THE VALUE RELEVANCE OF INTEGRATED REPORTING IN SOUTH AFRICA AND THE UNITED KINGDOM

by

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M Khatlisi 19 October 2022

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DEDICATION

This thesis is dedicated to my parents, Mr and Mrs Ntuli.

Thank you for instilling in me the importance and value of education.
I will forever be grateful.

Ngiyabonga.

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ABSTRACT

In 2013, the International Integrated Reporting Council (IIRC) had a long-term vision that firms across the world would adopt integrated reporting, which would ultimately become a corporate reporting norm. However, nine years later, integrated reporting is still voluntary in most countries, with South Africa being an exception. This study examined the value relevance of integrated reporting in a country which has been considered a leader in integrated reporting, South Africa, and a country that is the home base of IIRC, the United Kingdom. Integrated reporting would be value relevant if it has a predicted association with firm value. The study also investigated whether integrated reports with a high level of integrated reporting in line with the International Integrated Reporting Framework (International <IR> Framework) have a different association with firm value, compared to integrated reports with a low level of integrated reporting in each country. The study also tested whether the value relevance of integrated reporting in South Africa is statistically different compared to the value relevance of integrated reporting in the United Kingdom. Agency theory, signalling theory and voluntary disclosure theory formed the theoretical framework that served as a basis to develop testable hypotheses and guide the methodology which was adopted to achieve the research objectives of the study.

In this study, a quantitative research method was applied. Ohlson's (1995) valuation model and Tobin's Q valuation model were used to test the value relevance of integrated reporting. The measures of firm value used in the study were the market value of equity and Tobin's Q. The sample of the study consisted of two groups. The first group consisted of the Top 100 firms listed on the Johannesburg Stock Exchange (JSE). Financial and market data for these firms were collected from the JSE and IRESS Research Domain, and other disclosure information was hand-collected from the sources available. The second group consisted of Top 100 firms listed on the London Stock Exchange (LSE) – in other words, the Financial Times Stock Exchange (FTSE) 100 firms. Financial data for these firms were collected from the Refinitiv database; other disclosure information was hand-collected from the sources available. The sample period for both groups ran from 2011 to 2018. An integrated reporting disclosure index based on the guiding principles and content elements of the

International <IR> Framework was developed in the study and was used to measure the level of integrated reporting.

The overall findings for the South African sample showed that integrated reporting was not positively associated with firm value, except for the sample during the *King III* reporting periods, where a positive association between integrated reporting and firm value was obtained when firm value was proxied by Tobin's Q. The findings also showed that capital markets in South Africa did not differentiate between integrated reports with a high level of integrated reporting and those with a low level of integrated reporting. For the United Kingdom, the main findings showed that integrated reporting was not positively associated with firm value when firm value was proxied by either the market value of equity or Tobin's Q. The findings also showed that integrated reports with a low level of integrated reporting in the United Kingdom were negatively associated with firm value when Tobin's Q was used as a proxy for firm value. The overall results also showed that the association between integrated reporting and firm value in South Africa was not statistically different from the association between integrated reporting and firm value in the United Kingdom.

This study extended the literature by examining the value relevance of integrated reporting in the United Kingdom, which is the home base of the IIRC, but which still has voluntary integrated reporting, as well as in South Africa, which has been termed a leader in integrated reporting and has mandatory integrated reporting. In addition, this study also contributes to the body of knowledge by examining whether the regime change from *King III* to *King IV* in South Africa had any significant impact on the value relevance of integrated reporting.

Keywords:

Firm value; Integrated reporting score; Integrated reporting; International <IR> framework; Mandatory reporting; Market value of equity; Ohlson's model; South Africa; Tobin's Q; United Kingdom; Value relevance; Voluntary reporting.

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LIST OF ACRONYMS AND ABBREVIATIONS

ASX	Australian Securities Exchange
CSR	Corporate Social Reporting
CRR	Corporate Responsibility Reporting
EGLS	estimated generalised least squares
ESG	environmental, social and governance
EY	Ernst and Young
EU	European Union
et al.	Latin: et alii, English: “and others”
FRC	Financial Reporting Council
FTSE	Financial Times Stock Exchange
GRI	Global Reporting Initiative
H	Hypothesis
IASB	International Accounting Standards Board
ICAEW	Institute of Chartered Accountants in England and Wales
IFRS	International Financial Reporting Standards
IFRS for SMEs	International Financial Reporting Standards for Small and Medium-Sized Enterprises
IIRC	International Integrated Reporting Council
IIRF	International Integrated Reporting Framework
IoDSA	Institute of Directors in South Africa
<IR>	Integrated Reporting
IRC	Integrated Reporting Committee
IRSCORE	Integrated reporting scoring index
JSE	Johannesburg Stock Exchange
King I	*King Report on Corporate Governance* 1994
King II	*King Report on Corporate Governance for South Africa* 2002
King III	*King Report on Corporate Governance for South Africa* 2009
King IV	*King Report on Corporate Governance for South Africa* 2016
KPI	Key Performance Indicator
LSE	London Stock Exchange
N	number of observations
No.	number

par	paragraph
plc	Public Limited Company
p-value	probability value
PwC	PricewaterhouseCoopers
SA	South Africa
SAICA	South African Institute of Chartered Accountants
SD	Standard deviation
VIF	Variance Inflation Factor
UK	United Kingdom
US	United States
ZAR	South African Rand

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

Integrated reporting, which combines financial and non-financial reporting, began gaining global momentum in 2010, the year when the International Integrated Reporting Council (IIRC) was established in the United Kingdom. The IIRC offered a response to the global financial crises of 2008 and 2009, as it aims to provide sustainable solutions to reduce the risk of another financial system collapse (IIRC 2013:1). The IIRC consists of regulators, investors, firms, standard setters, the accounting profession and non-government organisations (IIRC 2013:1). Subsequent to the formation of the IIRC, the International Integrated Reporting Framework (the International <IR> Framework) was released in 2013 (IIRC 2013:1). The primary purpose of the International <IR> Framework is to provide the guiding principles and content elements that underpin the preparation of an integrated report (IIRC 2013:4).

Although the committee promoting integrated reporting, namely the IIRC, was established only in 2010, integrated reporting is not a new phenomenon. In fact, corporate reports which consolidate financial and non-financial reporting into one report began to be published in the early 2000s (Eccles, Krzus & Solano 2019:2). Events such as the global financial crises, organisation failures and climate change exacerbated the need for integrated reporting (De Villiers, Hsiao & Maroun 2017:450; Du Toit 2017:632). Events such as these resulted in a call for reporting that focuses not only on financial reporting, but also on non-financial aspects that may affect a firm as a whole.

The development of integrated reporting across different countries and firms has not come without challenges – it has been called “one of the most disruptive innovations in corporate reporting” (Gibassier, Rodrigue & Arjaliès 2018:1349). The requirement for firms to change their way of reporting and to include integrated thinking into their processes as required by the International <IR> Framework has proved to be difficult to meet for most firms (Flower 2015:15). Strong (2015:96) notes that “<IR> has travelled a contentious journey and will continue to be a challenging issue of public concern for some time to come”.

Although integrated reporting has gained popularity in the last few years, its usefulness to the main audience for integrated reporting, namely providers of financial capital (IIRC 2013:4) has been questioned (Slack & Campbell 2016:7). Research has produced inconsistent results with regard to the usefulness of integrated reporting, particularly to the providers of financial capital (Dumay, Bernardi, Guthrie & La Torre 2017:468; Rensburg & Botha 2014:146). For example, some studies have found that integrated reports are useful to providers of financial capital (Dey 2020:204), and that shareholders perceive integrated reports to be useful (Zhou, Simnett & Green 2017:94). However, other empirical studies suggest that integrated reports do not add significant value for the providers of financial capital (Hsiao, De Villiers & Scott 2021:797). In response to the contradictory results reported in the literature, the current study therefore examines the value relevance of integrated reporting (in other words, the association between integrated reporting and firm value) in South Africa, a country where integrated reporting is mandatory, and in the United Kingdom, a country where integrated reporting is voluntary.

The seminal studies by Ball and Brown (1968:158) and Beaver (1968:67) provide the foundation for value relevance studies. These researchers examined the association between accounting amounts and market prices or firm value. Other renowned studies in the literature followed suit by examining associations between earnings, the book value of equity, dividends, other non-financial information and firm value, for example, the studies by Ohlson (1995:661) and Holthausen and Watts (2001:5). Following an early study by Barth, Beaver and Landsman (2001:79), integrated reporting information is deemed value relevant if it has a predicted association with firm value. Kothari (2001:108) defines firm value as the "present value of expected future net cash flows, discounted at the appropriate risk adjusted rate". This implies that for information to be value relevant, it has to be used in valuing firm's equity – in other words, it has to be relevant and reliable (Barth et al. 2001:80). Therefore, in order to assess whether information is useful, the value relevance approach is often used in the literature (Badenhorst, Brümmer & De Wet 2016:1). This concept of value relevance stems from the Conceptual Framework issued by the International Accounting Standards Board (IASB), which states that information is relevant if it is capable of making a difference in users' decision-making (IASB 2018 par 2.6).

1.2 BACKGROUND INFORMATION

The IIRC defines an integrated report as *"*concise communication about how an organisation's strategy, governance, performance and prospects lead to the creation of value over the short, medium and long term" (IIRC 2013:7). At the centre of integrated reporting is integrated thinking, which allows connectivity of information to improve management reporting and decision-making (IIRC 2013:2). In support of this approach, proponents of integrated reporting have argued that an integrated report communicates most effectively a firm's ability to create value, since it allows firms to combine financial and non-financial reporting into one holistic report (Zúñiga, Pincheira, Walker & Turner 2020:637).

With regard to the purpose of integrated reporting, the IIRC (2013:4) states that it is to "explain to the providers of financial capital how an organisation will create value in the future, and it contains financial and other information" (IIRC 2013:4). These providers of financial capital have been classified in the literature as shareholders and investors (Wahl, Charifzadeh & Diefenbach 2020:2; Tlili, Othman & Hussainey 2019:655; Barth, Cahan, Chen & Venter 2017:48). The IIRC (2013:11) further suggests that firms use different capitals, namely the financial, manufactured, intellectual, human, social and relationship, and natural capitals, to create value for the providers of financial capital.

In respect of the format of an integrated report, the International <IR> Framework sets out seven guiding principles which preparers of integrated reports must follow. These principles are strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness, and consistency and comparability (IIRC 2013:16). In addition, the International <IR> Framework (IIRC 2013:24) stipulates eight content elements that should be included in an integrated report: organisational overview and external environment, governance, business model, risk and opportunities, strategy and resource allocation, performance, outlook, and basis of presentation. The requirement is that information presented in an integrated report should enable connectivity amongst these different content elements.

1.2.1 The development of integrated reporting in South Africa

In 1992, the Institute of Directors in South Africa (IoDSA) constituted the King Committee on Corporate Governance to evaluate corporate governance in South Africa (IoDSA 2002:7). This committee was chaired by a retired judge of the Supreme Court of South Africa, Professor Mervyn King. The formation of the King Committee coincided with a period when the country was working towards re-admission into the global arena and world economy (IoDSA 2002:7) as the country prepared to shift to a new democratic dispensation. The work of the King Committee resulted in the publication of what is known as *King I* in 1994 – the first corporate governance code for South Africa. Subsequently, the King Committee on Corporate Governance issued *King II* in 2002, as a revision of *King I* (IoDSA 2002:7)

In 2009, the IoDSA issued the third report on corporate governance, *King III*. The revisions included in *King III* were a response to the new *Companies Act, 71 of 2008* coming into effect and to changes in international governance trends (IoDSA 2009:5). A key change in *King III* was that it required JSE-listed firms to issue and publish integrated reports or explain reasons for not doing so (JSE 2013:447; IoDSA 2013:4). This requirement is of interest for the current study, because the JSE is the largest stock exchange in Africa and the 16th largest stock exchange in the world, with a market capitalisation of R9,8 billion as at 31 December 2020 (JSE 2020:6). It is therefore evident that the JSE is one of the well-established stock exchanges in the world, making it a useful exchange to include in a study on value relevance.

