to ensure forward-looking information tailored to the business model and strategic objectives of the organisation (Eccles & Krzus, 2010). According to Kaplan (1984), the inclusion of non-financial information in the integrated report challenges management to gain an understanding of the factors most critical to the long term success of an organisation. This challenge is still faced by management, as PwC (2015) has proven, that companies have struggled to report on how they manage their non-financial capital, as well as report on the strategy and risk to which the entity is exposed.

There have been some benefits associated with disclosing non-financial. Silvestri et al. (2017) developed a framework to assess whether integrated reporting is a powerful tool for accountability or not. One of the three factors identified as an influence in ensuring this is the integration of financial and non-financial information in order to communicate the value creation process to the user (De Villiers, Pei-Chi, et al., 2017; Doni et al., 2019; Silvestri et al., 2017).

2.2 Integrated reporting impact on stakeholders

The integrated report should provide insight into the relationships among the key stakeholders of an organisation and how their needs and expectations are being taken into consideration and will be addressed (Busco et al., 2013). These key stakeholders include employees, customers, suppliers, business partners, local communities, legislators, regulators and policymakers (Adams, 2015). The report should disclose information which is material and ensure reliability and completeness of information from both a negative and positive perspective (Busco et al., 2013).

Integrated reporting has resulted in a change in the way organisations use resources (De Villiers et al., 2014). According to Higgins, Stubbs, and Love (2014) integrated reporting, from managements' perspective, is the disclosure of information which indicates managements' competence in developing strategies capable of meeting current business challenges while meeting the interests of shareholders and other stakeholders.

Integrated reporting which incorporates both social and environmental reporting is vital in empowering stakeholders so that they are able to make better decisions and also to hold management accountable with the resources provided (Brown & Dillard, 2014). This information is relevant to users as there has been a shift in the investor landscape from being concerned only about profitability and making a return to investors who are now also concerned about sustainability (Abeysekera, 2013). This is evident in shareholders who decide to exit the market and sell their shares because they often do not have the necessary information about the organisation so the IIRC aims to correct these market failures through integrated reporting (Abeysekera, 2013; Soyka, 2013).

The main focus of a few studies has been on what integrated reporting is and why organisations should apply integrated reporting (Adams, 2002; Adams & Frost, 2008; Schaltegger, 2012). None of these studies focuses on how organisations should implement integrated reporting and how it can be achieved (Frostenson, Helin, & Sandström, 2012). The lack of comprehensive accounting standards may be what is inhibiting the widespread adoption of integrated reporting by organisations (adapted from Jeffrey & Perkins, 2014).

Barth et al. (2017) have considered how the dual objective of integrated reporting can be achieved through international accounting standards and additional disclosures. The EY panel focuses on the quality of these disclosures and whether or not the integrated report provided by an organisation communicates well the strategy and value creation process (Barth et al., 2017).

2.3 Integrated thinking

The IIRC (2013, p. 2) defines integrated thinking as

> "the active consideration by an organisation of the relationships between its various operating and functional units and the capitals that the organisation uses and affects".

Integrated thinking results in integrated decision making by management and actions which will lead to value creation for the organisation in the short-, medium- and long-term (Guthrie et al., 2017; IIRC, 2013). According to the IIRC (2013, p. 2), "Integrated thinking takes into account the connectivity and interdependencies between the range of factors that affect an organization's ability to create value over time". This indicates that integrated thinking is focused on long-term value creation for an organisation.

Implementing integrated reporting within an organisation requires management to incorporate integrated thinking into the day-to-day business operations. Integrated thinking can be incorporated through developing new ways to disclose, measure and manage information (De Villiers, Pei-Chi, et al., 2017). Integrated reporting is aligned with the "tone at the top" and should be incorporated by management in order to provide direction to employees on how value is created (Dumay & Dai, 2017).

This is supported by the IIRC (2013) stating that integrated thinking is an integral element when producing an integrated report (Adams & Simnett, 2011). Research by Dumay and Dai (2017) and WICI (2013) indicates that integrated reporting only forms part of the concept as integrated thinking forms a basis for integrated reporting. Integrated thinking is considered the logic which guides the preparation of an integrated report (Giovannoni & Fabietti, 2013; Sun, 2012). Although integrated thinking is deemed to be crucial in the preparation of an integrated report, there is not much guidance for preparers to develop an integrated thinking framework (McNally et al., 2017).

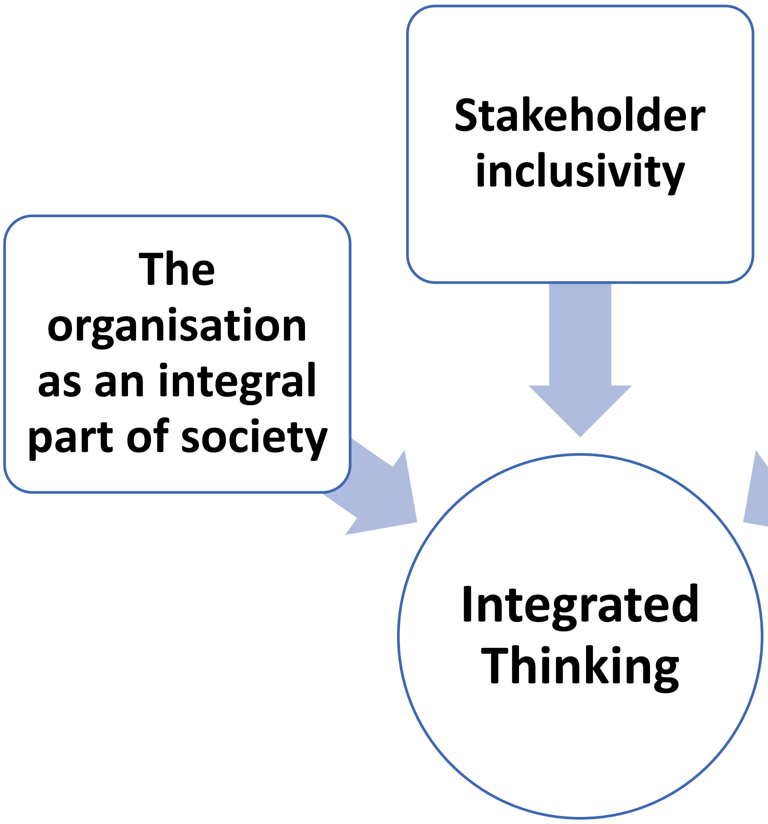
As displayed in Figure 2, integrated thinking, as defined by the IOD (2016), is the connectivity and interdependencies amongst a range of factors which influence the value creation process of a firm. Part of these factors incorporates the organisation being an integral part of society, stakeholder inclusivity and being a corporate citizen.

An organisation is considered an integral part of society when the organisation conducts its operations in a societal context in which it both affects and is also affected by society (IOD, 2016). This has become a necessity because of society holding an organisation accountable and being more transparent in the activities it undertakes (Abeysekera, 2013; Tirado-Valencia et al., 2019). According to the IRCSA (2011), the weakness of most existing reporting models are caused by management being unaware that the success of the organisation is linked to the environment, the economy and, most importantly society. According to the legitimacy theory, a "social contract" exists between society and an organisation. This contract implies that the organisation has a duty to communicate its activities and how these affect society (Silvestri et al., 2017).

In addition, stakeholder inclusivity is achieved through the interdependent relationship which arises among the stakeholders and the organisation. This relationship is enhanced through an organisation's ability to create value not only for itself but also for other stakeholders. This emphasises the need of the organisation to become aware of the opportunities and some of the challenges which result from a triple context in which the entity operates to ensure that the expectations and interests of all material stakeholders are met (IOD, 2016). The primary focus of annual reports has become communicating core information to stakeholders (de Villiers et al., 2014; De Villiers & van Staden, 2011). According to EY (2013b) and the IOD (2009a), an essential element of integrated reporting is providing additional information to stakeholders enabling them to assess the long-term prospects of an organisation.

Lastly, for an organisation to become a corporate citizen, the organisation must acknowledge its right, obligations and responsibilities towards the society and the environment in which it operates in (IOD, 2016). This illustrates that accountability is integral for an organisation and an integrated report is the primary means by which management demonstrates how the resources entrusted to them have been utilized (Masiero, Arkhipova, Massaro, & Bagnoli, 2019; Murphy & O'Connell, 2013). The importance of an organisation being seen as a corporate citizen is illustrated by integrated reporting evolving to incorporate more social and environmental responsibility disclosure (Del Baldo, 2017; Eccles & Saltzman, 2011; Rowbottom & Locke, 2013). Malola (2019) further illustrated that the inclusion of Corporate Social Responsibility as a disclosure in the integrated reporting is a potential driver of integrated reporting quality.

Figure 2. Integrated thinking components



(IOD, 2016)

Integrated thinking resulting in holding management accountable provides useful information, especially to stewards (Whittington, 2008). There has been a shift in the development of integrated thinking as integrated thinking is becoming a tool for stewardship and accountability (du Toit et al., 2017). As integrated thinking is the basis for integrated reporting, integrated reports can be used as an accountability tool to keep stakeholders informed (Silvestri et al., 2017) of the activities of the entity. Integrated reporting results in more reliable information to users as it reduces information asymmetry (adapted from Whittington, 2008) through the transparency of information about how resources are invested.

Holding management accountable continues to remain prevalent today as it is considered the root metaphor and dominating purpose of accounting. This dominating purpose is to hold management responsible for the positions which they have been entrusted to manage (Ravenscroft & Williams, 2009). As indicated by Figure 2, integrated thinking is promoted through the entity being a good corporate citizen (IOD, 2016). Integrated thinking also ensures management acts in the best interest of the entity and more importantly, in the best interest of the stakeholders (IOD, 2010).

The enhanced accountability of management through integrated reporting results in value creation over time. Stakeholders have access to more information regarding the business activities (value creation process) and they can hold those charged with governance accountable sooner, ensuring that entities create value overtime sustainably (Abeysekera, 2013; IIRC, 2013 2013; Whittington, 2008)

2.4 Segment reporting

IFRS 8 segmental disclosure requires the entity to identify segments within the firm's internal organisational structure in the same way in which the chief operating decision-maker (CODM) would allocate resources and evaluate the performance of the organisation (Kajüter & Nienhaus, 2017). IFRS 8 requires entities, specifically those with publicly traded securities, to disclose information about the segments which the CODM has identified (IASB, 2016b). This information includes the products and services of the operating segment, the geographical areas in which the segments operate and the major customers (IASB, 2016b).

According to IASB (2016b, para. 2), an operating segment is defined as:

> "…a component of an entity that engages in business activities from which it may earn revenues and incur expenses (including revenues and expenses relating to transactions with other components of the same entity); whose operating results are reviewed regularly by the entity's chief operating decision-maker to make decisions about resources to be allocated to the segment and assess its performance and for which discrete financial information is available."