Later on in 2016, the King Committee published the *King IV: Report on Corporate Governance for South Africa* (*King IV*). The report is effective for all financial years commencing on or after 1 April 2017 (IoDSA 2016:38). *King IV* places increased emphasis on integrated reporting and integrated thinking, therefore closing the circle which commenced in 2009 when *King III* was released (IoDSA 2016:23). *King IV* requires firms to apply and explain the application of integrated reporting principles.

The sophisticated and advanced approach to corporate governance as discussed above has allowed South Africa to become a leader in the development of integrated reporting. South African firms were therefore amongst the first to adopt integrated reporting, as Muttakin, Mihret, Lemma and Khan (2020:518), Atkins and Maroun

(2015:198), Cheng, Green, Conradie, Kinoshi and Romi (2014:93), and De Villiers, Rinaldi and Unerman (2014:1046) point out. These studies on integrated reporting in South Africa have found several benefits associated with integrated reporting. *King III* argues that one of these benefits is that integrated reporting enables stakeholders to make accurate estimations about a firm's economic value (IoDSA 2009:13). However, the literature is replete with contradictory claims regarding the economic consequences of integrated reporting, as detailed in Sections 1.3 and 3.2; hence, the question of the benefits of engaging in integrated reporting require further investigation.

1.2.2 The development of integrated reporting in the United Kingdom

In the United Kingdom, integrated reporting is voluntary, and the related research on integrated reporting in the United Kingdom is limited (Chaidali & Jones 2017:18). Integrated reporting in the United Kingdom is not mandatory, because of other mandatory reporting requirements. In the United Kingdom, large public listed firms with more than 500 employees are required to comply with the European Union (EU) Directive which was issued in 2014 (EU 2014). The EU Directive requires these firms to disclose a non-financial information statement but is not specific regarding which framework firms can use to comply with its requirements, so firms can use either the Global Reporting Initiative (GRI) or the International <IR> Framework. The GRI provides specific guidelines on how to use the GRI to comply with the EU Directive; hence, the GRI, which complies with the EU Directive, is currently the most used framework for non-financial reporting (Bernardi 2020:77).

The EU Directive is seen a stepping stone towards integrated reporting in Europe, since the International <IR> Framework is one of the recommended frameworks for compliance (Bernardi 2020:5; Biondi, Dumay & Monciardini 2020:890). It is also important to note that one of the primary proponents of the EU Directive was Richard Howitt, who was previously the chief executive officer of the IIRC (Bernardi 2020:5). It is thus evident that the EU Directive is not in competition with the International <IR> Framework, but rather serves to promote integrated reporting.

Earlier on in 2014, when integrated reporting was still in its infancy, Black Sun conducted a survey which included 66 firms involved in the IIRC pilot programme. The

purpose of the survey entailed obtaining these firms' views on integrated reporting. Regarding these firms' geographical locations, 56% were from Europe, 18% from the Asian Pacific, 14% from South America, 8% from southern Africa, and 4% from north Africa (Black Sun 2014:26). This research found that South Africa, the United Kingdom and Europe were leading the way in terms of best integrated reporting practices.

There has been limited research on the topic of the value relevance of integrated reporting in the United Kingdom in the academic literature (Jablowski 2021:7). In 2013, PriceWaterhouseCoopers (PwC) conducted a survey on the state of integrated reporting in the United Kingdom for FTSE 100 firms. The results showed that the majority of firms had started making a shift towards integrated thinking (PwC 2013:1). These findings are supported by those of Robertson and Samy (2015:190), who investigated factors affecting integrated reporting implementation in the United Kingdom. Their study found that the integrated reports lacked true integration, which limited their usefulness. Nevertheless, even though the number of firms adopting integrated reporting in the United Kingdom was still limited even a few years later, they still made up the majority of voluntary adopters in Europe (Lopes & Coelho 2018:400). This was the basis for choosing the United Kingdom as a country for the current study. A more detailed discussion of the selection of the United Kingdom as a focus is provided in Chapter 2.

1.3 LITERATURE REVIEW

The above discussion suggests that integrated reporting may achieve its purpose as intended by the IIRC, which is to provide value creation information to providers of financial capital (IIRC 2013:7). However, empirical evidence to support these claims is still limited. A recent study by Soriya and Rastogi (2021:558) conducted a systematic literature review on integrated reporting. The study reviewed 110 articles on integrated reporting published between 2011 and early 2020. The purpose of their study was to assess how integrated reporting had developed across different countries, what the main focus of these studies was, and lastly, to identify opportunities for future research. The study found that, out of the 110 published articles, only 14% (approximately 15 articles) had investigated the association between integrated reporting and firm value, also referred to as value relevance (Soriya & Rastogi 2021:565). As Figure 1.1 shows, most of the studies they reviewed focused on examining the implementation effects of

integrated reporting and the concept of integrated reporting, rather than on the value relevance of integrated reporting. These findings highlight the scarcity of empirical research on the value relevance of integrated reporting.

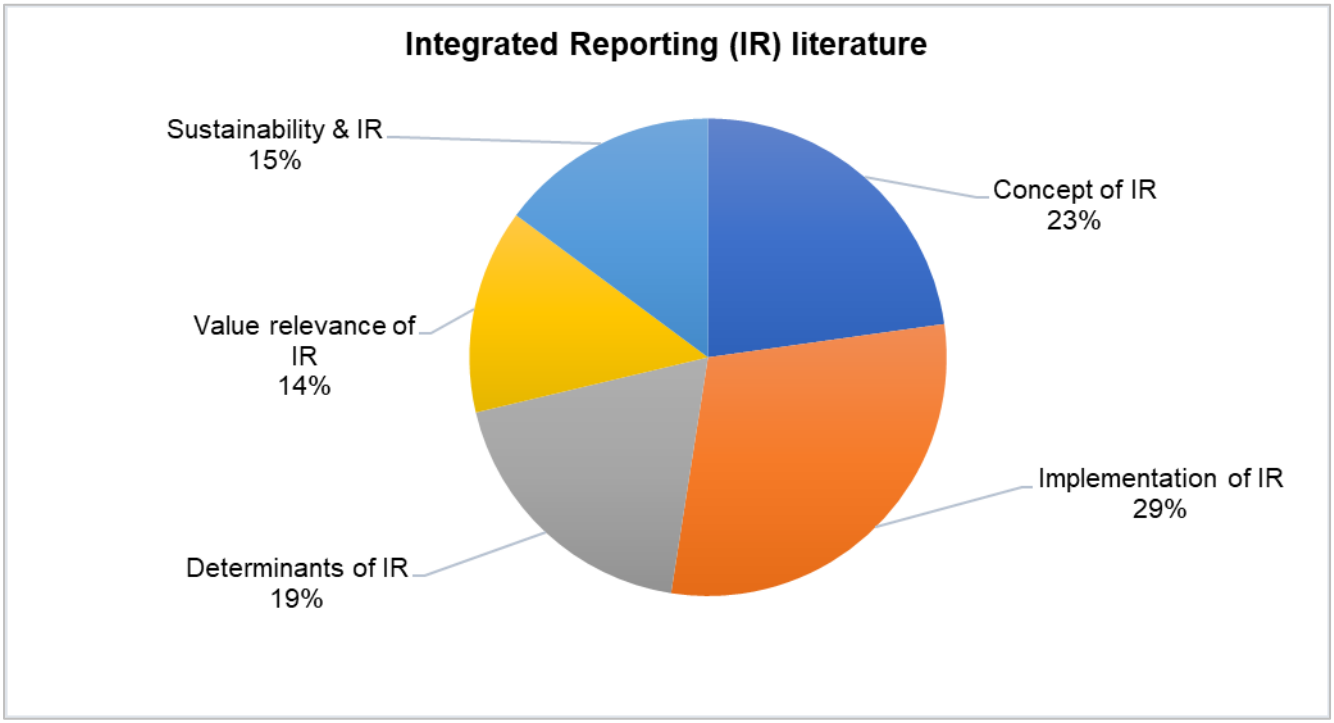

Figure 1.1: Focus areas of the integrated reporting literature

Source: Adapted from Soriya and Rastogi (2021:565)

Empirical studies on the value relevance of integrated reporting in South Africa document mixed findings. One problem with comparing these studies is that several use different proxies of integrated reporting and firm value.

Some of the studies document a positive association between integrated reporting and firm value as proxied by cost of equity, analyst forecast error and Tobin's Q (for example, Barth et al. 2017:43; Zhou et al. 2017:94; Lee & Yeo 2016:1236). Barth et al.'s (2017:43) study used a proxy for integrated reporting obtained from Ernst and Young's (EY's) Excellence in Integrated Reporting Awards, whereas Zhou et al. (2017:38) and Lee and Yeo (2016:1246) used self-constructed indices formulated from the International <IR> Framework as a proxy for integrated reporting. The samples for the above-mentioned studies comprised of JSE-listed firms, and the different sample periods ranged from 2010 to 2014.

A study by Conway (2019:604) documents a negative association between integrated reporting and firm value as proxied by Tobin's Q, for a sample of JSE-listed firms between 2006 and 2015. Other studies, such as those by Mohaimen (2021:73) and Baboukardos and Rimmel (2016:1) report conflicting results; they examined the association between accounting information under an integrated reported approach and share prices in South Africa using sample periods ranging from 2008 until 2017. Mohaimen's (2021:136) findings showed that the value relevance of accounting information was enhanced by the adoption of integrated reporting, but the findings of Baboukardos and Rimmel (2016:5) suggest a decline in the value relevance of accounting information under the integrated reporting approach.

Likewise, the literature on the value relevance of integrated reporting in voluntary countries including the United Kingdom is limited. Studies often draw on samples of firms from different countries instead of a single country and document conflicting results. One group of studies document no association between integrated reporting and firm value. For example, Permatasari and Narsa (2021:672) chose a sample of firms from several countries in Europe and South Africa between 2009 until 2015. Using a single measure of firm value, namely the market value of equity, the findings of their study showed that integrated reporting is only value relevant when it is used together with accounting information (Permatasari & Narsa 2021:672). A study by Gregorovious (2021:76) documents no association between integrated reporting and firm value, proxied by profitability, for a sample of 20 firms from the United States from 2015 to 2019. Similarly, Hsiao et al. (2021:795) used a sample of global firms from the IIRC Examples Database and GRI database to investigate the value relevance of integrated and sustainability reporting and found no association between integrated reporting and firm value. A study by Wahl et al. (2020:11) documents no association between integrated reporting (proxied by an indicator variable) and Tobin's Q for a sample of international firms from 2011 to 2018.

Another group of studies on the value relevance of integrated reporting in voluntary settings do show a positive association between integrated reporting and firm value. For instance, Jablowski (2021:6) examined the value relevance of integrated reporting in Germany and the United Kingdom from 2014 to 2018. Using a single measure of firm value, namely the market value of equity, the findings of that study showed a

positive association between integrated reporting and firm value in both countries. Other studies employ a sample of firms from different countries or single countries where integrated reporting is voluntary and have documented a positive association between integrated reporting and firm value, as proxied by cost of equity (Maama & Marimuthu 2021:393), Tobin's Q (Dey 2020:202), or share price (Cortesi & Vena 2019:745).

By contrast, a negative association between integrated reporting and firm value as proxied by the market value of equity has been documented by Landau, Rochell, Klein and Zwergel (2020:760). Considering a sample of European firms from 2010 to 2016, the study found that integrated reporting, proxied by an indicator variable which equalled to 1 if a firm had issued an integrated report and 0 otherwise, was negatively associated with the market value of equity. However, Hossain, Bose and Shamsuddin (2022:19) have criticised the use of indicator variables as proxies for integrated reporting, arguing that indicator variables are not a true representation of a firm's actual integrated reporting practice. Hossain et al. (2022:19) posit that such proxies limit the generalisability of the findings from such studies. A review of other studies on the value relevance of integrated reporting which have used indicator variables as proxies for integrated reporting, for example, research by Gal and Akisik (2020:1231), Gerwanski (2020:2304), García-Sánchez and Noguera-Gámez (2017:962), and Cortesi and Vena (2019:749), is provided in Chapter 3.