An entity is required to report on an operating segment which meets the following criteria in accordance with IASB (2016b, para. 13):

- “it’s reported revenue, from both external customers and intersegment sales or transfers, is 10 per cent or more of the combined revenue, internal and external, of all operating segments, or
- the absolute measure of its reported profit or loss is 10 per cent or more of the greater, in absolute amount, of (i) the combined reported profit of all operating segments that did not report a loss and (ii) the combined reported loss of all operating segments that reported a loss, or
- its assets are 10 per cent or more of the combined assets of all operating segments.”

IASB (2016b) requires a comparable number of segmental narratives in order to change management’s rationale in identifying segments in the same manner in which they are used internally (Kajüter & Nienhaus, 2017).

2.5 Importance of segment reporting in integrated reporting

Segment reporting allows for consistency with management’s analysis and the annual report disclosures used to communicate information to users by providing various measures of segment performance (Nichols et al., 2012). IFRS 8 places a focus on the information used by management within the internal process to operate the business and allows the reporting of measures which are non-IFRS (Nichols et al., 2012). Kajüter and Nienhaus (2017) also indicated that segment information under IFRS 8 has provided more value-relevant information as it operates on the fundamental characteristics of relevance and faithful representation as per IAS 1 (IASB, 2011).

The change from IAS 14 to IFRS 8 was issued by the IASB in November 2006 (IASB, 2016b). The implementation of IFRS 8 did not indicate an increase in the number of disclosures in the financial reports but, instead, a shift in management’s rationale in identifying segments so that they are in line with the internal process (Kajüter & Nienhaus, 2017). The changes have resulted in a difference in the way segments are identified, the measurement basis used and the line items reported. IFRS 8 has created a shift from a mandatory financial list of information being disclosed to a focus on all resources and capital utilised being disclosed (IASB, 2016b). This enhances integrated thinking as management no longer focuses on financial capital only but instead, is held accountable for all the resources utilised in creating sustainable value.

Table 1. Implementation of IFRS 8	
Principle	**Implementation**
Identification of Segments	• Segments are identified based on the Chief Operating Decision Maker’s decision to

Table 1. Implementation of IFRS 8	
Principle	**Implementation**
	allocate resources to and assess the performance of the entity for internal reporting purposes. • There is only a single level of segmentation.
Disclosure of segment information	• Disclosure based on the segment information used internally by the entity's CODM: • No mandatory financial segment information disclosure[2] • Financial information measurement of segments may differ from financial accounting methods

(adapted from IASB, 2016b)

IFRS 8 creates a link between management accounting and financial accounting. According to Waweru (2010), management accounting provides vital information with regards to the implementation of an organisation's corporate strategy which assists the entity in maintaining its competitive advantage. IFRS 8 allows for the implementation of the strategy to be communicated to the users of financial statements through disclosure of the internal processes (IASB, 2008).

The disclosure of non-financial information measures in the firms' planning and control systems will ensure that management understands the factors which affect the long-term success of the organisation (Kaplan, 1984; Tarquinio & Posadas, 2020). As a great deal of management accounting is undertaken by business managers rather than accountants (Burns & Vaivio, 2001), IFRS 8 ensures that there is communication between accountants and those running the entity on a daily basis to provide useful information to users.

According to Brown (1997), Givoly, Hayn, and D'souza (2000) and Tse (1989), segment reporting helps investors place value on a firm as segmental information isolates the future cash flow streams from each other segment. This is essential as each segment is subject to

[2] Except disclosure of profit or loss and assets for the 2009 financial year-end as this is when IFRS 8 became effective

different economic environments. As a result of IFRS 8 moving from a risk and rewards based approach to a management approach, this ensures that there is consistency in the information internal management has and will be more in line with other disclosed information in integrated reports (IASB, 2011).

A recently signed memorandum by the IIRC has indicated a need to remove internal barriers for a more efficient accounting and reporting process (de Villiers et al., 2014). Segment reporting aligns with the objectives of the IIRC through the alignment of internal and external accounting. According to McNally et al. (2017), standards set by regulatory boards, such as the IASB, have become a defining feature for corporate reports as they provide a guide for what should be disclosed in integrated reports. This results in standard-setters having the scope to provide structures to support the preparation of integrated reports (Guthrie et al., 2017).

In line with integrated reporting, segment reporting requires a comparable number of segment narratives but with fewer line items to ensure that segments are identified in the same way in which they are used internally (Kajüter & Nienhaus, 2017). This change to a management approach has also allowed the users of financial statements to see the entity through the eyes of management and how value is created in the short-, medium- and long-term.

Edwards and Smith (1996) examine why organisations may not want to disclose segment information and have indicated that the main disadvantage is competitors having knowledge of the internal process and how the firm creates value. Although, there is more value created from the organisation when aligning external reporting to the internal management structure (Emmanuel & Garrod, 1987).

The key disclosure requirements per IFRS 8 are summarised in Table 2 below. These elements should be incorporated within the integrated report to provide more useful information to users.

Table 2. Key disclosure elements as per IFRS 8
Factors used to identify the entity’s reportable segments
Basis of organisations based on business activities
Judgements made by management in aggregating segments
Types of products and services from which each reportable segment derives revenue
Information about products and services

Table 2. Key disclosure elements as per IFRS 8
Information about geographical areas
Segment profit or loss
Revenue from external customers
Segment expenses
Segment assets
Segment liabilities
Basis of measurement of a segment as determined by the CODM
Information about major customers
Restatement of previously reported information
Reconciliation of the totals of segment revenue, assets, profit or loss and liabilities
Nature of differences in the measurement of reportable segments and financial statements
Investments in associates and joint ventures

(adapted from IASB, 2016b)

As indicated in Table 2 above, IFRS 8 requires the disclosure of the factors used to identify the entities reportable segments. This requires management to identify the segments which create value for the organisation. Certain factors can include the business activities which result in revenue being generated, resource allocation by the CODM and whether there is enough discrete information (IASB, 2016b). Management can also identify segments based on having an investment in the subsidiary, associate or joint venture.

This allows management to determine the basis of the organisation. The basis of an organisation is disclosing segments in line with the geographical location in which the segments operate. Management may also disclose segments based on products produced and services provided. Management also needs to disclose the judgement used in aggregating segments.

The aggregation of segments may be a result of similar economic characteristics (IASB, 2016b). According to EY (2009), similar economic characteristics include the nature of the products and services and the production processes, the type of class of customer for an organisation's products and services, the methods used to distribute products or to provide services and, if applicable, the nature of the regulatory environment. Table 2 also indicates that management must disclose the different types of products produced or services provided by the different segments.

The disclosure of profit or loss, revenue and expenses for each segment allow the users to identify the performance and operations of the business (Mardini et al., 2012) and communicate what segments management finds significant in the value creation process. In particular, the disclosure by the management of segments which are making losses indicates that management still identifies these segments as critical for value creation and should be included in the integrated report. This creates an image of integrity.

The disclosure of assets and liabilities for each segment is necessary as these figures show the financial position of each segment and are reflective of what the CODM could consider during decision making about relevant investments and measuring of performance (IASB, 2016a). Based on the performance of the segments, management is able to allocate resources more efficiently and make decisions about the future operations of the segments.

As indicated in Table 2 above, management must disclose the measurement basis as determined by the CODM. The CODM may choose to measure segment profits in accordance with the consolidated financial statements (IASB, 2016b). The CODM may also choose to measure the performance of a segment based on measures such as headline earnings, EBITDA and normalised headline earnings.

IFRS 8 also requires information to be disclosed about a segment's major customer. Such information includes who the customer is and what percentage of the revenue the customer contributes (IASB, 2016b). This is important in determining whether the entity may be dependent on one customer and whether the revenue is sustainable in the future.

IFRS 8 also requires disclosure on information which might have been restated from the prior year and an explanation of why the information is restated (IASB, 2016b). This allows organisations to disclose and provide comparisons of any changes in the internal structure which might result in a change in segment identification (IASB, 2016b). This allows for comparable and reliable information being provided to the users (IASB, 2019).

Lastly, as indicated in Table 2 above, IFRS 8 requires reconciliation and disclosure of the nature of differences in the reconciliation (IASB, 2016b). The reconciliation is required for the following items (EY, 2009; IASB, 2016b);

- the total of the reportable segments' revenues reconciled to the entity's revenue
- the total of the reportable segments' profit or loss reconciled to the entity's profit or loss before income tax and discontinued operations

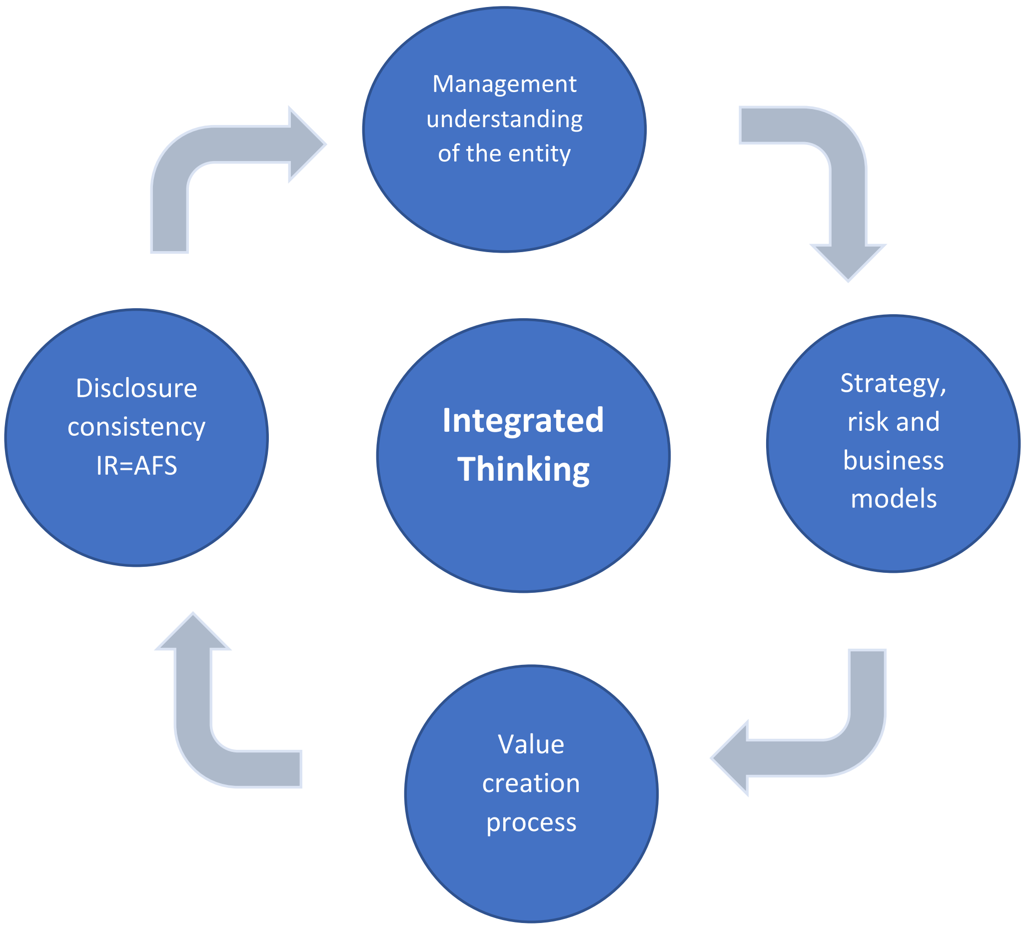
- the total of the reportable segments' assets reconciled to the entity's assets
- the total of the reportable segments' liabilities reconciled to the entity's liabilities
- the total of the reportable segments' amounts for every other material item of information disclosed to the corresponding amount for the entity.

As there is evidence that segment reporting is necessary within integrated, the main objective of this paper is to determine whether better quality segmental reporting will result in better integrated reporting quality.

2.6 Integrated thinking models

Figure 3 below presents a framework which can be used as an integrated thinking model. According to Dumay and Dai (2017), integrated thinking can be broken down into two components: first, connectivity of an entity's strategy, governance and performance, and second, connectivity among segments.

Figure 3: Integrated thinking model



The first component of integrated thinking, as indicated by Dumay and Dai (2017), takes into account the connectivity and the interdependencies among those factors considered to be material in ensuring an organisation's ability to create value over time (WICI, 2013). The degree to which management understands the organisation's strategy, the governance of the entity and the past and future performance can lead to benefits for the organisation as these factors are affected by different capitals (IIRC, 2013; Young, 2012). This indicates why management's understanding is a factor in integrated thinking, as shown.

Management's understanding of the entity's business model and its dependency on different capitals results in having a better understanding of the internal process which ensures better dialogue and the breakdown of internal barriers (Krzus, 2011; WICI, 2013). In addition to understanding the internal units in the firm, management uses integrated thinking as a way to understand better the impact of decision making and the behaviour on stakeholders (Di Donato, Bordogna, & Busco, 2013; Dumay & Dai, 2017; Krzus, 2011; WICI, 2013).

The second component of integrated thinking is the connectivity of segments within an organisation (adapted from Dumay & Dai, 2017). Integrated reporting requires management to find the relationship among the different internal units within an organisation and how they work together to create value for the organisation as a whole (IIRC, 2013; Sun, 2012). Managements' understanding of the relationships among the internal units allows management to communicate the connectivity of the different elements which allow for sustainable value creation (Abeysekera, 2013). Management's understanding of how the different capitals are connected allows better decision making trade-offs between the capitals based on meeting the needs of stakeholders (Dumay & Dai, 2017; IIRC, 2013). This indicates why the value creation process is a factor of integrated thinking (Figure 3).

According to Mardini et al. (2012), segment disclosure helps investors to understand the operations of an organisation better. According to Balakrishnan, Harris, and Sen (1990) and Behn, Nichols, and Street (2002), the income and turnover of an organisation are more accurate when geographic segment reports are used. This indicates that the main principle underpinning IFRS 8 is the scope for users to interpret a company's performance and position based on the internal reports used in the internal process by the CODM in decision making (Leung & Verriest, 2015).

IFRS 8 disclosures should be incorporated in the business model and disclosed in the integrated report as this is in line with the theory of the firm (M. C. Jensen & Meckling, 1976). The theory of the firm emphasises the importance of monitoring management's performance in the firm to ensure value creation. IFRS 8 is a form of monitoring management's performance as it informs users of how resources are allocated by management to create value. This allows management to be held accountable for the organisation's capitals.

The importance of monitoring management's performance is further supported by stewardship, where users have the need to hold management accountable (Murphy & O'Connell, 2013; Turner & Coote, 2018; Watts & Zimmerman, 1978; Whittington, 2008). IFRS 8 segment reporting is one way of monitoring performance as it ensures transparency through the disclosure of how resources are allocated and utilised by each segment and can then hold management accountable for segments which are not performing in line with the strategy of the business. Disclosure of operating segments within the input process indicates that organisations consider segment disclosure vital from the very beginning to reach the end goal of value creation. The alignment of IFRS 8 disclosure and the inputs in a business model is important as it informs users how the CODM maximises the resources and capital provided by stakeholders.

IFRS 8 disclosure within the business activities process will indicate that the organization views segment disclosure as important in informing users how the organization uses the capitals to create value through business activities conducted (IIRC, 2016). The IFRS 8 disclosure of segments in the output process of the business model will communicate to users the value which has been created. This implies that the organization views segment reporting as an essential part of the strategy. According to IIRC (2016), the outputs of business are intentional and planned; they indicate the targets and strategy of that business.

Segment disclosure must be incorporated within the business risk as according to Sarasvathy, Simon, and Lave (1998), risk is perceived differently by individuals as it is not an objective characteristic of decisions and events but results from different individuals drawing different problems from searching for solutions. One of the better ways to analyse risk exposure is through the different segments and what impact these risks might have as this will result in better risk management.

The scope for users to interpret a company's performance and position shows the necessity of segment reporting in integrated reporting as it is in line with the dual objective of providing quality information to external users and more efficient resource allocation and also supporting integrated internal thinking by focusing on actions which create value for the firm (Barth et al., 2017; IIRC, 2013). IFRS 8 provides the means for shareholders to understand an entity's business model and how management creates value for the entity. This allowed for communication of the value creation process to users of financial statements even before integrated reporting becomes applicable.

Similar to the implementation of integrated reporting being used as a means to break down internal barriers in communication among departments (De Villiers, Pei-Chi, et al., 2017), segment reporting requires communication between the different segments in order for better performance for the entity as a whole. According to Malola (2019), the production of high quality integrated reports may indicate improved internal decision-making process by management.

Integrated thinking is more than just a process which results in the production of an integrated report. Integrated thinking can only be achieved when information is presented in a clear and concise manner which links the strategy, sustainability and risk of an organisation within the value creation process (IIRC, 2013; Macias & Farfan-Lievano, 2017). Integrated thinking requires a broad connection among people, their different functions and information, planning and decision making and the various capitals (Macias & Farfan-Lievano, 2017).

Integrated reporting supports the idea of integrated thinking, decision-making by management and any actions which will result in value creation for the firm (C. A. Adams & McNicholas, 2007; Barth et al., 2017; IIRC, 2013). This provides evidence that integrated reporting has a dual objective of providing information, not only to external users of financial statements but also to management for purposes of internal decision making (Barth et al., 2017). According to Nordisk (2013), integrated reporting allows management to develop a culture of integration in the way performance is measured. Integrated reporting ensures that there is a combined emphasis on the strategic focus of an organisation and the future-orientated thinking by management. This will result in the reporting of the connectivity and interdependencies of the various capitals (IIRC, 2016). Integrated reporting is motivated by the belief that integrated disclosure is not just the end goal in the process of innovative reporting but it is only the beginning of a change in the way in which entities are managed in order to incorporate corporate governance, enhance employee culture and to incentivise management to create value for the entity through good performance measures (De Villiers et al., 2014).

According to Zhang and Andrew (2014), annual financial statements have a role in supporting decisions made by management to determine how the entity’s resources are utilised, which is in line with the objective of integrated reporting (IIRC, 2013). Information symmetry within the annual financial statements and the integrated report is expected as, according to Silvestri et al. (2017), an integrated report extends the information contained in the financial statements. Integrated thinking can be achieved through consistency in the information as this allows comparability (Jeffrey & Perkins, 2014). The consistency in disclosure communicates the link between the financial information contained in the annual financial statements and the value creation process. This indicates that consistency in disclosure between the annual financial statements and integrated reports indicates the presence of integrated thinking (indicated in Figure 3). Integrated reporting is more than just a single report that contains both the financial and non- financial information of an organisation; it is about providing clear and concise representations of how management uses resources within the organisation to create and sustain value, after taking into consideration economic, social and environmental factors (IIRC, 2013; Jensen & Berg, 2012)

One way of implementing integrated thinking is through the development, by management, of ways to measure, manage and disclose information to users (De Villiers, Venter, et al., 2017). Integrated thinking must be incorporated within mainstream management using accounting policies, such as IFRS 8, which promote integrated thinking to ensure that integrated reporting becomes the corporate reporting norm for value creation.

2.7 Segment reporting in integrated reporting

Figure 4 illustrates the link between segment reporting and integrated reporting. First, the diagram illustrates that management needs to obtain an understanding of the entity in order to identify segments based on the business operations and how resources will be allocated to create value.

Once these segments are identified, management needs to incorporate them in the value creation process to ensure sustainable value creation. Segments must be incorporated within the business model of the entity, specifically in the inputs, business process and outputs. This results in the integration of segments in day-to-day operations. Segments are integrated within the business model to ensure long-term value creation and to ensure a better allocation of resources.

The business model incorporates outputs of the business, which are measured through the outlook and performance of the entity. Communication of the outputs through the different segments identified is crucial as the CODM of business identifies segments based on the firm's internal organizational structure and how resources are allocated and performance is evaluated (IASB, 2016b). Users can distinguish how the business is operating, based on the breakdown of the performance by the different segments and the outputs produced. Management's incorporation of segments in the business process allows for a broader and more connected account of the organization's performance (IIRC, 2013). The communication by management of the outlooks and performance of the entity using segment reporting allows for a focus on sustainable, responsible performance to ensure that inputs and resources are utilized more efficiently (Abeysekera, 2013).

Management’s integration of segments into the business model allows for integration within the day-to-day operations. This results in management further incorporating segments within the risks and the strategies of the entity. Once management can monitor better and measure the performance of each segment, management can identify the potential risks which may result in a lack of value creation in the future. Furthermore, for segments performing well, management can adapt the strategy of the business to ensure that the segments continue to operate effectively in the short-, medium- and long-term.

The integration of segments within the business model, risk and strategy of the organisation to enhance the performance of the organisation allow the entity to become a corporate citizen. The organisation acknowledges its rights, obligations and responsibilities to the society and the environment in which it operates in (IOD, 2016). This is illustrated through public accountability, when management demonstrates how the resources entrusted to them have been utilized (Murphy & O’Connell, 2013) within each segment, to create sustainable value.

Once an organisation becomes a corporate citizen, the organisation can be considered an integral part of society, as it conducts its operations in a societal context in which it both affects and is also affected by society (IOD, 2016). The integration of segments allows an organisation to be held accountable and be more transparent of the activities it undertakes (Abeysekera, 2013). This allows management to be aware that the success of the organisation is linked to the environment, the economy and, most importantly, the society. Management has a duty to communicate its business activities and how they affect society (Silvestri et al., 2017).