Other studies have investigated the usefulness of integrated reporting to providers of financial capital by conducting case studies, surveys, focus groups and interviews. For instance, evidence from Slack and Tsalavoutas (2018:2) suggests that the usefulness of integrated reports to capital market participants in the United Kingdom is limited. The authors interviewed equity market participants of top firms in London. One of the findings reported was that the interviewees cited the integrated report's lack of relevance as a barrier to using the integrated report for decision-making and questioned the need for an integrated report over a traditional annual report (Slack & Tsalavoutas 2018:10). This finding may be related to the fact that many integrated reports have been found to be superficially integrated in terms of combining both financial and non-financial information into a single report, thus limiting the usefulness of integrated reports in South Africa (McNally, Cerbone & Maroun 2017:492).

In line with McNally et al.'s (2017:492) findings, Flower (2020:127) also argues that the failure of integrated reporting to provide comprehensive non-financial information, including sustainability information, is due to the regulatory capture of the integrated reporting process by the accounting profession (Flower 2020:127). In this context, Bridges, Harrison and Hay (2021:598) posit that when the development of the International <IR> Framework by accountants resulted in the International <IR> Framework (2013), it erased the importance of sustainability matters – this is evidenced by the fact that in the International <IR> Framework (IIRC 2013), the word "sustainability" rarely appears.[1] Findings from a qualitative study conducted in Brazil through focus groups also show that investors do not consider integrated reports to be useful (De Albuquerque Ribeiro, Ezequiel, Zotes & Neto 2022:13). The argument provided by members of the focus groups was that integrated reports add little to no information beyond what is already available through press releases and other sources of information (De Albuquerque Ribeiro et al. 2022:18). Hossain et al. (2022:13) argue that firms use integrated reporting as a method to legitimise their corporate reporting, rather than focus on the content of the report, resulting in the lack of usefulness of the integrated report.

There is also evidence in the literature that suggests that the preparers of integrated reports do not understand who the main audience for integrated reporting is (Naynar, Ram & Maroun 2018:242). Naynar et al. (2018:245) investigated the perceived significance of select disclosure in the integrated reports of South African financial services firms. Their research methodology involved first analysing the integrated reports of sample firms to identify the disclosure items contained in the integrated reports and to formulate themes. Next, they developed a questionnaire to obtain the respondent's perceptions about integrated reporting's identified themes; the respondents were chartered accountants, academics, accounting practitioners, trainee accountants and preparers of integrated reports (Naynar et al. 2018:246). Their findings showed that the preparers of integrated reports did not have the same understanding of the integrated reporting process as users of such reports. This therefore resulted in a 'perception gap' between the preparers of integrated reports and the users of such reports (Naynar et al. 2018:249).

[1] A search using the word "sustainability" in the International <IR> Framework (2013) only returned three results.

Naynar et al.'s (2018:249) findings are in line with the findings from early research conducted in 2017 by the IIRC. In 2017, the IIRC launched a formal consultation process to gather feedback from market participants about challenges and experiences on their integrated reporting experience. This consultation process drew more than 400 submissions from 19 countries. The survey used in the consultation process consisted of 11 questions. Seven questions addressed reporting issues identified during the research process by the IIRC. The submissions were then analysed by the IIRC technical team, which identified the major themes (IIRC 2017:4). Several challenges were raised by market participants. Most relevant to the current study were the responses to Question 3, which related to the legitimate needs and interests of key stakeholders. The aim of the question was to assess whom preparers of integrated reports understood to be their primary stakeholders. Two findings from the research indicated that market participants did not understand the purpose of integrated reporting; additionally, the preparers of the integrated reports did not understand who the main audience for these integrated reports were (IIRC 2017:7). It is therefore evident that the major problem raised by the participants was the confusion surrounding the audience of integrated reports. Some participants misinterpreted the International <IR> Framework and believed that an integrated report should cater for all stakeholders (IIRC 2017:7). However, the International <IR> Framework is clear with regard to the primary purpose of an integrated report as already mentioned (IIRC 2013:4), identifying the audience of integrated reports as providers of financial capital. It can therefore be argued that if preparers of integrated reports do not fully understand who the audience of their reports are, it is questionable whether these integrated reports will contain information useful to the providers of financial capital as the specific target audience.

It is therefore possible that the disconnect between preparers' understanding of the integrated reporting process and the primary goal of integrated reporting as intended by the IIRC, together with findings from qualitative studies on the lack of usefulness of integrated reporting to capital market participants, has resulted in conflicting findings on the value relevance of integrated reporting. However, Hossain et al. (2022:19) attribute the mixed findings on the value relevance of integrated reporting to research design issues, given that there are large differences regarding sample sizes, research settings and proxies for integrated reporting. Considering the mixed findings from

studies reported above, this study examined the association between integrated reporting (proxied by an integrated reporting scoring index based on the guiding principles and content elements of the International <IR> Framework) and firm value using two market-related proxies of firm value, namely the market value of equity and Tobin's Q in a mandatory setting (South Africa) and in a voluntary setting (the United Kingdom).

1.4 PROBLEM STATEMENT

The above discussion illustrates that the findings on the value relevance of integrated reporting in South Africa are mixed, with some studies documenting a positive association between integrated reporting and firm value (for example, Caglio, Melloni & Perego 2020: 69; Lee & Yeo 2016:1236), while other studies document a negative association between integrated reporting and firm value (for example, Conway 2019:628; Baboukardos & Rimmel 2016:5). Similar mixed findings on the value relevance of integrated reporting in the United Kingdom and other settings where integrated reporting is voluntary have also been documented in the literature. For instance, Cortesi and Vena (2019:745) have reported a positive association between integrated reporting and firm value for a sample of global firms from the IIRC's Examples Database, whereas Landau et al. (2020:1760) found a negative association between integrated reporting and firm value in Europe, and Hsiao et al. (2021:797) note no association between integrated reporting and firm value for a sample of global firms from the IIRC's Examples Database and GRI Database.

In addition, there are few studies on the value relevance of integrated reporting, particularly in the United Kingdom (Jablowski 2021:7). This is concerning, because the United Kingdom is the home base of the IIRC (Bakker, Georgakopoulos, Sotiropoulou & Tountas 2020:770) and it is thus expected that most or some studies would have tested the value relevance of integrated reporting in the United Kingdom. An early study by De Villiers, Venter and Hsiao (2017:937) conducted a review of the integrated reporting literature and provided insights into areas for future research. In this regard, De Villiers, Venter and Hsiao (2017:947) have identified the fact that most of the evidence provided by empirical studies is limited to South African data; hence they called on researchers to conduct more studies using data across countries in mandatory and voluntary settings. The current study responds to this call.

There are also a small number of studies which examine the value relevance of integrated reporting across countries. A recent doctoral thesis by Jablowski (2021:7) examined the value relevance of voluntary integrated reporting in Germany and the United Kingdom from 2014 to 2018. She used the market value of equity as a proxy for firm value and a self-constructed index as a proxy for integrated reporting. The findings of the study showed that integrated reporting is value relevant in both countries (Jablowski 2021:7). Recognising the need to provide additional evidence on the value relevance of integrated reporting across countries where integrated reporting is mandatory and voluntary in a single study, as encouraged by De Villiers, Venter and Hsiao (2017:947), this study addressed the research gap by conducting analyses using South African data (a mandatory setting) and data from the United Kingdom (a voluntary setting).

The findings from a recent systematic literature review study by Hossain et al. (2022:19), which reviewed 119 published articles on integrated reporting between 2012 and 2021, found that the majority of the studies focus on the determinants of integrated reporting at firm-level, rather than on the value relevance of integrated reporting. The findings from their study showed that the few studies on the value relevance of integrated reporting are mainly based in South Africa, thus ignoring other countries and cross-country settings (Hossain et al 2022:19). This study addressed this research problem.

In addition, there was a change in the integrated reporting setting in South Africa from the *King III* requirements to the *King IV* requirements in 2016. The capital market implications of this change for the value relevance of integrated reporting are unknown (Zúñiga et al. 2020:647). This study also addressed this research problem.

Therefore, the **problem statement** of this study is stated as follows:

> Various stakeholders such as providers of financial capital, businesses and capital markets all require information that is value relevant in order to make effective business decisions and productive resource allocations (Zhou et al. 2017:94). Hence, the IIRC has promoted integrated reporting as a new form of corporate reporting which provides value relevant and holistic information, and which enables such stakeholders to create value in the long term (IIRC 2013:4). However, the evidence on whether integrated reporting delivers on its promise to add value to the providers of financial capital, particularly in the United Kingdom where the IIRC was formed, and in South Africa, is contradictory. Furthermore,

> although South Africa is a leader in integrated reporting, the capital market implications of the regime change from *King III* to *King IV* are still unclear. It is therefore argued that if integrated reporting is not regarded and perceived as value relevant by its intended audience, the IIRC is unlikely to realise its vision of making integrated reporting the global corporate reporting norm (Hossain et al. 2022:19).

1.5 RESEARCH OBJECTIVES AND RELATED HYPOTHESES

The current study was motivated by the increasing attention on integrated reporting, not only in South Africa, but also globally, particularly in the United Kingdom. Given the debates about whether integrated reporting adds any value to providers of financial capital, the current study sought to investigate this phenomenon further.

The first objective of the study was to examine the value relevance of integrated reporting in South Africa and in the United Kingdom. This investigation was conducted separately for each country, using two different samples, one from South Africa and another from the United Kingdom. Using agency theory, this study hypothesised that integrated reporting is positively associated with firm value in South Africa. This hypothesis stemmed from the argument that the disclosure of integrated reports would reduce information asymmetry, and should thus enable providers of financial capital to make accurate estimations of firm value (De Villiers & Marques 2016:9). Using voluntary disclosure theory, this study also hypothesised that there is a positive association between integrated reporting and firm value in the United Kingdom. This hypothesis was necessary because integrated reporting is voluntary in the United Kingdom; therefore, any firm that voluntarily produces an integrated report, in addition to other mandatory disclosures, may gain a competitive advantage which may consequently influence its market value positively (Hummel & Schlick 2016:4).

The second objective of this study was to investigate whether integrated reports with a high level of integrated reporting, in line with the International <IR> Framework, are evaluated differently by capital markets than integrated reports with a low level of integrated reporting, in terms of the International <IR> Framework, in each country. Simply put, it was considered possible that integrated reports that are more closely aligned to the International <IR> Framework may have a positive association with firm value, compared to integrated reports with less alignment to the International <IR> Framework, and which may have no association or a negative association with firm value. This is because the level of integrated reporting disclosure which is in line with

the International <IR> Framework has been associated with integrated reporting quality (Hoang, Vu, Nguyen & Luu 2020: 369; Barth et al. 2017:49; Zhou et al. 2017:108). This study therefore developed an integrated reporting disclosure index based on the International <IR> Framework to evaluate the level of integrated reporting disclosure in line with the International <IR> Framework (see Section 4.5). This study therefore hypothesised that integrated reports with a high level of integrated reporting in line with the International <IR> Framework are evaluated differently by capital markets, compared to integrated reports with a low level of integrated reporting in terms of the International <IR> Framework in each country. This argument is in line with Zhou et al.'s (2017) study, which found that integrated reports with a high level of alignment with the International <IR> Framework reduced information asymmetry in South Africa.

A recent development by the IIRC is the release, in 2021, of a revised International <IR> Framework, which is applicable to reporting periods commencing on or after 1 January 2022 (IIRC 2021:1). In this regard, it should be noted that this study used the earlier version of the International <IR> Framework, which was published in 2013, throughout the study, as the earlier Framework applies to the study's sample firm-years (2011 to 2018). Sample firms in this study could not have adopted the new version of the International <IR> Framework, since it was only released in 2021. Therefore, the original International <IR> Framework (IIRC 2013) serves as a basis for evaluating the level of integrated reporting disclosure, as discussed in Chapter 4.

The third objective of this study was to test whether the value relevance of integrated reporting in South Africa is statistically different, compared to the value relevance of integrated reporting in the United Kingdom. Because integrated reporting is mandatory in South Africa, while it is voluntary in the United Kingdom, it is possible that there may be differences or similarities between the two countries, which could affect the value relevance (or lack thereof) of integrated reporting between these two countries. Consequently, because of country-level similarities which might have existed between these two countries in the study period, and which might have affected the value relevance of integrated reporting in each country, this study stated the last hypothesis in its null form and hypothesised that the value relevance of integrated reporting in South Africa is not statistically different from the value relevance of integrated reporting in the United Kingdom.