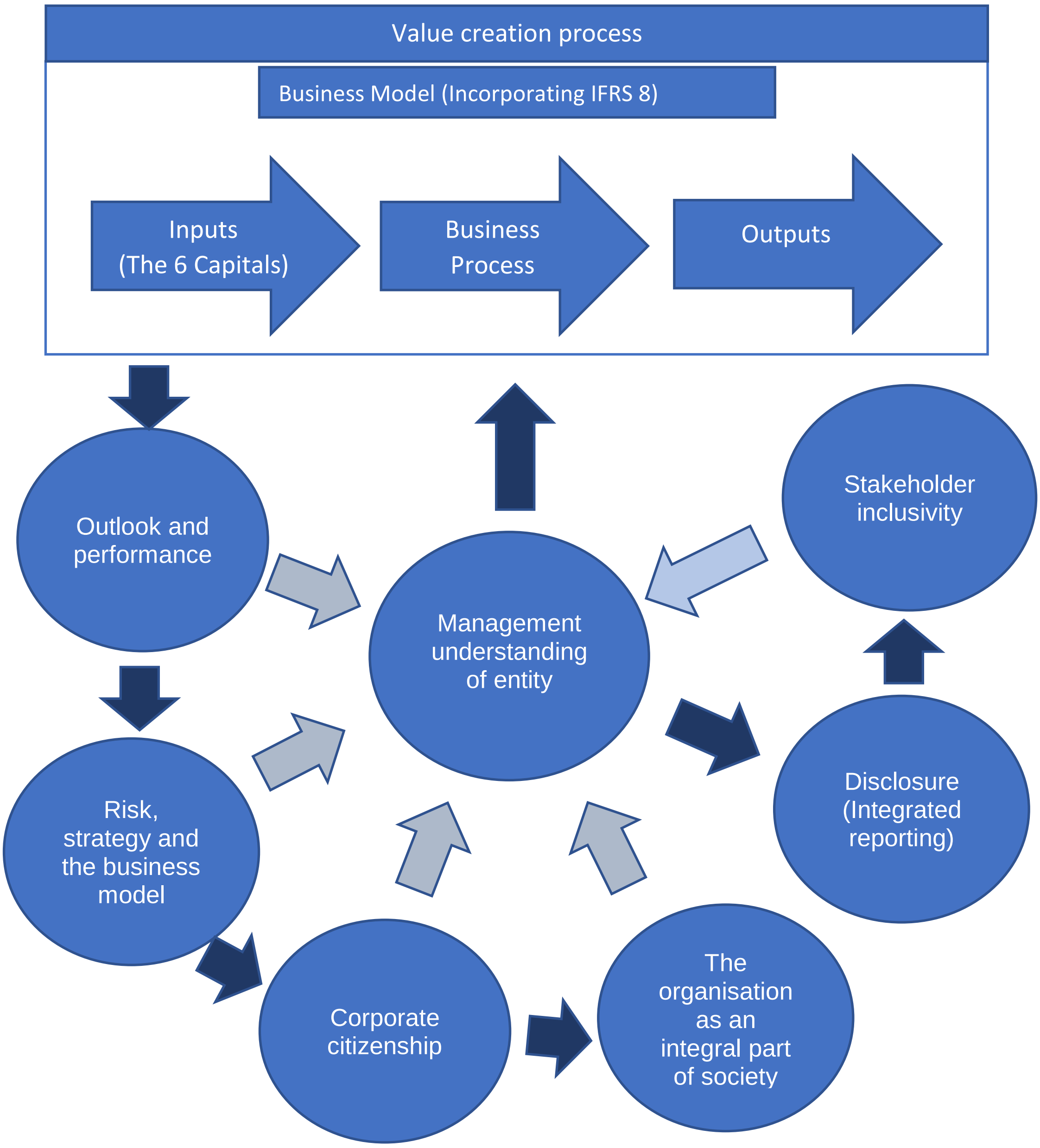
Management’s decisions, such as the basis in which they determine segments, the incorporation of segments with the business model, risk and strategy, achieving outcomes and performance targets, all have an effect on how management conducts business within the society it operates in. In turn, the society in which management operates also influences management’s decision making. This is illustrated in Figure 4, where management’s role also influences management’s understanding of the entity in society. This is further supported by the principle that organisations should take into account the interests of society, rather than subvert society (Murphy & O’Connell, 2013). An organisation which plays an integral part in society can be perceived as pragmatically legitimate through satisfying the needs and interests of stakeholders through value creation (Di Tullio, Valentinetti, Nielsen, & Rea, 2019; Herbert & Graham, 2019). This forms the core of integrated thinking. This, in turn, allows management to disclose information used in decision making to promote integrated thinking through the prevention of silo thinking when measuring performance and reporting to users (Giovannoni & Fabietti, 2013; Stacchezzini, Melloni, & Lai, 2016).

Integrated thinking must be communicated to the users through the integrated report. Integrated thinking is applied to ensure that there is disclosure consistency of segments in the annual financial statements and the integrated report. Integrated thinking will also be achieved once management incorporates the segments within the business model, risk and strategy of the business in the integrated report. The application of integrated thinking by management will then result in integrated reporting quality being achieved by entities. This is as a result of integrated thinking being a key driver of integrated reporting quality (Adams, 2017).

Lastly, the disclosure of value creation for all stakeholders and the entity in the integrated report allows for stakeholder inclusivity. Stakeholder inclusivity is achieved through the interdependent relationship which arises between the stakeholders and the organisation. This emphasises the need of the organisation to become aware of the opportunities and some of the challenges which result from the triple context in which the entity operates to ensure that the expectations and interests of all material stakeholders are met (IOD, 2016). When management is aware of the challenges and opportunities faced by the entity, this further allows a better understanding of the entity and, in turn, management is better able to take advantage of these opportunities.

Figure 4 supports the notion of integrated thinking as defined by the IOD (2016), which is the connectivity and interdependencies among a range of factors which influence the value creation process of a firm. Some of these factors incorporates the organisation being an integral part of society, stakeholder inclusivity and being a corporate citizen (IOD, 2016). These factors also include management's understanding of the entity, the strategy of the entity, risks, business models and disclosure in the integrated report. Segment reporting is a useful means to break down internal barriers in communication among departments as communication among the different segments is required for better performance of the entity as a whole. All these factors play a role in promoting integrated thinking (see Figure 3 above). All these factors are linked and are dependent on one another for sustainable value creation. Sustainable value creation can only be achieved through the integration of these factors within the different segments.

Figure 4. Segmental reporting and integrated reporting



3. Methodology

This study is a longitudinal quantitative analysis of the trends between segmental disclosure in the integrated report and the annual financial statements. A quantitative method is used to determine whether or not there is a link between them. An interpretive framework is used to analyse the data. The research is exploratory, where a content analysis method is used to collect data from the top 100 JSE listed entities over 3 years. The data is interpretively analysed using the disclosure elements in Appendix 1 and 2.

3.1. Population and study sample

The population is all listed companies on the JSE. Purposive sampling is used to select the sample (Creswell & Clark, 2017). The sample consists of the companies scored in the EY *Excellence in Integrated Reporting Awards* in 2015, 2016 and 2017. The scores obtained from EY are included in the data collection.

EY has been conducting the Excellence Report survey for the last six years to encourage organisations to produce quality integrated reports (EY, 2017). The report covers the top 100 listed entities in South Africa, in which the rankings vary from Top 10 with honours, excellent Top 10, excellent, good, average and progress to be made (EY, 2015, 2016, 2017). These firms represent approximately 94% of the market capitalisation of the JSE from 2015 to 2017. Only 96 companies were included in the sample as 4 of the entities became delisted or deteriorated in integrated reporting quality. Pure holding companies are excluded as per the EY mark plan (EY, 2015, 2016, 2017) and only companies with integrated and annual reports for the year-ended on or before 31 December were included in the sample.

The sample contains companies which have a dual-listing and would not necessarily publish an integrated report aligned to the IIRC's framework. These companies were still retained in the sample as their 'annual reports' contain integrated information as described by King IV and the IIRC. The fundamental concepts are still expected in both the integrated report and annual report which include value creation for the organisation and for others and the various capitals that the organisation uses and affects (EY, 2015, 2016, 2017). Therefore, for the purpose of this research the term 'integrated report' includes both reports aligned to the IIRC's framework as well as annual reports which include both financial and non-financial information[3] (IIRC, 2013). Finally, as the companies included in the analysis have been scored by EY, no distinction is drawn between companies which label their primary report to stakeholders as an 'integrated report' and those which refer to the reports by other terms.

[3] The extent to which companies comply with the IIRC framework is not considered. Similarly, the impact of primary listing status is not addressed by this research. These are inherent limitations of the thesis.

3.2. Collection of data

The research questions are addressed by collecting data from the annual financial statements and integrated reports. Data on segmental disclosures come from the financial statements and data on the strategy, risk and business model are obtained from the integrated reports.

3.2.1 Segmental reports

Data are collected from the annual financial statements using an IFRS 8 disclosure checklist (see Appendix 1). The key elements, as per Table 2 (Section 2.4), are identified in the annual financial statements. Data on the key features are collected from the IFRS 8 Segment Reporting note disclosure in the annual financial statements of the companies. These disclosures are captured using an Excel spreadsheet. The data are categorised into headings as in Table 2 and Appendix 1. The amount for revenue, expenses, liabilities, assets and basis of measurement is collected for the excel spreadsheet. The basis of organisation is collected, based either on geographic location or products and services. The number of operating segments in the organisation is also collected as an amount. The disclosure of the aggregation of segments and the reconciliation is collected as a polar question.

The disclosure checklist is used as a base for the data collection process performed to address the first research question, namely, how JSE listed companies disclose operating segments within the integrated report.

3.2.2 Integrated report

The researcher identifies IFRS 8 disclosures as determined in the integrated report, the number of segments identified in the integrated report, the basis used to identify the operating segments such as geographical location or products or services and whether or not the basis differs from the basis used in the annual financial statements. The researcher also identifies whether or not the segments have been incorporated in the strategy of the entity. In addition, where the disclosure of a segment is in a specific capital or part of the value creation process (input, process and output section) is also captured for each segment identified (adapted from Leedy & Ormrod, 2005).

The researcher further identifies the business model of the organisation as this is where value is created within an organisation (IIRC, 2016). More specifically, the researcher identifies how the organisations disclose the operating segments in the integrated report to determine whether or not they incorporate segments as part of the inputs, business activities or outputs in the value creation process. The number of pages in the integrated report is also recorded (Maroun, Usher, & Mansoor, 2018; Pitrakkos & Maroun, 2019) (Appendix 2). Lastly, the researcher identifies whether or not these segments are incorporated in the risk assessment of the business and whether or not the segments identified are subsidiaries, joint ventures or associates as this may be the reason they were identified as separate segments (IASB, 2016b).

3.2.3 IRQ scores

IRQ scores are obtained from the EY South Africa Excellence in Integrated Reporting Awards across the three years (2015-2017) (EY, 2015, 2016, 2017). These are captured on an Excel spreadsheet (Appendix 1).

3.3. Data analysis

When answering the first research question, content analysis is used to examine and identify the number of operating segments in the integrated report (Brennan, Daly, & Harrington, 2010; Leedy & Ormrod, 2005). Using content analysis and following the same approach as Maroun et al. (2018), the researcher first analyses the entire integrated report of the companies to obtain an overall understanding of the structure and the content of the report.

The content is analysed interpretively to ensure that all information relating to segment reporting in the integrated report is identified. Interpretive text analysis ensures that segment disclosure identification is throughout the entire integrated report to analyse the extent of integration of segment disclosure (Carels, Maroun, & Padia, 2013; Merkl-Davies, Brennan, & Vourvachis, 2011).