This study also had secondary objectives which sought to shed more light on the value relevance of integrated reporting in South Africa and in the United Kingdom. These objectives were investigated as part of sensitivity analyses of the main objectives. These secondary objectives were the following:

- to investigate the value relevance of integrated reporting in South Africa before *King IV* was introduced and after *King IV* became effective (this investigation was conducted for South African firms only);
- to investigate whether integrated reporting in line with the guiding principles and content elements of the International <IR> Framework are associated with firm value when considered separately (this investigation was conducted for each country separately);
- to investigate the value relevance of integrated reporting for environmentally sensitive firms and environmentally non-sensitive firms (this investigation was conducted for each country separately); and
- to investigate whether loss-making firms affect the value relevance of integrated reporting in each country.

1.6 THEORETICAL FRAMEWORK

If integrated reporting achieves its purpose as described by the IIRC, it should enable providers of financial capital to make better financial decisions (IIRC 2013:7). The study was therefore interested in the value relevance of integrated reporting, in other words, whether integrated reporting is associated with firm value. If a significant association between firm value and integrated reporting could be demonstrated, it would suggest that providers of financial capital take integrated reporting information into account in making sound investment decisions. It was therefore imperative to position the current study against a theoretical framework which could explain this association.

Prior studies on the value relevance of integrated reporting were concerned with whether integrated reporting reduces information asymmetry, or whether integrated reporting has a positive influence on financial performance or firm value (Soriya & Rastogi 2021:564). These studies often used agency theory, signalling theory and voluntary disclosure theories to explain the association between integrated reporting and firm value (Nguyen, Nguyen, Tran, Nguyen & Do 2021:7; Hsiao & Kelly 2018:8).

Agency theory suggests that information asymmetry occurs when managers are more informed about the operations of a firm than the owners of the firm (Vitolla, Raimo & Rubino 2020:1153). One avenue to mitigate such agency problems is increased disclosure to provide additional information to owners (De Klerk & De Villiers 2012:22). Increased disclosure reduces information asymmetry and lowers agency costs (Sun 2021:4). Integrated reporting, in line with the International <IR> Framework, is seen as a reporting mechanism which reduces information asymmetry and consequently increases firm value (see Hoang et al. 2020:365; Barth et al. 2017:43; Lee & Yeo 2016:1221).

Signalling theory has been used in the literature to explain the behaviour between two parties when these two parties do not have access to the same information, a situation which results in information asymmetry (Connelly, Certo, Ireland & Reutzel 2011:39). This theory suggests that one party (the insider) can choose to disclose high quality information to the other party (the receiver), thus sending a signal about the superior quality of the firm (Omran & El-Galfy 2014:261). As a result, this high-quality information sends a signal to the capital markets, reducing information asymmetry and positively influencing firm value (Frias-Aceituno, Rodríguez-Ariza & García-Sánchez 2014:58). In this regard, research has found that integrated reports can indeed be used to send a signal about a firm's superior performance (Grassmann, Fuhrmann & Guenther 2019:882).

Voluntary disclosure theory postulates that voluntary disclosures improve a firm's information environment, thus reducing information asymmetry (Simnet & Huggins 2015:14). In support of this theory, Hoque (2017:245) concludes that the disclosure of an integrated report improves a firm's information environment, since an integrated report consolidates multiple reports into a single report. As a consequence of an improved firm information environment, Lee and Yeo (2016:1243) found that firms which had high levels of integrated reporting performed better than firms with low levels of integrated reporting in terms of share prices and accounting performance. This finding is relevant to this current study, because the level of integrated reporting, in line with the International <IR> framework, is principles based and will thus differ from firm to firm.

1.7 CONTRIBUTION

The current study makes several contributions. By investigating the value relevance of integrated reporting in South Africa (a mandatory setting) and the United Kingdom (a voluntary setting), this study adds to the growing body of literature on the economic consequences of integrated reporting.

Firstly, Velte (2021:32) points out that empirical studies on the value relevance of integrated reporting tend to focus either on a South African sample or on a list of firms from different countries. Hence, Velte (2021:32) calls for more studies to focus on EU firms and specifically environmentally sensitive industries within the EU. The current study is a response to that call, since the United Kingdom was still a member of the EU at the time when the study was conducted. By investigating the value relevance of integrated reporting in the United Kingdom and further conducting this investigation for environmentally sensitive firms (see Section 1.5), this study aims to fill a void in the literature. This study is also amongst the few studies to examine the value relevance of integrated reporting in the United Kingdom, the home base of the IIRC.

Secondly, in terms of the methodological contribution, some studies on the value relevance of integrated reporting measure the extent and quality of integrated reporting using self-constructed disclosure indices which are developed from the International <IR> Framework (for example, Hoang et al. 2020:381; Zhou et al. 2017:132). Moreover, some of these studies focus only on using the content elements part of the International <IR> Framework, rather than the guiding principles, to develop the disclosure indices that the studies use. For example, Lee and Yeo (2016:1248) developed an integrated reporting disclosure index based on content elements of the International <IR> Framework, ignoring the guiding principles of the International <IR> Framework. Another study by Dey (2020:205) investigated the value relevance of integrated reporting in Bangladesh. Similar to Lee and Yeo (2016:1248), Dey's (2020:205) study developed an integrated reporting disclosure index based only on the content elements of the International <IR> Framework, again ignoring the guiding principles. In view of such approaches, Velte (2021:31) calls for studies that develop integrated reporting disclosure indices based on the International <IR> Framework to include guiding principles such as materiality, conciseness and connectivity, because these guiding principles reflect the quality of integrated reporting. An argument that

arises from the literature is that integrated reports can only provide information useful to capital markets if they are concise, and only if these reports include material information (Gerwanski, Kordsachia & Velte 2019:763). Therefore, the current study contributes to the literature by developing an integrated reporting disclosure index which is used to evaluate the level of integrated reporting in line with the International <IR> Framework. This index was developed by considering both the guiding principles and content elements of the International <IR> Framework, thus extending the literature.

Some researchers who have examined the economic consequences of integrated reporting in South Africa have relied on the ratings by Ernst and Young's (EY's) Excellence in Integrated Reporting Awards (Moloi & Iredele 2020:8; Barth et al. 2017:49). Ernst and Young do not make the mark plans and scores available to the public; hence, researchers often have to conduct additional analyses from the overall ranking (Ernst & Young 2014:25). Ernst & Young ranks the integrated reports from progress to be made, average, good, excellent, and top 10. Ernst and Young only conducts these awards for the South African Top 100 JSE-listed firms, so the rankings are not available for other South African firms. Additionally, Ernst and Young's rankings are not available for firms that operate outside South Africa.

Thirdly, Zúñiga et al. (2020:647) have called for future studies on the value relevance of integrated reporting to examine the effect of the change in the regulation from *King III* to *King IV*. This thesis investigates the value relevance of integrated reporting in South Africa under both *King III* and *King IV*. The findings of this investigation therefore provide insight into whether the implementation of *King IV* may have influenced firm value for South African firms positively or negatively.

Lastly, this study is a cross-country study in the literature on the value relevance of integrated reporting, as recommended by several studies which have conducted a systematic review of the literature on the value relevance of integrated reporting, such as the study by Hossain et al. (2022:19). Because the study compares the value relevance of integrated reporting in a mandatory and in a voluntary setting, the findings of the study are of interest to regulators, particularly in countries where integrated reporting is voluntary.

1.8 RESEARCH DESIGN

This study adopted a quantitative research method stemming from a positivist research paradigm to test the research objectives. A positivist paradigm allows researchers to test a theory and hypotheses through scientific and quantitative methods (Mackenzie & Knipe 2006:2). Quantitative research methods entail collecting and analysing numerical data in order to perform statistical analysis and to interpret information (Creswell 2002:340). One of the advantages of quantitative analysis is that it enables researchers to assess behaviours and trends, which enables the formulation of conclusions (Goertzen 2017:12). Additionally, quantitative research methods enable researchers to either prove or disprove set hypotheses (Arghode 2012:156). This methodology was best suited for this study, as it enabled the researcher to examine the association between integrated reporting and firm value.

The first step was to develop an integrated reporting scoring index from the International <IR> Framework to construct a proxy for integrated reporting in line with this framework. This index was based on the guiding principles and content elements of the International <IR> Framework. This integrated reporting scoring index evaluated whether an integrated report was prepared according to the guiding principles and content elements of the International <IR> Framework.

To examine the value relevance of integrated reporting, this study followed prior empirical studies by using a modified Ohlson's (1995) valuation model to test the hypotheses (see Landau et al. 2020:1755; Cortesi & Vena 2019:750; Baboukardos & Rimmel 2016:5). Ohlson's (1995) valuation was chosen in this study because it is an accepted valuation model in empirical studies examining the value relevance of integrated reporting (Jablowski 2021:13). In addition, this study also used the Tobin's Q valuation model to test the hypotheses. This valuation method was chosen in order to enable a comparison of the results from this study to the findings of prior studies (see Kyere & Ausloos 2020:1878; Wahl et al. 2020:7; Caglio et al. 2020:66; Barth et al. 2017:44).

Multiple regressions were estimated using a price levels approach. The findings of the study were also subject to sensitivity analyses to test robustness. The sample used in this study consisted of two datasets: the South African Top 100 JSE-listed firms, which

represented the mandatory sample, and the United Kingdom's Top 100 LSE-listed firms, which represented the voluntary sample. Data were collected from 2011 to 2018. This allowed a sufficient period to examine the value relevance of integrated reporting over a longer sample period.

1.9 STRUCTURE OF THE THESIS

This thesis consists of seven chapters. Following on from this introductory chapter, the remainder of the study contains the following chapters:

Chapter 2: Integrated reporting

This chapter provides an overview of different types of corporate reporting that preceded integrated reporting. A comprehensive discussion of the current state of integrated reporting in South Africa and the United Kingdom is also provided. The chapter also discusses the rationale for choosing South Africa and the United Kingdom as the countries on which to focus in this study.

Chapter 3: Literature review, theoretical framework and hypothesis development

This chapter provides a review of the literature on the value relevance of integrated reporting in South Africa and globally, including the United Kingdom. This is followed by a discussion of theories on integrated reporting, as well as an evaluation of those theories that did not fit the purposes of the current study. A discussion and review of the theoretical framework (the agency, signalling and voluntary disclosure theories) underpinning this study are provided, together with the hypotheses which were developed to be empirically tested in this study.

Chapter 4: Research methodology

This chapter begins with a discussion of the research philosophy and methodology adopted in the study. This includes information on the initial sample selection process for each country. Next, the process followed to develop an integrated reporting scoring index based on the International <IR> Framework is explained. Lastly, this chapter indicates which empirical tests were performed to test the associations between integrated reporting and firm value.

Chapter 5: Results – Association between integrated reporting and firm value

This chapter presents the quantitative findings for each hypothesis, as well as an interpretation of the findings. The findings presented in this chapter relate to the main research objectives for this study.

Chapter 6: Results – Additional analyses

This chapter presents the findings and interpretation of the additional tests performed in this study. These tests and findings relate to the secondary objectives of the study.

Chapter 7: Conclusion

This chapter concludes the thesis by providing a review of the thesis and a summary of the findings and reflecting on the theoretical and practical implications of the findings and the contributions of the thesis. Lastly, this chapter suggests areas for potential future research.

CHAPTER 2
INTEGRATED REPORTING

2.1 INTRODUCTION

In order to contextualise the study's research objectives, it is important to understand the status quo of integrated reporting in South Africa and globally, particularly in the United Kingdom. This chapter begins by providing a brief description of different types of reporting that were widely used prior to the introduction of integrated reporting. This is followed by an overview of the situation pertaining to integrated reporting in South Africa and the United Kingdom. The reasons for selecting these two countries as the focus of the study are also discussed before concluding the chapter.

2.2 ANTECEDENTS OF INTEGRATED REPORTING

Before integrated reporting came into effect, aside from purely financial reporting (which is not discussed here), other forms of corporate disclosure and reporting were widely used (Vitolla, Raimo & De Nuccio 2018:233; De Villiers et al. 2014:1042). These reports were often prepared as standalone reports, and they were known as the balanced scorecard, triple bottom line reporting and sustainability reporting (De Villiers et al. 2014:1044). These three kinds of reporting are discussed below.

2.2.1 The balanced scorecard

The balanced scorecard is a widely accepted strategic management system (Cobbold & Lawrie 2002:1). It was introduced in the 1990s by Kaplan and Norton as a strategy performance management tool (Kaplan & Norton 1992:71). As a performance management system, the balanced scorecard focuses on financial measures, but also considers non-financial aspects that affect a business as a whole, namely internal business processes, customers, and innovation and learning aspects (Kaplan & Norton 1992:72).

The balanced scorecard uses both financial and non-financial measures to predict future financial performance, in other words, the ability to create value for shareholders (Vendrame 2018:8). The first perspective, as shown in Figure 2.1, refers to the financial perspective. This relates to an organisation's ability to create value

(profitability) for shareholders over the long term. The second perspective is the internal business perspective, which refers to the ability of an organisation to understand and use the internal processes which contribute to the success of the organisation. The third perspective is the customer perspective, implying customer and stakeholder satisfaction. This refers to an organisation's ability to satisfy the needs of its customers and other stakeholders. The fourth perspective of the balanced scorecard is the innovation and learning perspective. This refers to the extent to which an organisation can learn, grow and adapt to new innovative ways of doing business.

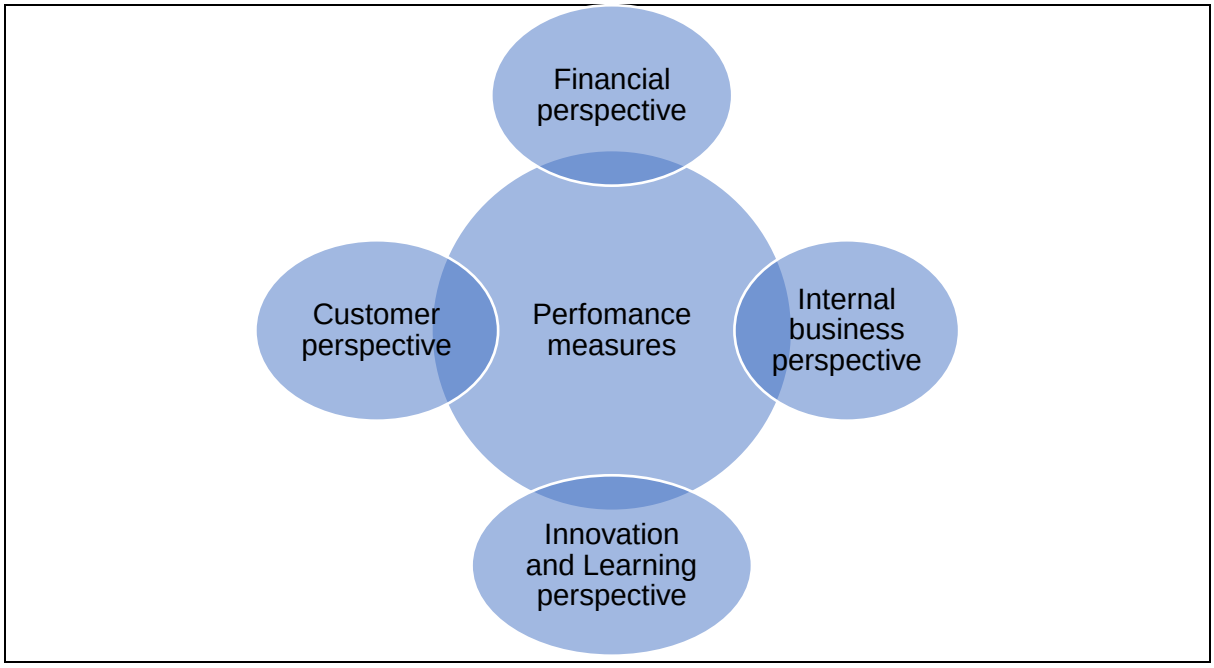

Figure 2.1: The balanced scorecard

Source: Adapted from Kaplan and Norton (1992:72)

These four perspectives all need to be covered in the scorecard.

2.2.2 Triple bottom line reporting

There is no single definition of triple bottom line reporting (Ekwueme, Egbunike & Onyali 2013:82). This term dates back to the mid-1990s, when the management of organisations began referring to it in their work. This term then became popular around 1997, when Elkington (1997) published *Cannibals with forks: The triple bottom line of 21st century business.* In the accounting literature usually triple bottom line reporting

is reported as a form of reporting that encompasses financial, social and environmental aspects (Slaper & Hall 2011:1). Elkington (1997:51) refers to three bottom lines:

- the financial bottom line – how profitability is assessed and made sustainable;
- the social bottom line – how natural capital can be defined and quantified; and
- the environmental bottom line – factors that enable organisations to be environmentally sustainable.

Triple bottom line reporting has three dimensions, often termed “people, planets and profits” (Slaper & Hall 2011:1). Therefore triple bottom line reporting implies that the success of an organisation should be measured not only by financial metrics, but also by the organisation’s social and environmental performance (Ekwueme et al. 2013:79).

2.2.3 Sustainability reporting

Sustainability reporting, corporate social responsibility reporting (CRR), triple bottom line reporting and social and environmental reporting have evolved over the years. Many such reports have been produced by firms in the last few decades (Kolk 2004:1). A study by Rosati and Faria (2019:1311) defines sustainability reporting as “the practice of reporting publicly on an organisation’s economic, environmental and/or social sustainability impacts”. This definition encompasses financial, environmental and social factors, which are all encapsulated in integrated reporting and triple bottom line reporting. The literature has often used these terms interchangeably (Aluchna, Hussain & Roszkowska-Menkes 2019:1). These corporate reporting practices gained momentum due to the demands by various stakeholders for relevant information over the years. Firms responded to this pressure by explaining their activities and by accounting for negative events, for example, major oil and chemical spills (De Villiers & Maroun 2018:163). Sustainability accounting was therefore a predecessor of integrated reporting. Most firms would produce these reports as stand-alone reports which focused on environmental, social and governance (ESG) matters only. These reports would then form part of the set of annual disclosures (Al-Htaybat & Von Alberti-Alhtaybat 2018:1435).

However, critics found that the quantity of such reports containing non-financial information was inversely related to the quality of the information included in such reports (Wild & Van Staden 2013:5). Moreover, these stand-alone reports also

produced disintegrated non-financial information. Integrated reporting, which offers both financial reporting and non-financial information, appears to be the solution to this problem, even though it has not come without its fair share of criticism (Bernardi & Stark 2018:16). However, an integrated report is not merely a combination of annual financial and sustainability reports: it should also be a concise report that consolidates financial and non-financial performance measures into one report (De Villiers & Maroun 2018:158).

King III states that a sustainability agenda is imperative for 21st-century firms to survive (IoDSA 2009:11). Maubane, Prinsloo and Van Rooyen (2014:155) argue that organisational success in the 21st century is achieved by taking cognisance of the natural environment, social and political systems, as well the global economy. In this context, Huang and Watson (2015:2) describe corporate social responsibility as a "firm's efforts to surpass compliance by voluntarily engaging in actions that appear to further some social good, beyond the interests of the firms and that which is required by law". This suggests that most information disclosed in these reports is voluntary in nature. Prior research has therefore argued that firms will not embrace sustainability reporting unless it provides some form of benefit (De Klerk & De Villiers 2012:21). A similar argument can be made regarding integrated reporting in voluntary settings, as organisations will only embrace integrated reporting if it provides some form of benefit.

Prior research has also studied the effects of sustainability reporting or CRR on capital markets. These studies have tended to focus solely on ESG performance (Setia, Abhayawansa, Joshi & Huynh 2015:398), because the sustainability reporting trend led firms to produce numerous stand-alone sustainability reports, which resulted in overwhelming volumes of disconnected financial, environmental and social information (Lodhia & Stone 2017:17; Cheng et al. 2014:91). There have also been growing concerns that sustainability reports do not cater for a variety of stakeholders (Cheng et al. 2014:91). A lack of focus on the interconnection between financial, environmental and social issues has also been cited as a drawback of sustainability reporting (Bernardi & Stark 2018:15; Atkins & Maroun 2015:200; Van Zyl 2013:21). Furthermore, sustainability reporting has been criticised for focusing on retrospective reporting, while integrated reporting links both historical (financial) and future (non-financial)

reporting (Jensen & Berg 2012:299). Integrated reporting therefore aims to bridge this gap by consolidating the various reports into one concise report.

A number of studies have examined the association of CRR and share prices, with some contradictory findings. An early study by De Klerk and De Villiers (2012:21) examined the value relevance of CRR for investment decision-making. Using a sample of the South African Top 100 JSE-listed firms, the study found that the share prices of firms with high levels of CRR were likely to be higher than those of firms with less CRR. A study in the Canadian context has also found that investors seem to value sustainability reporting positively (Berthelot, Coulmont & Serret 2012:355). However, contrary to findings by De Klerk and De Villiers (2012:21), Marcia, Maroun and Callaghan (2015:500) reported a negative association between CRR and share prices, so they argue that CRR does not add value to the firm's share price.

Some studies on sustainability reporting preceded those on integrated reporting. These focused mainly on the consequences of a firm's ethical, economic, environmental and social actions (Macias & Farfan-Lievano 2017:607). For example, Garg (2015:38) examined the association between sustainability reporting and the financial performance of firms in India between 2008 and 2018. The findings of Garg's (2015:38) study showed a positive association between sustainability reporting and a firm's financial performance in the long run, but a negative association in the short term. This finding should be noted, given that integrated reporting aims to connect the firm's value creation story with investors' assessment of firm value (KPMG 2012:5). It should be noted that sustainability reporting and integrated reporting are interlinked, because sustainability reporting forms part of integrated reporting, so if sustainability reporting affects the value creation process of the company over time (Setia et al. 2015:398), this may hold implications for the effects of integrated reporting.

The interlinking between integrated reporting and sustainability reporting is also demonstrated by *King III* (IoDSA 2009:116), which sets out three principles related to integrated reporting and disclosure. These principles state that the board of a firm should

- ensure the integrity of an organisation's integrated report (Principle 9.1);
- integrate sustainability reports and financial reports (Principle 9.2); and
- provide independent assurance of sustainability reports (Principle 9.3).

Principle 9.2 above is of interest to the current study, as it shows the link between sustainability reporting and integrated reporting. According to this principle, sustainability disclosures should be incorporated into the financial reporting of a firm through one report – the integrated report. There is thus no doubt that, even though sustainability reporting might have its shortcomings, it has contributed considerably to the development of integrated reporting (De Villiers et al. 2014:1043).

2.3 THE STATE OF INTEGRATED REPORTING IN SOUTH AFRICA AND THE UNITED KINGDOM

This section provides a discussion of the status quo of integrated reporting in South Africa and in the United Kingdom.

2.3.1 South Africa's integrated reporting environment

There has been some debate on whether or not integrated reporting is truly mandatory in South Africa (Barth et al. 2017:45). This emanates from the 'apply or explain' approach of *King III*, which became effective for all annual periods ending on or after 1 March 2010. In terms of the 'apply or explain' principle, JSE-listed firms have thus been required to issue an integrated report for financial years starting on or after 1 March 2010, or to explain why they are not doing so.