Once the disclosures in the integrated report have been identified, descriptive statistics (Castellano, Del Gobbo, & Corsi, 2019) are used to analyse the data. Descriptive statistics, such as the number of companies with separate segment disclosures, are identified. The percentage of companies which disclose all segments in the integrated report as per the annual financial statements and the percentage of companies which integrate the segments within the different capitals in the integrated report. The mean, variances and ranges of the data collection instruments are also determined in order to analyse the statistics. This allows better comparison across the three years. This method allows the researcher to answer the first research question concerning how JSE listed entities disclose operating segments in the integrated reports.

In answering the second research question, where companies have disclosed the same segments in their annual financial statements and integrated reports, the researcher determines whether or not it is correlated in comparison to companies which do not integrate segment disclosure in the integrated report. The companies are grouped into different industries (Table 3) to allow the researcher to analyse the collected data. When answering the third research question regarding whether segment disclosures contained within the integrated report illustrate the emergence of integrated thinking, integrated thinking is represented using four integrated thinking models (Figure 3, Section 2.6). The four integrated thinking models allow the researcher to analyse the collected data in order to determine the emergence of integrated thinking.

A systems approach within a content analysis of trends is used (Krippendorff, 2018). A systems approach is a method which draws on a positivist research epistemology, entailing a detailed coding scheme (Appendix 1 and 2) (Merkl-Davies et al., 2011). It is an approach which follows a rigid set of procedures (Merkl-Davies et al., 2011). The researcher identifies trends of segment disclosure in the annual financial statements and in the integrated report to identify similarities in segment disclosure within the reports. Only the disclosures detailed in Appendix 1 will be used to identify trends. Trends the researcher expects to find are the same number of segments being identified in the integrated reports as per the annual financial statements and similar disclosures as per the annual financial statements for profit, revenue, expenses, assets and liabilities for each segment as this is valuable information to users of financial statements.

When considering the trends, descriptive statistics are used to summarise the data. Inferential statistics are used to determine whether there are correlations and trends in the disclosure. A Spearman correlation analysis is used to evaluate associations between integrated reporting quality and disclosure elements per Appendix 1 and 2.

A Kruskal-Wallace test is used to evaluate whether there is a difference between IRQ for different groups being industries disaggregated and years, as shown in Table 5. The Jonkheere-Terpstra test allows the researcher to determine whether there is an upward or downward trend in the significance of the disclosure elements and the grouping factor IRQ and industries disaggregated. The inferential statistics used to allow the researcher to determine whether IRQ is higher when companies disclose the same segments in the annual financial statements and the integrated report based on the different industry in which the company operates.

The researcher determines whether the segmental disclosures contained within the integrated report illustrate the emergence of integrated thinking. Discriminant analysis is used to analyse the data. Discriminant analysis is used to determine different functions based on the disclosure elements in Appendix 2. The functions are then labelled and used to analyze the relationship among the different industries IRQ. The canonical discriminant function allows the researcher to determine whether segmental disclosures within the integrated report illustrate the emergence of integrated thinking.

3.3.1 Integrated thinking models

As a result of integrated thinking being proven by Adams (2017) to be a key driver of integrated reporting quality, during the analysis process, the data collected from the integrated reports are grouped into four different models, each representing, integrated thinking. The following four models are identified based on the data collection disclosure factors in Appendix 1 and Appendix 2. Although these four models have only been used in isolation in prior literature to analyse data collected (De Villiers, Venter, et al., 2017; Dumay, Bernardi, Guthrie, & La Torre, 2017; IIRC, 2013; IOD, 2016; Sun, 2012; Young, 2012), the four models are used as a basis to group data that has been collected as the four models are a represention of the concepts that make up integrated thinking as per Section 2.6. The four models are explained below in more detail.

Model 1

Model 1 incorporates how management understands the components of the business. The CODM determines the basis of organisation for determining segments based on the way resources are allocated within the entity and the operations of the organisation. The basis is either geographic location or products and services. These factors as well as whether an organisation has a residual segment which is a segment which incorporates all the other segments not separately identified are incorporated.

Model 1 also incorporates the basis of measurement that management uses internally to measure segments which allow non-IFRS specific measurements such as headline earnings and EBITDA. The disclosure elements grouped into model 1 align with integrated thinking as it ensures that management has a better understanding of the operations of the business and the industry in which they operate (IIRC, 2013; Young, 2012) and (Velte, 2019). This allows for better allocation of resources to ensure better performance. Model 1 is summarised as below.

$$\text{Model 1} = \frac{Basis\ of\ management\ AFS}{Basis\ of\ management\ IR} + \frac{Basis\ of\ organisation\ AFS}{Basis\ of\ organisation\ IR} + \frac{Disclosure\ of\ factors\ used\ to\ identify\ segments\ in\ AFS}{Disclosure\ of\ factors\ used\ to\ identify\ segments\ in\ IR}$$

Model 2

Model 2 represents the proportion of segment reporting which is the same in both the annual financial statements, as well as in the integrated report. Model 2 indicates integrated thinking through consistency in the disclosure of segment reporting in the integrated report and the annual financial statements (adapted from De Villiers, Venter, et al., 2017; IIRC, 2013).

Model 2 has been determined as the average number of segments in an organisation which have the same proportion of segments in the integrated report, as well as in the annual financial statements for the disclosure of the number of segments identified, segments which disclose profit or loss, segments that disclose revenue and expenses and lastly, segments that disclose assets and liabilities.

$$\text{Model 2} = \frac{no.of\ segments\ in\ AFS}{no.of\ segments\ in\ IR} + \frac{segment\ revenue\ in\ AFS}{segment\ revenue\ in\ IR} + \frac{segment\ profit\ or\ loss\ AFS}{egment\ profit\ or\ loss\ IR} + \frac{segment\ expenses\ in\ AFS}{segment\ expenses\ in\ IR} + \frac{segment\ assets\ in\ AFS}{segment\ assets\ in\ IR} + \frac{segment\ liabilities\ in\ AFS}{segment\ liabilities\ in\ IR}$$

Model 3

Model 3 indicates integrated thinking through the incorporation of segments within the strategy of the entity, business model and risk (Dumay & Dai, 2017; Macias & Farfan-Lievano, 2017; Sun, 2012). Model 3 also incorporates a cross-reference of the number of segments identified in comparison to the number of pages in the integrated report of an entity. Cross-referencing indicates that an increase in the number of pages in an integrated report increases the likelihood of segments being incorporated in the report and disclosed in the strategy, business model and risk of an entity (adapted from García-Sánchez et al., 2013). The equation for cross variance is shown below.

$$\text{Cross-reference variable} = \frac{\sum(Seg1\ ;Seg\ n)}{no.of\ pages\ in\ IR}$$

Model 4

Lastly, model 4 considers the value creation process. Specifically, where exactly in the business model the segments are integrated, in the inputs, processes or outputs. Model 4 specifically considers the number of segments included in the inputs, processes or outputs as a percentage of the total segments identified by an entity. This indicates that there will be a decline in model 4 as a result of segments identified not being included in the business model. This is an indicator of integrated thinking as it indicates that segments contribute in different ways to the value creation process of an entity either in inputs, processes or outputs (Krzus, 2011; WICI, 2013). It further emphasizes integrated thinking as defined by the IOD (2016) that all these segments in the business model are connected and interdependent on one another to create overall value for the company. The equation for model 4 is shown below.

$$\text{Model 4} = \frac{No.of\ segments\ in\ inputs\ x\ No.of\ segments\ in\ process\ x\ No.of\ seg}{3\ x\ No.of\ total\ segments}$$

Industries

The industry groupings are used to answer the second and third research questions. To better the analysis process, the top 100 JSE-listed companies were grouped and given codes, based on the different industries to ensure that segment reporting and IRQ are analysed separately for each industry. This grouping of industries ensures that industries were separated as a factor when determining whether segment reporting results in better IRQ. The groupings also allow for better analysis in determining whether segmental disclosures contained in the integrated report illustrate the emergence of integrated thinking. Of the 100 JSE-listed companies observed, Table 3 indicates the different grouped industries, the grouping code from 1-6 and the industry percentage represented.

Table 3. Industry percentages representation

Group	Industry	Percentage
1	Mining, Oil and Gas producers	16.67%
2	Financial Services, Insurance	21.88%
3	Property	11.46%
4	General Industrials, Manufacturing, Cement and Chemicals	12.50%
5	Pharmaceuticals, Retail, Packaging, Fishing, Food and Beverages	23.96%
6	Telecommunications, Healthcare, Media, Travel and leisure and Technology	13.54%

3.4. Validity and reliability

The collection of the data and coding are based on IFRS 8 disclosure requirements which ensure face validity and internal validity as the accounting standards are credible (IASB, 2016a; Merkl-Davies et al., 2011) (see Appendix 1). A content analysis method is used where sentences, as well as words, are used to identify segments disclosed in the integrated report, as well as graphics which are used in the integrated report to depict business models (IIRC, 2013). Internal validity over the coding process is ensured through a test/retest process over a sample, where the researcher re-read, re-categorize, and re-analyse the same integrated reports to ensure stability and consistency in the collection and data analysis process (Krippendorff, 2018).

External validity is determined by the purposeful sample (Leedy & Ormrod, 2005) as the firms from the EY Excellence report represent approximately 94% of the market capitalization of the JSE in 2015 and 2016 (EY, 2015, 2016) and approximately 95% in 2016 and 2017 (EY, 2016, 2017). Barth et al. (2017) have evaluated the score sheets used by the adjudicators and found them to be consistent with the IIRC Framework and as a result, the scores are appropriate as a basis for measuring IRQ which indicates empirical validity (Krippendorff, 2018). Zhou, Simnett, and Green (2017) find that their measure of IRQ based on the 2012 draft IIRC Framework is correlated with the EY quality categories which adds validity to the use of the EY scores to measure IRQ. Although EY used different score sheets each year to reflect integrated reporting guidelines in effect at the time, the comparison of the guiding principles and content elements included in the various score sheets reveals that the fundamental principles of what constitutes a quality integrated report did not change substantially over time.

4. Results analysis

4.1. Segmental disclosures in integrated reports

Descriptive statistics are represented in Table 4. The report quality remains relatively constant from 2015 to 2017, using the EY quality measures[4] (EY_{2015} =4.17, EY_{2016}=4.07, EY_{2017}= 4.09) (Malola, 2019). Descriptive statistics are represented for the disclosure as required by IFRS 8 (IASB, 2016b) using minimum, maximum, mean and standard deviation to analyse the data collected as per Appendix 1 checklist. The descriptive statistics (Table 4) indicate that on average, companies identify 3.31 segments in the integrated report in 2015, an average of 3.21 in 2016 and an average of 3.22 in 2017.

[4] EY does not publish individual score sheets. It publishes broad categorical scores ranging from 1 (Excellent with honours) to 6 (progress to be made).