A few months after *King III* had been incorporated into the JSE listing requirements in 2010, delegates from the South African Institute of Chartered Accountants (SAICA), the JSE, the IoDSA, the Association for Savings and Investment South Africa, and Business Unity South Africa formed a body called the Integrated Reporting Committee of South Africa (IRC) to provide guidance on integrated reporting and integrated thinking (IRC 2011:5). The IRC has been chaired by Professor Mervyn King since its inception in 2010. Subsequently, in 2011, the IRC issued a discussion paper which has served as a guideline for integrated reporting. It states:

> Following the incorporation of King III into the Johannesburg Stock Exchange (JSE) Listings Requirements, listed companies are required to issue an integrated report for financial years starting on or after 1 March 2010, or to explain why they are not doing so. Various other initiatives in the country are adding to the call for integrated reports. (IRC 2011:3)

A point of contention is the word “or” in the ‘apply or explain’ approach. One could argue that if JSE-listed firms have the option of not applying a recommendation by *King III* and can merely explain their reasons for not applying the recommendation, then integrated reporting is not really mandatory. However, it seems that the IRC has strongly pushed the perception of ‘mandatory’ implementation of integrated reporting in South Africa, through declarations such as that quoted above (“various other initiatives in the country are adding to the call for integrated reports” – see IRC 2011:3); however, an investigation into this narrative was beyond the scope of the current study.

With regard to the ‘apply or explain’ approach of *King III*, De Villiers, Venter and Hsiao (2017:945) point out that the issue does not pertain to compliance with the JSE listing requirements for integrated reporting, but rather to the process of applying the recommendations of *King III*. In the same study, De Villiers, Venter and Hsiao (2017:945) refer to South Africa as the most suitable mandatory integrated reporting setting for research, hence implying that the setting is “mandatory”. It is thus not surprising that the authors use the term “mandatory” throughout their study to refer to the state of integrated reporting in South Africa.

Similarly, Barth et al. (2017:45) argue that a firm’s disclosure in terms of compliance with integrating reporting is mandatory, but that firms can comply in different ways or apply a similar practice. This point is similar to one made by Slack and Tsalavoutas (2018:6), who explicitly state that integrated reporting in South Africa is mandatory as a result of the King Code of Governance Principles (IoDSA 2009), but that the application of the International <IR> Framework is not. Based on these arguments, JSE-listed firms are required to produce integrated reports; however, they can use any practice in the process of doing so. Barth et al. (2017:42) investigated whether accounting information of JSE-listed firms was enhanced after the mandatory adoption of integrated reporting, and their study uses the term ‘mandatory’ throughout the article. As part of their study’s analysis, Barth et al. (2017) hand-collected data on integrated reports. They found that 99.2% of firms complied with the *King III* requirement of issuing integrated reports. The authors further argue that such a high level of compliance with *King III*’s requirements is inconsistent with voluntary compliance (Barth et al. 2017:45).

Moreover, a recent study by Arul, De Villiers and Dimes (2020:720) investigated the concept of integrated thinking in integrated reports using data from South Africa (to which they refer as a mandatory setting) and Japan (which they refer to as a voluntary setting). The authors state that "South African listed companies are at the forefront of IR practices, as IR has been mandatory for listed companies in South Africa since 2010" (Arul et al. 2020:721). Examples of other studies in the literature that use the term 'mandatory' to refer to the state of integrated reporting for the South African JSE-listed firms include work by Caglio et al. (2020:55), Corvino, Don and Bianchi Martini (2020:3), Hoang et al. (2020:363), Kunc, Giorgino and Barnabè (2020:5), Songini, Pistoni, Bavagnoli and Minutiello (2020:186), Roslender and Nielsen (2020:3), Tlili et al. (2019:642), Wang, Zhou and Wang (2020:641), Zúñiga et al. (2020:635), Conway (2019:604), Speziale (2019:25), Loprevite, Ricca and Rupo (2018:1), Slack and Tsalavoutas (2018:6), Steenkamp (2018:232), De Villiers, Venter and Hsiao (2017:945), Burke and Clark (2016:274), Haji and Anifowose (2016:217), Morros (2016:337), Havlová (2015:232) and Steyn (2014:476).

However, despite the widespread assumption that integrated reporting is mandatory in South Africa, there are some authors who argue that the release of integrated reports in South Africa is not mandatory (Dumay et al. 2017:11; Du Toit 2017:2). These authors base their argument on the fact that the JSE issued a guidance letter on integrated reporting in June 2013 (see JSE 2013:447). The purpose of the guidance letter was to clarify the misunderstanding of the obligations of listed firms regarding JSE listing requirements and Integrated Reporting. The guidance letter states:

> The JSE's general approach to corporate governance in relation to the King Code on Corporate Governance for South Africa (the **'King Code'**) is that certain principles are mandatory with the balance being adopted on an 'apply or explain' basis. Chapter 9 of the King Code which deals with Integrated Reporting and disclosure is not a mandatory principle pursuant to our recent guidance and can therefore be applied on an 'apply or explain' basis. (JSE 2013:447)

Furthermore, the JSE (2013:447) concludes: "[T]he JSE wishes to advise Issuers that the production of an Integrated Report is not a mandatory principle from a Requirements perspective, and neither is the application and compliance with the Draft Framework". It should, however, be noted that the International <IR> Framework was still in the drafting stage when this guidance letter was issued, and that *King III* still applied. Dumay et al. (2017:11) insist that the widely held belief regarding mandatory

integrated reporting in South Africa is erroneous, as, in terms of the JSE guidance letter, it is only quasi-mandatory.

The above discussion clearly highlights the debate on whether the integrated reporting setting in South Africa before *King IV* was mandatory or not. Most scholars argue that it was, but most agree that application of the International <IR> Framework was not. The JSE further clarified in its guidance letter in 2013 that both the issuing of integrated reporting and compliance with the International <IR> framework were not mandatory requirements for JSE-listed firms.

On 1 November 2016, the King Committee published the *King IV report on corporate governance for South Africa* which is effective for all financial years commencing on or after 1 April 2017 (IoDSA 2016:38). Unlike *King III*, *King IV* adopts an 'apply *and* explain' basis which requires firms to apply all principles and, additionally, to explain *how* the principles are applied (Dumay et al. 2017:463). Moreover, *King IV* places increased emphasis on integrated reporting and integrated thinking (IoDSA 2016:4). *King IV* recommends integrated reporting by organisations that may not have prepared integrated reports under *King III*, namely small and medium enterprises, non-profit organisations, retirement funds, state-owned enterprises and municipalities (IoDSA 2016:1).

Both *King III* and *King IV* are similar in terms of their integrated reporting requirements. The only difference between the two reports is that *King III* required JSE-listed firms to adopt integrated reporting on an 'apply *or* explain' basis, whilst *King IV* assumes the application of all principles and requires companies to explain how the principles are applied; hence, 'apply *and* explain' (IoDSA 2016:7). It should also be noted that *King IV* has replaced *King III* in its entirety (Dumay et al. 2017:463)

Furthermore, *King IV* makes recommendations based on 16 principles (*King III* had 75 principles) that firms must apply and explain (IoDSA 2016:7). An extract from Principle 5 of the *King IV* report pertaining to the reporting requirements reads as follows: "The governing body should oversee that the organization issues an integrated report at least annually" (IoDSA 2016:40). *King IV* therefore makes it clear that its application is on an 'apply and explain' basis (apply principles and explain practices).

The 16 principles of *King IV* are mandatory, which makes integrated reporting after *King IV* mandatory (Kele & Makhetha 2022:3; Naicker 2022:57; IoDSA 2016:40).

2.3.2 The United Kingdom's integrated reporting environment

Despite the fact that the IIRC was established in the United Kingdom, the Council failed to promote integrated reporting in the United Kingdom (Bernardi 2020:73). This is clearly evidenced by the lack of studies on integrated reporting in the United Kingdom. However, a few European firms (rather than United Kingdom firms) have been examined in the integrated reporting literature. For example, Gerwanski et al. (2019:750) investigated determinants of materiality disclosure quality in integrated reporting. The study analysed a sample of South African and European firms due to strong regulatory reporting requirements in these two regions. South Africa was chosen because integrated reporting was deemed mandatory in South Africa by Gerwanski et al. (2019). European firms were chosen since there is a strong emphasis on non-financial reporting in Europe, and this was strengthened by the implementation of EU Directive 2014.

Corporate reporting in the United Kingdom is governed by the Financial Reporting Council (FRC) in terms of the United Kingdom's Corporate Governance Code (FRC 2014). The aim of the FRC is to promote high-quality corporate governance, which encourages investment. In August 2013, the United Kingdom government's amended the *Companies Act 2006*, and introduced a new requirement for companies to include a strategic report as part of the annual report. This requirement was effective for all periods ending on or after 30 September 2013 (FRC 2014:3). The main aim of the United Kingdom's Strategic Report is to provide information about how directors create value for shareholders (FRC 2018:4). This is similar to integrated reporting's main aim, which is to explain value creation to shareholders and investors (IIRC 2013:7).

The FRC emphasises that, in the United Kingdom, a strategic report is required by law as part of the annual report; however, use of the International <IR> Framework and of the Guidance on the Strategic Report is not required by law, but only serve to promote similar reporting content (FRC 2014:22). In this regard, Gibassier, Adams and Jérôme (2019:14) argue that the purpose of this encouragement is to promote integrated reporting in the United Kingdom.

It is therefore clear that integrated reporting in the United Kingdom is not mandatory, but only voluntary (Gibassier et al. 2019:14; Hassan, Adhikariparajuli, Fletcher & Elamer 2019:845; Robertson & Samy 2015:196). Globally, the state of integrated reporting is voluntary, except in South Africa, where (as discussed in Section 2.3.1) most academics regard the setting as mandatory under *King III* (Kunc et al. 2020:5; Hassan et al. 2019:849; Lopes & Coelho 2018:5), and it is undeniably mandatory under *King IV*.

2.3.3 Summary

It is clear from the above discussion that integrated reporting in the United Kingdom is voluntary and it is referred to as such throughout the study.

As indicated, the South African case is more complex. Before the release of *King IV*, there was strong institutional pressure for JSE-listed firms to issue integrated reports; hence, most firms issued the reports voluntarily as established in the above discussion (Dumay et al. 2017:463). Although integrated reporting might not have been mandatory, according to the JSE, it seems that JSE-listed firms were institutionally coerced into producing these reports. Richard and Odendaal (2020:23) thus refer to the integrated reporting environment in South Africa as quasi-mandatory. This seems to be correct, as the discussion on Section 2.3.1 has highlighted that even before *King IV* was issued, there was a perception amongst scholars and firms that integrated reporting was mandatory, even though it was not (it was quasi-mandatory). It is also well known that South Africa has always been at the forefront of corporate governance through the publication of the King Reports (*King I*, *II*, *III* and *IV*); consequently, South Africa has always been regarded as a world leader in integrated reporting (Wang et al. 2020:638; Zúñiga et al. 2020:636; Steenkamp 2018:232).

A similar argument is made for Australia by Dumay and Hossain (2019:344), who refer to the sustainability reporting environment in Australia as “quasi-mandatory”. At the time when the study by Dumay and Hossain (2019:344) was conducted, public listed firms in Australia were governed by the *Corporate Governance Principles and Recommendations* (the *Principles*), Third Edition, which was issued by the Australian Securities Exchange (ASX) Corporate Governance Council, and which became effective in 2014 (ASX Corporate Governance Council 2014:1). One of the aims of the

Principles was to provide guidance for practices surrounding sustainability risk reporting under an "if not, why not" approach (ASX Corporate Governance Council 2014:3). In this third edition, Australian public listed firms were required to issue an Appendix 4G report outlining why they did or did not comply with the *Principles* (Dumay & Hossain 2019:344). It is for this reason that Dumay and Hossain (2019:344) refer to the Australian sustainability reporting environment as quasi-mandatory. Another study, by Dienes, Sassen and Fischer (2016:174), investigated sustainability reporting practices of firms globally by analysing 560 studies between 2000 and 2015. Their overview study found that sustainability reporting practices were quasi-mandatory for large firms due to the public pressure that large firms experience (Dienes et al. 2016:174).

Based on the above discussions, it is clear that before the introduction of *King IV*, integrated reporting in South Africa was quasi-mandatory, and only became fully mandatory after *King IV*.

2.4 REASONS FOR FOCUSING ON SOUTH AFRICA AND THE UNITED KINGDOM

There are three reasons that underpinned the selection of South Africa and the United Kingdom as the focus for this study.

Firstly, this study was interested in examining the association between integrated reporting and market-related measures of firm performance (the market value of equity and Tobin's Q) in two well-established systems. In respect of the South African capital market system, the JSE is the largest stock exchange by market capitalisation in Africa and the 16th largest stock exchange in the world – the JSE had a market capitalisation of R9.8billion as at 31 December 2020 (JSE 2020:9). It is therefore evident that the JSE is amongst the most well-established stock exchanges in the world. In this regard, De Villiers, Venter and Hsiao (2017:945) assert that the characteristics of the JSE are similar to those of developed countries' stock exchanges. With regard to the United Kingdom's capital market system, the LSE is the second largest stock exchange in Europe (after Euronext) and the 8th largest stock exchange in the world, with an estimated market capitalisation of 3.93 trillion pounds in 2021 (Statista 2022; Trade Brains 2022).

Secondly, as mentioned in Section 1.4, this study was interested in comparing the value relance of integrated reporting in a country that has been termed a leader of integrated reporting, namely South Africa, and the country which is the home base of IIRC, namely the United Kingdom. Therefore, the integrated reporting adoption practices in each of these two countries were analysed. It seemed appropriate to include the countries with the most integrated reporting adopters for sampling purposes. This is because empirical studies on the value relevance of integrated reporting, for example, by Gregorovious (2021:2), Jablowski (2021:210), and Moloi and Iredele (2020:11) often suffer from small sample sizes, which limits the generalisability of the findings (see Section 3.2.4 for a detailed discussion of this limitation).

Thirdly, there are country-level institutional factors in the United Kingdom and South Africa which the literature has cited as having an influence on integrated reporting (Jensen & Berg 2012:299). These institutional factors have an impact on the country's reporting environments, which ultimately influence firm's disclosure practices. These institutional factors are discussed in Section 2.4.2 below.

2.4.1 Integrated reporting adoption practices

In 2013, the IIRC anticipated that integrated reporting would become a standard form of corporate reporting (IIRC 2013:1). However, as of 30 April 2022, only about 533 global firms had adopted integrated reporting, according to the IIRC's Integrated Reporting Examples Database. This database contains examples of firms that are producing integrated reports. In April 2022, most reporters listed in the database were from Africa, Europe and Asia, as illustrated in Figure 2.2 (IIRC 2022).

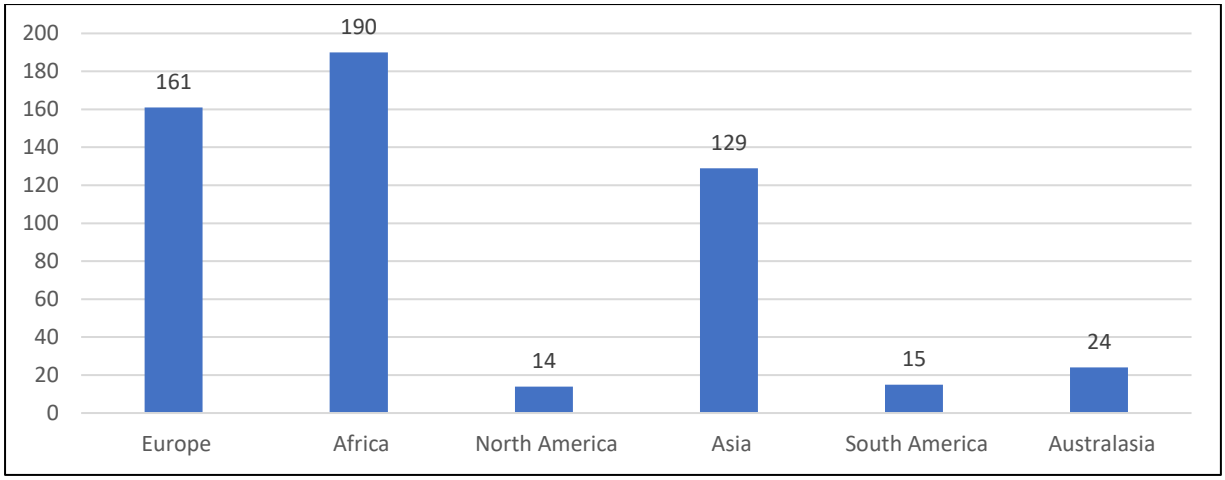

Figure 2.2: Integrated reporting adopters by region in April 2022

Source: Integrated Reporting Examples Database (IIRC 2022)

At the inception of integrated reporting, Black Sun Plc (2014:1) assessed the emerging integrated reporting trends of 50 organisations worldwide by examining five regions, namely the United Kingdom, Europe, South Africa, Asia/Oceania and Japan. The research found that South Africa, the United Kingdom and Europe were leading the way in the adoption of integrated reporting and best reporting practices. Another early study by Demirel and Erol (2016:32), which reviewed the integrated reporting adoption practices of global firms between 1999 and 2015, supports these findings. The study found that most of the firms issuing integrated reports began doing so in 2012; and that most of these firms were in Europe, followed by Africa.

A few years later, Lopes and Coelho (2018:398) investigated the geographical dispersion of firms that prepared integrated reports between 2011 to 2015. Lopes and Coelho (2018:400) used a sample of firms that produced integrated reports included in the Integrated Reporting Examples Database. The study found that most firms that produced integrated reports were from South Africa, followed by the United Kingdom, Spain and, lastly, the Netherlands. In terms of continents, the study found that most reporters were from Africa (mostly from South Africa), Europe (mostly from the United Kingdom), Asia (mainly from Japan) and lastly Australia (Lopes & Coelho 2018:406).

Another study by Girella, Zambon and Rossi (2019:981) investigated whether firm-specific and country-specific factors influence the adoption of integrated reporting. They looked at a sample of 71 global firms that started adopting integrated reporting

in 2016. In terms of the sample composition, 56% of the firms were from Europe, with firms in the United Kingdom making up a total of 33%. This was followed by Asia at 26%, with Japan making up 17% of the total sample. Moreover, Beretta, Demartini and Trucco (2019:102) investigated whether the intellectual capital disclosed in integrated reports was associated with firm value in Europe. Their sample consisted of firms that published integrated reports in Europe, according to the Integrated Reporting Examples Database. The greatest number of preparers were from the United Kingdom (49%), followed by the Netherlands (16%) and Italy (11%) (Beretta et al. 2019:102).

Landau et al. (2020:1750) investigated the value relevance of assurance of integrated reports of 50 European firms listed on STOXX Ltd (STOXX provides market indices of the European and global markets and was acquired by Qontigo in 2019) between 2010 and 2016. These 50 firms were from nine different countries – most were in the United Kingdom. The study found that the quality of integrated reports is critical for market valuation. The above-mentioned studies therefore show that firms in the United Kingdom make up a large percentage of European firms who have adopted integrated reporting, and this is further supported by the geographical analysis shown in Figure 2.2. This is one of the reasons for choosing the United Kingdom as a country for analysis in the current study.

Reporters from Africa are mainly from South Africa – indeed, South Africa has been termed the birthplace of integrated reporting (Bernardi 2020:13). South Africa was chosen as a country for analysis in the current study because integrated reporting is mandatory and was quasi-mandatory even before the introduction of *King IV*, which makes the setting unique. The voluntary sample for the United Kingdom consisted of Top 100 LSE-listed firms, as the United Kingdom is the second largest contributor towards integrated reporting and is the home base of the IIRC.

2.4.2 Country-level institutional factors

Jensen and Berg's (2012:299) study was amongst the first to investigate potential country-level determinants of integrated reporting. They used a sample of 309 firms. These country-level determinants and their implications for South African and the United Kingdom's integrated reporting environments are discussed below. The

comparability of the two countries in terms of these determinants was considered in the choice of these two countries as the focus of this study.

2.4.2.1 Financial systems

The literature shows that there are two types of financial system in which countries operate: bank-oriented and market-oriented systems (Jensen & Berg 2012:302; Anderson & Gupta 2009:64; Ali & Hwang 2000:2). Jensen and Berg (2012:302) argue that in a bank-based economy, the financial assets and liabilities of most firms consist of bank deposits and direct loans. Since these firms rely mainly on bank capital, they provide banks with direct access to information about their firm, which reduces the need for published financial statements. Ali and Hwang (2000:2) hold a similar position, pointing out that in a country with a bank-oriented system, most of the capital is supplied by banks, so the banks have direct access to the information of various firms, reducing the demand for extensive reporting. Therefore, firms in such countries are not expected to need to disclose detailed information about their operations, with the corollary that such firms are unlikely to engage in voluntary reporting.

By contrast, in a market-oriented system, organisational control is coordinated by various stakeholders who finance the operations of a firm (Jensen & Berg 2012; Ali & Hwang 2000:2). These firms therefore depend on their stakeholders for finance and will disclose various types of information to satisfy the needs of different stakeholders, because stakeholders rely heavily on published reports to obtain the information they need for financial securities valuation and monitoring purposes (Jensen & Berg 2012:303).

An early study by Ali and Hwang (2000:1) investigated the association between country-level factors and value relevance of financial information. Their study found that firms in market-oriented systems enjoy greater value relevance from financial information than firms in bank-oriented systems do. Their study attributed this finding to the heavy reliance of the market on financial information, which ultimately affects share prices once particular information is available. Furthermore, Ali and Hwang (2000:20) found that the value relevance of financial information is higher for firms with high external audit fees.

In light of the above discussion, it is important for the current study to note that South Africa is considered to have a market-oriented financial system (Levine 2002:409). Providers of financial capital do not have direct access to the financial, social and environmental information of firms. Shareholders and investors must obtain this information from the publicly available information from domains such as websites, press releases, and firms' annual and integrated reports. Once information is available through public releases, the capital markets often react to the information that is disclosed or published, whether good or bad. In addition, the JSE requires all publicly listed firms to appoint external auditors to audit the published financial statements. This results in high expenditure arising from external audit fees.

Similarly, the United Kingdom is regarded as having a market-oriented system (Kannenberg & Schreck 2019:534; Levine 2002:399). The United Kingdom's reporting environment is also largely controlled by the capital markets, and most firms have various stakeholders who rely on published reports for decision-making (Jensen & Berg 2012:303). Therefore, firms in the United Kingdom have to cater for this wide range of stakeholders through increased disclosure.

2.4.2.2 Political and legal system

Amor-Esteban, García-Sánchez and Galindo-Villardón (2018:435) point out that firms which operate in countries with similar legal systems tend to adopt similar reporting practices. The literature has shown that the level of corporate disclosure is affected by the legal system of a country, in other words, by whether a country operates under a codified (or civil) law system or a common law system (Jensen & Berg 2012:301).

A code or civil law system is based on a broad set of codes, and it puts the emphasis on the opinions of legal scholars (Jaggi & Low 2000:501). Firms in code or civil law countries are viewed as socially responsible firms which must meet the needs of various stakeholders. These firms need to ensure transparency in their operations, and this transparency is often achieved by increased disclosure (Jensen & Berg 2012:302). Firms in civil law legal systems are seen as a coalition of all stakeholders – research shows that firms that operate in this institution are sensitive to the interests of stakeholders (Jensen & Berg 2012:302).

By contrast, a common law legal system is characterised by strong shareholder or investor protection rights, which results in stronger capital markets, compared to the market in code law countries (Choi & Meek 2008:43). Firms in common law legal systems are considered to be a means to maximise shareholders' wealth (Jensen & Berg 2012:302). It can therefore be argued that firms in common law countries issue integrated reports to serve and protect shareholders' rights; therefore such reports provide information to cater specifically for providers of financial capital. The mandatory adoption of integrated reporting in South Africa, as a common law country, therefore supports this notion (La Porta, Lopez-de-Silanes, Shleifer & Vishny 1997:1138). The United Kingdom is also classified as a common law country (Jaggi & Louw 2000:500; La Porta et al. 1997:1138).

In terms of information disclosures, firms in common law countries experience high information demand from investors, while the opposite is true for firms in code or civil law countries (Choi & Meek 2008:44). One reason is that in code or civil law countries, most firms are owned by private families, and thus face less demand for disclosure (Jensen & Berg 2012:302). It therefore follows that since South Africa and the United Kingdom are both common law countries, these two countries are likely to publish integrated reports to protect shareholder's rights. It is therefore not surprising that integrated reporting is mandatory in South Africa, and the United Kingdom has the largest number of voluntary integrated reporters in Europe, as shown in Section 2.4.1.