Table 4, on average, shows there are 4 segments (2017) identified by companies in the integrated reports. This is in line with the average number of segments identified in the annual financial statements. The average number of companies which disclose the same proportion of segments in the integrated report, as well as in the annual financial statements, has not changed significantly from 2015 (80%) to 2017 (79%). There has been a slight decrease in management obtaining a better understanding of the business operations over the years, as indicated by model 1 (2015= 83% to 2017= 79%). There has also been a slight decrease in the disclosure consistency of segments in the integrated report and the annual financial statements as represented by model 2 (2015= 54% to 2017= 52%). However, there has been a slight increase over the years of companies which disclose segments within the strategy, risk and business model, as represented by model 3 (2015 = 33% to 2017= 36%) and model 4 (2015= 9% to 2017 = 14%) indicating that management finds these segments crucial to the day-to-day operations of the business as the years proceed.

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Table 4. Descriptive statistics												
	Minimum	**Maximum**	**Mean**	**Std. Deviation**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Year	**2015**				**2016**				**2017**			
Number of operating segments in AFS	1.00	10.00	3.71	1.76	1.00	10.00	3.72	1.72	1.00	10.00	3.82	1.88
Proportion of segments IR=AFS	0	1.00	0.81	0.39	0	1.00	0.82	0.38	0	1.00	0.79	0.41
Number of operating segments IR	1.00	10.00	3.31	1.93	1.00	10.00	3.21	1.86	1.00	10.00	3.22	2.10
MODEL 1	0	1.00	0.83	0.34	-	1.00	0.82	0.35	0	1.00	0.79	0.37
MODEL 2	0.06	1.00	0.54	0.25	0.06	0.95	0.54	0.26	0	0.95	0.52	0.27
MODEL 3	0	0.93	0.33	0.18	-	0.94	0.34	0.20	0	1.00	0.36	0.21
MODEL 4	0	0.75	0.09	0.15	-	1.00	0.11	0.18	0	1.00	0.14	0.21
PAGES	48.00	552.00	150.56	75.54	32.00	324.00	145.64	58.58	58.00	348.00	146.88	61.49
IRQ	2.00	6.00	4.17	1.24	1.00	6.00	4.07	1.22	1.00	6.00	4.09	1.33
Valid N (listwise)	96.00				96.00				96.00			

Even though there has been a slight increase in the averages for model 3 and model 4, the averages are significantly low in relation to model 1 and model 2. This is an indicator that most companies identify and disclose segments in the integrated report but there is limited integration with the business operations. The low averages indicate that segments might be disclosed in the integrated report since management does not put thought into what should be disclosed and so, discloses the same information as contained in the financial statements. The low averages are supported by Silvestri et al. (2017), indicating that the integrated report is often seen as a mere extension of the annual financial statements. Managers might be disclosing segments as a form of legitimacy but do not incorporate segments within the value creation process. This may infer that management does not understand the business or industry in which they operate and how the segments integrate with the business activities. The slight increase in model 3 and model 4 indicates that over time, management has slightly improved their integrated thinking in order to create more sustainable value.

It appears that managers might be disclosing financial information and non-financial information separately. This results in information not being integrated as suggested by the IIRC (2013). Only 14% of companies integrate segments within the strategy and the business model. This indicates that there is still a lack of communication about and transparency of how resources are used to create value.

The improvement in EY excellence scores indicates that companies had better quality reports in 2016 and 2017, in comparison to 2015. Based on this evidence, this paper does find that most JSE-listed entities do disclose segments within the integrated report. The increase in IRQ can be as a result of improved segmental disclosures (as indicated by model 3 and model 4) and may be a good indicator of an improvement in integrated thinking (Barth et al., 2017).

4.2. The relationship between report quality and segmental disclosures

Table 5 shows correlations of integrated reporting quality (IRQ) and the other disclosure elements.

Table 5. Correlation analysis

	PAGES	IND-AGG[5]	ASSETS	PROFIT	MODEL 1	MODEL 2	MODEL 3	MODEL 4	Number of operating segments IR	IRQ
PAGES	1.000	-.234**	-.088	-.155**	.143*	.203**	.092	.000	.121*	.112
IND-AGG	-.234**	1.000	.056	.285**	.034	.031	-.172**	-.207**	-.053	.077
ASSETS	-.088	.056	1.000	.702**	-.081	-.154**	.013	-.053	.063	.098
PROFIT	-.155**	.285**	.702**	1.000	-.025	-.142*	-.081	-.107	.046	.094
MODEL 1	.143*	.034	-.081	-.025	1.000	.649**	-.165**	-.362**	.594**	.373**
MODEL 2	.203**	.031	-.154**	-.142*	.649**	1.000	-.218**	-.225**	.162**	.381**
MODEL 3	.092	-.172**	.013	-.081	-.165**	-.218**	1.000	.533**	.212**	-.366**
MODEL 4	.000	-.207**	-.053	-.107	-.362**	-.225**	.533**	1.000	-.302**	-.617**
Number of operating segments IR	.121*	-.053	.063	.046	.594**	.162**	.212**	-.302**	1.000	.129*
IRQ	.112	.077	.098	.094	.373**	.381**	-.366**	-.617**	.129*	1.000

****. Correlation is significant at the 0.01 level (2-tailed).**
***. Correlation is significant at the 0.05 level (2-tailed).**
Spearman's rho above the diagonal; Kendal's tau-b below the diagonal

[5] Industry Aggregated code as per table 3

There is a weak correlation between IRQ and the number of pages in the integrated report (r_s=0.112, p>0.05). The same is true for the paired correlations between IRQ and industry aggregated (IND-AGG) (r_s=0.077, p>0.05), assets (r_s=0.098, p>0.05) and profits (r_s=0.094, p>0.05) as per Table 5. None of these correlations is significant at the 1%, although, there is a correlation between the number of operating segments disclosed in an integrated report with the number of pages in the integrated report ($r_s = 0.121, \mathrm{p} < 0.05$). On average, the number of pages included in the integrated report by companies has not changed from 2015 (150.58) to 2017 (146.88) as per Table 4. This indicates the number of pages in an integrated report does not have an impact on IRQ, as was supported by Malola (2019). The weak correlation between the industry in which an organisation operates and IRQ contrasts with Herbert and Graham (2019) findings that the industry has an impact on the information included in the integrated report. Instead, this finding is supported by Abeysekera (2013) and KPMG (2011) who found other factors, such as the strategy of the business, have an effect on the performance of the entity. The focus on the strategy allows for a better understanding of the relationship between the different elements of the business elements and the external environment (Silvestri, 2017) which includes the industry in which the entity operates.

Table 6. Changes in key disclosure elements controlling for industry and IRQ

	Grouping by industry		**Grouping by Integrated Reporting Quality**	
	N=100		**N=100**	
	H-statistic	**Std J-T statistic**	**H-statistic**	**Std J-T statistic**
Model 1	15.562**	2.368*	41.914**	6.180**
Model 2	17.424**	1.741	52.911**	6.115**
Model 3	16.972**	-3.295*	48.234**	-6.094**
Model 4	29.877**	-2.868**	103.245**	-10.325**
IRQ	29.628**	1.571		
Profit	51.349**	3.740**		
Assets	33.201**	-.938		
Revenue	20.943**	2.263*		

****. significant at the 0.01 level (2-tailed).**
***. significant at the 0.05 level (2-tailed).**

There is a significant upward trend with IRQ ($H = 29.628$, $p < 0.01$; J-T= 1.571), profit ($H = 51.349$, $p < 0.01$; J-T= 3.740) and revenue ($H = 20.943$, $p < 0.01$; J-T=2.263) as per Table 6 above. This implies that industries in the lower end of the industry grouping, being the mining industry, have lower IRQ whereas industries on the higher end such as telecommunications have higher IRQ. There is an upward trend with regards to how the industries perform, based on revenue and profit. It appears that the telecommunication industry is performing better than the mining industries.

There is a significant downward trend with assets ($H = 33.201$, $p < 0.01$; J-T= -.938) as in Table 6. This implies that the mining industry has more assets in the balance sheet than do organisations in the telecommunications industry. This is consistent with the findings by Humphreys (2001) that mining companies invest significantly in machinery as it is essential for operations and generating revenue. This is evident through the increase in capital disclosure in the mining industry which indicates an increase in capital utilised (Herbert & Graham, 2019). On the other hand, companies in the telecommunications industry do not require as many assets for operations.

However, the correlation between integrated reporting quality and the number of operating segments identified in the integrated report is significant (r_s=0.129, $p<0.05$) as in Table 5 above. This suggests that the number of segments identified by management has an impact on integrated reporting quality. This is in line with the average number of segments identified increasing from 2015 (3.71) to 2017 (3.82) as well as the average scores decreasing from 2015 (4.17) to 2017 (4.09) indicating better EY scores and an increase in IRQ. This may be as a result of management being better able to allocate resources to the individual segments and monitor performance based on the different geographical locations of an entity or based on the different business operations (Kajüter & Nienhaus, 2017). Segment disclosure provides information on how an entity creates value and helps users to interpret the company's performance and position (Leung & Verriest, 2015). Segment disclosure allows improved quality as it places a focus on information used by management to operate the business by using measures which are non-IFRS (Nichols et al., 2012). Segments provide information about how the strategy is implemented and also communicates the internal business processes to users (IASB, 2008). This overlaps with integrated reporting quality as it improves the quality of the information provided in an integrated report.

Model 1 (r_s=0.373, $p<0.01$) and model 2 (r_s=0.381, $p<0.01$) have moderate positive correlations with IRQ which are significant at the 1% level as per Table 5. There is also a significant upward trend with model 1 ($H = 41.914$, $p < 0.01$; J-T= 6.180) and model 2 ($H = 52.911$, $p < 0.01$; J-T= 6.115) at both the 0.01 and 0.05 level as per Table 6 above, when using industry disaggregated as the grouping factor. This is consistent with prior literature which suggests that understanding the entity and disclosure consistency within the integrated report and annual financial statements are components of integrated thinking (Dumay & Dai, 2017). These findings are aligned with WICI (2013) which suggests that gaining an understanding of the internal operations results in management having the ability to create value and achieve integrated thinking. As a result, integrated thinking results in better integrated reporting quality. How management identifies operating segments and discloses them in the integrated report should be consistent with the annual financial statements.

When using industry disaggregated (Table 6) is the grouping factor, there appears to be significance at both the 0.01 and 0.05 level. There is a significant upward trend with model 1 (H = 15.562, $p < 0.01$; J-T= 2.3685) and model 2 (H = 17.424, $p < 0.01$; J-T= 1.741). This might indicate that as the industries move from mining (Table 3) to telecommunications, there is an increase in how management understands the business as the industry becomes less complex. In line with Figure 4 (Section 2.7), stakeholder inclusivity plays a role in management's understanding of the entity (indicated by model 1) as management becomes aware of opportunities and challenges faced by the organisation to ensure that the interests and expectations of all stakeholders are met. Based on stakeholder engagement being crucial to integrated thinking (see Figure 3, Section 2.6), the upward trend between the industries disaggregated indicates that there might be less stakeholder engagement with industries such as mining. This further indicates that the IRQ score is not appropriate in determining the effect that stakeholder engagement has on an integrated report when considering these industries.

There is a moderate negative correlation between model 3 (r_s=-0.366, p<0.01) and a strong negative correlation with model 4 (r_s=-0.617, p<0.01) which is significant at the 1% level (Table 5). This is also supported by the significant downward trend with model 3 (H = 48.234, $p < 0.01$; J-T= -6.094) and model 4 (H = 103.245, $p < 0.01$; J-T= -10.325) when using IRQ as a grouping factor as in Table 6. A possible inference is that the correlation with model 3 is explained by an increase in the number of pages in an integrated report which results in a decline in the cross-reference variable and, as a result, a decline in model 3. As an increase in the number of pages in the integrated report allows management the opportunity to include segment disclosure, this indicates that integrated thinking is promoted through integration within the business models, risk and strategy of a business (IIRC, 2013; Macias & Farfan-Lievano, 2017). Based on the low averages for model 3 (2017= 35%) and model 4 (2017 = 14%) as indicated in Table 4 above, this implies that the disclosures may be symbolic rather than substantive. This is supported by prior literature which suggests that management considers the trade-off between disclosing information to stakeholders for transparency and effective communication as there is a need to withhold this information to maintain a competitive advantage with regards to the business strategy and the internal business operations (Abeysekera, 2013).

Based on prior literature, model 3 and model 4 support integrated thinking through presenting information clearly and concisely by linking the strategy, sustainability and risk of an organisation with the value creation process (Macias & Farfan-Lievano, 2017). The negative correlation between models 3 and 4 and IRQ implies that separately identifying segments within inputs, processes and outputs, instead of incorporating all segments into the business model, does not necessarily result in better IRQ. This also indicates that all segments work together in the value creation process rather than exist individually. Once each segment is included in the inputs, business process and outputs, this will allow the segments to be connected and interdependent on one another to create value as a whole for the entity (IOD, 2016). These segments will then create value and integrated thinking.

There is a significant downward trend with model 3 ($H = 16.972$, $p < 0.01$; -3.295) and model 4 ($H = 29.877$, $p < 0.01$; -2.868) when using industries as a grouping factor as in Table 6. This implies that industries such as pharmaceuticals and telecommunications have a better application of integrated thinking than industries such as mining and financial services. This may be the case as pharmaceuticals and telecommunications companies tend to have more complex business models than mining. This is supported by Herbert and Graham (2019) who found that mining companies disclose relational capitals more frequently than other industries. Therefore, it is expected that a better understanding and integration of the relevant segments is incorporated within the business models, risk and strategy. The results in Table 6 also suggest that different types of industries have different levels of integrated thinking (represented by the four models).

Additionally, Table 6 shows that all four models are correlated. The intercorrelation among the models suggests that the models are not independent and that there are one or more factors linking them. One of the factors can be integrated thinking which would suggest that the four models have an effect on integrated thinking and, as a result, integrated reporting quality.

Based on the above, when answering the second research question, it can be concluded that IRQ is better when companies disclose the same segments in their annual financial statements and integrated reports. The above evidence also supports the third research question, as it provides evidence that segmental disclosures within the integrated report illustrate the emergence of integrated thinking in companies.

4.3. Discriminant analysis

The discriminant analysis function below is used to analyse the relationship among the different industries above. Discriminant analysis is used as the dependent variables, namely, the different industries, are categorical. There is a statistically significant variance among the different grouped industries which is explained by two functions. As per the canonical discriminant function represented in Figure 5, function 1 (variance= 40,9%) and function 2 (variance= 29,5%) represent 70, 4% of the total variance between the integrated reporting quality of the companies within the different industries.

Table 7 shows the segmental disclosures loading on each function.

Table 7. Disclosure elements[6]

	Function 1	Function 2
Number of operating segments IR	✓	
Number of operating segments in AFS		
Disclosure of reconciliation in AFS		
Basis in AFS=Basis in IR		
Proportion of measurement bases IR=AFS		✓
Factors used to identify segments in AFS=IR	✓	
Proportion of segments IR=AFS	✓	
Proportion of segments with P&L IR=AFS		✓
Proportion of segments with Rev IR=AFS	✓	
Proportion of segments with Exp IR=AFS	✓	
Proportion of segments with Assets IR=AFS		✓
Proportion of segments with Liabilities IR=AFS		✓
Cross references		
No of segments in inputs/capitals		
No of segments in processes		
No of segments in outputs		

[6] Function 1 has a Wilks' Lambda of 0.306 (χ = 324.742, $p<0.01$) and Function 2 has a Wilks' Lambda of 0.483 (χ = 199.548, $p<0.01$). Table 6 indicates the disclosure elements which were grouped together and whether function 1 and function 2 incorporates these elements.

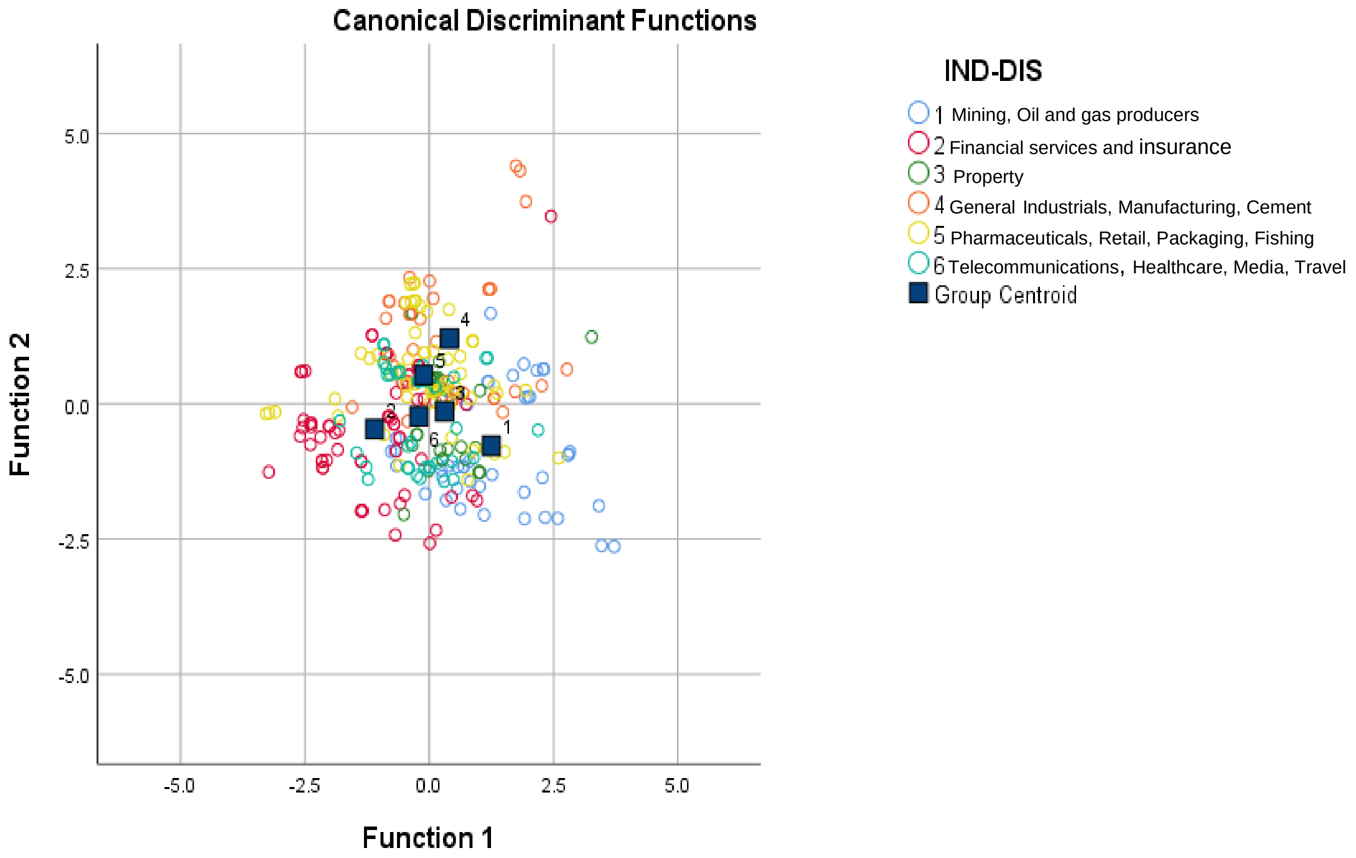
Table 7. Disclosure elements[6]		
No of segments in business model	✓	
No of segments in risk		

Function 1 loads mainly with the identification of segments, as well as the incorporation of segments into the business model. As discussed in Section 4.2, these characteristics are correlated to IRQ and are indicative of connectivity and interdependency (Dumay & Dai, 2017). This suggests that the integration of segments within the business process is the main difference between the industries. Function 1 is labelled connectivity and interdependency.

Function 2 loads mainly with the disclosure consistencies of the measurement basis, profits, assets and liabilities of segments in the annual financial statements and the integrated report. This suggests that disclosure consistency and communication is the main difference between the industries (De Villiers, Pei-Chi, et al., 2017; Silvestri et al., 2017). Function 2 is labelled disclosure consistency.

The final discriminate plot with industry on Function 1 and Function 2 is presented in Figure 5.

Figure 5. Canonical discriminant function



Function 1

Industries 3, 4, 5 and 6 are similar, therefore, Function 1 accounts for the difference between industries 1 and 2. This may be because of managements' understanding of the entity being better in either the mining industry or the financial services industry.

The difference between the mining industry and financial services may be attributed to the financial services industry identifying more operating segments within the entity and an increase in integration of these disclosed segments in the business model (see Section 4.2). This is consistent with the findings by Herbert and Graham (2019) and Quick and Inwinkl (2020), where it was proven that the financial services industry is far more compliant in embedding content within the integrated reports than providing disclosure to increase corporate legitimacy. The embedding of content indicates that management has a better understanding of the entity and the industry in which it operates. This is also consistent with De Villiers and Marques (2016) and Stacchezzini et al. (2016) whose findings indicated that industries with a greater environmental impact tend to provide generic disclosures to maintain legitimacy. The mining industry is considered to have a greater environmental impact.

According to Herbert and Graham (2019), financial services report less on societal impact which indicates a decline in stakeholder inclusivity and how the organisation is an integral part of society. These factors form part of integrated thinking.

Function 1 is also consistent with the findings in Table 6, where there is a significant upward trend with model 1 (H = 41.914, $p < 0.01$; J-T= 6.180) and model 2 (H = 52.911, $p < 0.01$; J-T= 6.115) at both the 0.01 and 0.05 level, when using industry disaggregated as the grouping factor. This indicates an increase in managements' understanding of the entity in the financial services industry in comparison to the mining industry which indicates better integrated thinking.

The purpose of an integrated report is also to explain the interconnectivity among the different capitals in the context of the organisation's external environment and business model (IIRC, 2013). With industries such as mining, it was found that, although there is extensive disclosure of relational capitals, there is no disclosure of how the capitals are interrelated (Herbert & Graham, 2019). As the business model is made up of the inputs and capitals, this further explains the difference between the mining and financial services industry which results from a difference in the way the segments are integrated into the business model. This indicates that Function 1 represents connectivity and interdependency. Because of connectivity and interdependency being components of integrated thinking (Dumay & Dai, 2017; WICI, 2013 2012, sun, 2012), this further supports the theme that integrated thinking has an impact on integrated reporting quality.

Function 2

Industries 3, 5 and 6 are similar but Function 2 accounts for the difference between industry 1 and 4 and industry 1 and 2. This may be due to disclosure consistency being better in either the mining industry, general industrials or financial services which is a factor of integrated thinking. This can further be explained by the upward trend in Table 5, which indicated fewer stakeholder engagements in the mining industries.

Function 2 includes segment disclosure elements found in the Statement of Comprehensive Income and the Statement of Financial Position. The disclosure of the proportion of segments in profit or loss and assets is consistent with the IASB (2016b) requirements. Management must identify segments which contribute 10% or more of the assets and profit of an entity. These disclosure elements are grouped together as the performance of a segment is important in determining how resources are allocated. The disclosure and communication of assets, liabilities and profit help in the measurement of performance.

As financial performance is made up of segment measurement basis, profits and liabilities, these are possible factors which may contribute to the differences in the industries. The disclosure consistencies of segments in the annual financial statements may be a communication tool for stakeholder engagement. This indicates that financial performance is still integral to users as it is a form of communicating value creation and is part of the outputs of the business model. The disclosure of profits, assets and liabilities per segment provides a breakdown to users of the business operations.

This supports Dumay and Dai (2017) who indicated that integrated thinking is the connectivity of an entity's strategy, governance and performance. Integrated thinking can only be achieved when information is communicated and presented in a clear and concise manner, which links the strategy, sustainability and risk of an organisation with the value creation process (IIRC, 2013; Macias & Farfan-Lievano, 2017).

Although the disclosure consistencies can be symbolic and appear as though the different industries have better integrated reporting quality and integrated thinking. This can imply that these industries do not necessarily apply integrated thinking but use disclosure in the integrated report as a form of legitimacy. This can also be a form of signalling as industries might choose only to identify segments making profits and aggregate loss-making segments. Therefore, management in the mining, financial services or general industrials industries can use the segment measurement basis as a signalling tool, based on which segments, they identify which might not necessarily be aligned with the business operations. As a result, Function 2 which represents disclosure consistency, only promotes integrated thinking depending on the intentions of management.

Based on the above evidence, it can be concluded that Function 1 incorporates the same elements as model 1 and 3, while Function 2 incorporates the same elements as model 3. Since the four models are a representation of integrated thinking, it is evident that Function 1 and Function 2 represent elements of integrated thinking. This indicates that integrated thinking accounts for 70, 4% of the variation in integrated reporting quality for certain industries. The above further supports the third research question, indicating that the disclosure of segments within the integrated report illustrates the emergence of integrated thinking within an organisation.

5. Conclusion

This thesis contributes to the integrated reporting literature by determining factors which result in integrated thinking and better-integrated reporting quality. The need for a more detailed analysis of what companies are reporting about their business models (Sukhari & De Villiers, 2018; Tweedie et al., 2018) and research on the drivers of organisational change and substantial performance (Adams, 2017) are addressed in this thesis. These findings are useful as high quality integrated reporting has been found a useful way to signal the ability of an entity to manage economic, social and environmental concerns effectively (Barth et al., 2017; Eccles, Ioannou, & Serafeim, 2014; Malola, 2019).

When considering the first research question, concerning how JSE-listed entities disclose operating segments in integrated reports, this thesis found that on average, 80% of JSE listed entities disclose segment reporting in the integrated report. This is significant and indicates that most entities find segment reporting an important disclosure element in the integrated report. This is supported by integrated reporting allowing for voluntary disclosures which management determine to be material (IIRC, 2016; Mohamed et al., 2019; Shima & Fung, 2019) and. The results indicate that on average, 52% of companies disclose segments in the same manner as in the annual financial statements.

These findings indicate that, although organisations disclose segments in the integrated report, there is a lack of integration with business operations. This is also supported by the separate disclosure of financial and non-financial information. This indicates that the integrated report is seen as an extension of the annual financial statements only. The segments might be disclosed as a form of legitimacy. This indicates that management may not understand the business or industry in which it operates and this results in a lack of integrated thinking and no sustainable value creation.

Although this is gradually improving as the results indicate a slight increase across the three years (2015 – 2017) of segments being disclosed and integrated within the risk, strategy and business model of the segments. This indicates that management acknowledges the importance of integrating segments in the day-to-day operations of the entity. This is consistent with the average EY rating score which represents integrated reporting quality, improving from 2015 to 2017 which indicates an improvement. Based on the findings, it can be concluded that most companies disclose segment reporting in the integrated report in a manner consistent with the disclosure in the annual financial statements as required by IASB (2008).

When answering the second research question, this thesis determined whether IRQ is better when companies disclose the same segments in their annual financial statements and their integrated report. According to Adams (2017), integrated thinking is a key driver of integrated reporting quality. Consequently, this thesis has determined the factors which influence integrated thinking in order to determine what subsequently drives integrated reporting quality. The integrated thinking models were used to answer the third research question regarding whether segmental disclosures in the integrated report illustrate the emergence of integrated thinking.

The thesis used four models and equations to represent the drivers of integrated thinking. Model 1 incorporates management's understanding of the entity which is supported by IASB (2016b) as management determines segments, based on the understanding of how resources should be allocated and how performance should be measured. Model 2 represents disclosure consistency of segments in the integrated report and annual financial statements (adapted from IIRC, 2013). Model 3 represents integrated thinking through the integration of segments in the strategy, risk and business model (Macias & Farfan-Lievano, 2017). Lastly, model 4 represents integrated thinking through the integration of segments within the value creation process (inputs, processes and outputs) (Krzus, 2011).

The results strongly indicated a significant correlation between integrated reporting quality and the number of operating segments identified in an integrated report (r_s= 0.129, p<0.05). The significant correlation is in line with the increase in the number of segments identified in the integrated report and the increase in better EY scores which indicate an increase in IRQ. This indicated that IRQ is higher when companies disclose the same segments in their annual financial statements and integrated reports. This is further supported by model 2 which represents segment disclosure consistency, having a moderate positive correlation with IRQ (r_s=0,381, p<0.01) significant at the 1% level. This thesis also considered whether the industry in which the entity operates has an influence on the IRQ. The findings indicated a significant upward trend with model 2 and industries disaggregated (H= 17,424, p<0.01; J-T= 1.741). This indicated that there is an increase in disclosure consistency in the telecommunications industry rather than the mining industry, resulting in better integrated thinking and therefore better IRQ.

Lastly, this paper used discriminant analysis to determine the relationship among the industries and two functions. Function 1 represented connectivity and interdependency, whereas Function 2 represented disclosure consistency and measurement. These functions incorporated disclosure elements found in the four integrated thinking models. This indicated that 70, 4% of the variance in integrated reporting quality is as a result of integrated thinking. Most importantly, Function 2 accounted for the differences among the mining industry, general industrials and financial services. The findings indicated that disclosure consistency may be a useful tool for stakeholder engagement as the disclosure of segments in the integrated report communicates how value is created. Disclosure consistency achieves integrated thinking through the connectivity of the entity's strategy and governance, with the performance (Dumay & Dai, 2017).

Based on the above results, this thesis concludes that segment reporting disclosure which is consistent in the integrated report and annual financial statements does illustrate the emergence of integrated thinking in an organisation. When these segments are integrated within the business model, strategy and risk of the entity, integrated thinking is improved which results in better integrated reporting quality.

The results contribute to the limited body of research around factors which may influence the nature and extent of disclosures found in an integrated report (De Villiers, Pei-Chi, et al., 2017; IOD, 2016). This paper has established four integrated thinking models which can be used by preparers of integrated reports and managers in applying integrated thinking to improve integrated reporting quality. These findings will be useful, not only to managers, but also to practitioners, standard-setters, regulators and investors in evaluating the merits of integrated reporting and segment reporting (Barth et al., 2017). Lastly, this paper will contribute to the detailed analysis of what companies should report in business models (Tweedie et al., 2018).

This paper only looked at JSE-listed companies as they are required to prepare an integrated report and so non-listed entities were not assessed. This paper only looked at companies in a South African context and, as a result, an area of future research is applying the research in a different jurisdiction. The extent to which companies comply with the IIRC framework is not considered. Similarly, the impact of primary listing status is not addressed by this research. These are inherent limitations of the thesis. An area of future research would be to analyse dual-listed entities separately. This paper only looked at the extent to which operating segments are disclosed in the integrated report and whether or not there is an association between segmental disclosure and IRQ. It did not evaluate whether segmental disclosures have a causal relationship between segmental reporting and IRQ. Future research should focus on using regression analysis to determine whether segmental reporting in the integrated report has a causal effect on IRQ. Future research should also consider other factors which might result in better IRQ and integrated thinking.

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7. Appendix 1

Disclosure requirements as per IFRS 8 from annual financial statements (IASB, 2016a)
Name of the entity
Year (2015 – 2017)
EY ranking
Basis of organisation
Number of operating segments
Aggregation of operating segments
Segment profit or loss
Segment revenue
Segment expenses
Segment assets
Segment liabilities
Basis of measurement
Amount based on the basis of measurement (EBITDA, Headline earnings etc.)
Nature of differences in measurement
Disclosure of reconciliation

8. Appendix 2

Disclosures from integrated report	
Disclosures	References
Basis of the organisation (geographical location, products and services or both)	(IASB, 2016a)
Number of operating segments	(IASB, 2016a)
Aggregation of operating segments	(IASB, 2016a)
Segment profit or loss	(IASB, 2016a)
Segment revenue	(IASB, 2016a)
Segment expenses	(IASB, 2016a)
Segment assets	(IASB, 2016a)
Segment liabilities	(IASB, 2016a)
Basis of measurement	(IASB, 2016a)
Amount based on the basis of measurement	(IASB, 2016a)
Nature of differences in measurement	(IASB, 2016a)
Disclosure of reconciliation	(IASB, 2016a)
Number of pages in the integrated report	(Maroun et al., 2018)
Disclosure in the value creation process in the integrated report (input, business activities, output)	(Barth et al., 2017; de Villiers et al., 2014)
Strategy	(Barth et al., 2017; de Villiers et al., 2014)
Risk	(Sarasvathy et al., 1998)
Segment represents subsidiary/ joint venture/ associate/ investment	

9. Appendix 3

Dual listed entities in the EY Excellence in Integrated Reporting Awards (EY, 2017)
Brait SE
British America Tobacco plc
ArcelorMittal South Africa Ltd
SABMiller plc
Grindrod Ltd
Glencore plc
Investec plc
Lonmin plc
Mondi plc
Old Mutual plc
Mediclinic International plc
MMI Holdings Ltd
Mr Price Group Ltd
Naspers Ltd
Northam Platinum Ltd
Steinhoff International Holdings Ltd
Vukile Property Fund Ltd
Rockcastle Global Real Estate Company Ltd

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