2.4.2.3 Culture: reporting environment

According to Choi and Meek (2008:43), a country's accounting system is determined by the country's legal environment. They argue that common law countries have accounting standards which are driven by fair representation and which are governed by the private sector, namely the accounting profession. By contrast, the accounting system in code or civil law countries is characterised by fewer disclosures, and banks and governments are responsible for setting the accounting standards (Zhao & Millet-Reyes 2007:226).

In terms of the accounting system in South Africa, the *Companies Act, 71of 2008* (see IoDSA 2011) requires all JSE-listed firms to use the International Financial Reporting Standards (IFRS). Smaller firms must also use IFRS for Small and Medium-Sized

Enterprises (IFRS for SMEs) to prepare their financial statements. This requirement became effective on 1 January 2005. SAICA is at the forefront of ensuring compliance with these reporting requirements. Therefore, it is likely that capital markets will react to the integrated reports of South African firms.

The financial reporting environment in the United Kingdom is also governed by a private accounting body, namely the Financial Reporting Council (FRC 2018). The United Kingdom is regarded as having one of the most sophisticated corporate governance systems in the world (Jablowski 2021:88). This is not surprising, since the first accounting body – the Society of Accountants in Edinburgh – was formed in the United Kingdom (Choi & Meek 2008:78).

2.4.2.4 Economic system

The literature shows that firms in developed countries tend to disclose voluntary information more than firms in less developed countries do (Choi & Meek 2008:189). This is because firms in developed countries adopt new reporting strategies more quickly than firms in less developed countries, since developed countries have more resources (Jensen & Berg 2012:305). The United Kingdom is classified as a developed country, whereas South Africa is classified as a developing country (Jensen & Berg 2012:307). It is therefore not surprising that the United Kingdom has been on an upward trajectory in respect of integrated reporting adoption (see discussion above in Section 2.4.1), but South Africa is exceptional among developing countries because it is a leader in integrated reporting and has been producing high quality integrated reports since the inception of integrated reporting (Barth et al. 2017:44).

2.5 CONCLUSION

This chapter has provided an overview of the different types of reporting that were widely used prior to integrated reporting. It is important to understand these forms of reporting, because they paved the way for integrated reporting. Additionally, this chapter has also provided a detailed explanation of the situation regarding integrated reporting in South Africa and the United Kingdom. One aim of discussing the South African situation was correcting widely held misconceptions about the ‘mandatory’ status of integrated reporting in South Africa. Lastly, this chapter has provided a rationale for selecting the United Kingdom and South Africa as the focus for this study.

The sophisticated capital market systems which exist in both countries, the integrated reporting adoption practices in each country, as well as country-level factors (the prevailing financial systems, political and legal systems, reporting environment and economic systems in these two countries) were considered to highlight similarities and differences between these two countries which made them comparable for the purposes of this study.

The next chapter provides a review of the literature on the value relevance of integrated reporting in both countries, a discussion of socio-political and economics-based theories in integrated reporting and, lastly, a discussion of the theoretical framework. The chapter also includes the development of the hypotheses explored in this study.

CHAPTER 3
LITERATURE REVIEW, THEORETICAL FRAMEWORK AND DEVELOPMENT OF HYPOTHESES

3.1 INTRODUCTION

This chapter starts with a review of the literature on the value relevance of integrated reporting. This is followed by a discussion of the theoretical framework which underpinned the current study, and from which the hypotheses were developed. The three hypotheses are set out at the end of the chapter, before a brief conclusion.

3.2 LITERATURE REVIEW

The purpose of this section is to review the literature on the value relevance of integrated reporting. Value relevance of integrated reporting in the context of the current study refers to the association between integrated reporting and firm value. Therefore, the literature reviewed in this chapter formed the basis for the investigations performed and hypotheses that were developed for this study. It is important to note that the literature reviewed in this study was limited to studies on the economic consequences of integrated reporting, since it was beyond the scope of this thesis to review all the existing literature on integrated reporting.

This section begins by reviewing the literature on the concept of value relevance in general. Thereafter, a review of studies on the value relevance of integrated reporting in South Africa is provided. Next, the literature on the value relevance of integrated reporting globally and in the United Kingdom is considered. Finally, gaps in the literature are identified and discussed.

3.2.1 Value relevance research

Several studies have investigated the value relevance of either financial information, or non-financial information such as that included in integrated reporting and/or a combination of both – in other words, the association between corporate information and financial performance or firm value (Jayasiri, Kumarasinghe & Pandey 2022:32). Barth et al. (2001:79) posit that an accounting amount is value relevant if it has a predicted association with the market value of equity. This definition has been used by

numerous studies examining value relevance, not only of accounting amounts, but also of non-accounting information, such as

- environmental reporting (for example, by Bernardi & Stark 2018:16; Mervelskemper & Streit 2017:536; Clarkson, Fang, Li & Richardson 2013:411; Moneva & Cuellar 2009:441; Hassel, Nilsson & Nyquist 2005:41);
- corporate social responsibility reporting (for example, by Horn, De Klerk & De Villers 2018:1; Cahan, De Villiers, Jeter, Naiker & Van Staden 2016:579; De Klerk & De Villiers 2012:23; Cardamone, Carnevale & Guinta 2012:255); and
- integrated reporting (for example, by Bakker et al. 2020:76; Zúñiga et al. 2020:635; Pavlopoulos, Magnis & Iatridis 2019; Barth et al. 2017:43, Lee & Yeo 2016:1221).

For most of the twentieth century, accounting information was considered adequate to meet the reporting requirements of a firm. It was deemed sufficient for stakeholders to make economic decisions (Lipunga 2015:131), because stakeholders focused only on the financial performance of a firm to make economic decisions. However, in recent years, there has been a wider call from regulators and professional bodies for firms to consolidate their financial and non-financial reports in order to enhance their investors' decision-making (Slack & Tsalavoutas 2018:4). The increased call to provide information beyond financial information, such as ESG information, led to the emergence of a framework to regulate this new trend in reporting, namely the International <IR> Framework (IIRC 2011:1). Integrated reporting is intended to combine various aspects of the performance of a firm into a single report. Therefore, in terms of the Conceptual Framework (IASB 2018 par 2.6), information disclosed in an integrated report must be useful and relevant to the main audience of integrated reporting, namely providers of financial capital.

As discussed above, at the core of value relevance studies lies the examination of the association between financial and non-financial information on the one hand, and firms' financial performance or firm value on the other. Different studies use different measures or terms for financial performance or firm value. With reference to the definition and measures of financial performance or firm value, Crous, Battisti and Leonidou (2021:2) state:

> The terms financial performance and financial sustainability are defined differently by authors, and the proxies used for assessing the quality of non-financial reporting are not standardised. Adding to the non-comparability of studies are the different

definitions used by authors for firm value or financial performance from the cost of capital to Tobin's Q.

Although different terms are used to refer to financial performance, the consensus amongst scholars is that financial performance is measured using either accounting-based or market-based measures of financial performance. Examples of the accounting-based measures include return on equity (Samy 2019:31; Vitolla, Raimo, Rubino & Garzoni 2019:1600), return on assets (Islam 2020:228; Beck, Frost & Jones 2018:521), and net profit margin (Delen, Kuzey & Uyar 2013:3971). Examples of the market-based measures of financial performance or firm value include Tobin's Q (Dey 2020:197; Lee & Yeo 2016:1237), share prices (Baboukardos & Rimmel 2016:7), the market value of equity (Landau et al. 2020:1755), the cost of capital (Maama & Marimuthu 2021:393; Botosan & Plumlee 2002:33), analyst forecast error (Bernardi & Stark 2018:21; Zhou et al. 2017:105) and expected future cash flows (Barth et al. 2017:48).

For instance, Beck et al. (2018:517) examined the association between corporate social responsibility and firm performance and found a positive association. Beck et al. (2018:521) used pre-tax return on equity as a proxy for financial performance. Another study, by Churet and Eccles (2014:62), investigated the association between integrated reporting quality and financial performance. They used return on invested capital as a proxy for financial performance – their findings could not prove an association between return on invested capital and integrated reporting quality. By contrast, Mervelskemper and Streit's (2017:536) investigation of the association between ESG performance and firm value, using the market value of equity as a proxy for firm value, demonstrated that investors valued ESG performance more when firms disclosed it either in standalone reports or as part of an integrated report.

Several other studies have combined both accounting-based measures of financial performance and market-based measures of financial performance in their analysis. For example, De Klerk (2018:4) examined the association between corporate social responsibility assurance and corporate social responsibility quality as perceived by investors. Her study used four performance measures, namely two market-based measures of financial performance (share prices and the market-to-book ratio) and two

accounting-based measures of financial performance (future cash flows and future profitability).

It therefore follows that, since value relevance studies (including the current study) are interested in the association between financial or non-financial information and financial performance or firm value, these studies would use either market-based measures of financial performance as proxies for financial performance or firm value in their analysis, or accounting-based measures of financial performance, or both. In this regard, Islam (2020:231) argues that there is no clear preference in the choice to use one proxy rather than another proxy to measure financial performance in the literature; hence, researchers use the proxies that best fit their studies' research objectives. This thesis used market-based measures of financial performance and chose two proxies of firm value, namely the market value of equity and Tobin's Q. A comprehensive discussion of these two proxies is provided in Section 4.6.

3.2.2 Value relevance of integrated reporting: South Africa

South African firms were amongst the first to adopt integrated reporting. As a result, most studies on the value relevance of integrated reporting tend to include South African data (Jablowski 2021:5). A discussion of these studies is provided below.

An early study by Lee and Yeo (2016:1221) examined the association between integrated reporting disclosures and firm value. The study had a sample of 822 firm-year observations of all JSE-listed firms for the period from 2010 to 2013. The study constructed an integrated reporting score using the content elements from the International <IR> Framework to serve as a proxy for integrated reporting disclosures. The findings showed a positive association between firm value and integrated reporting disclosures. Furthermore, the study found that firms with a high level of integrated reporting performed better than those with a low level of integrated reporting, both in terms of stock performance and accounting performance (Lee & Yeo 2016:1236).

Another early study was that by Baboukardos and Rimmel (2016:2). It investigated whether the value relevance of accounting information improved after the implementation of integrated reporting in South Africa. The study used data from a sample of non-financial firms and non-utilities firms for the period between 2008 and

2013. Using Ohlson's (1995) model to examine the association between share prices and earnings and book values of equity, the study found that the coefficient of earnings increased after the introduction of integrated reporting, but that the coefficient of book value of equity decreased after the introduction of integrated reporting (Baboukardos & Rimmel 2016:8). The current study differs from that of Baboukardos and Rimmel (2016:5), in that their study focused on summary accounting information and thus did not include a proxy for integrated reporting. The main variables of interest in Baboukardos and Rimmel's (2016:5) study were accounting information-related variables (earnings and the book value of equity), whereas the main variable of interest in the current study is a proxy for integrated reporting (the integrated reporting score).

Zhou et al. (2017:94) examined whether the level of alignment of integrated reporting with the International <IR> Framework affects the accuracy and dispersion of analysts' earnings forecast, and whether this reduces the cost of equity. Their study developed a coding framework (based on the eight content elements of the International <IR> Framework, as well as on an overall impression of integrated reports based on the guiding principles) to evaluate the level of firms' integrated reporting disclosures aligned to the International <IR> Framework. Using a sample of JSE-listed firms from 2009 to 2012, their study found that an increase in the alignment of integrated reporting with the International <IR> Framework was associated with a decrease in the cost of capital, and that analysts' forecast error and dispersion decreased as the level of alignment increased (Zhou et al. 2017:113).

In the same year, Barth et al. (2017:43) examined whether the quality of integrated reporting is associated with firm value as proxied by stock liquidity, expected future cash flow and cost of capital. Their sample consisted of the Top 100 listed firms on the JSE from 2011 to 2014. Their study developed an index to evaluate the quality of integrated reporting. This index was constructed using scores from the Ernst and Young Excellence in Integrated Reporting Awards and was formulated on the basis of the guiding principles and content elements of the International <IR> Framework. The study found a positive association between the quality of integrated reporting and stock liquidity and firm value. A positive association was also found between the quality of the integrated report and expected future cash flows. Lastly, the study found no

association between the quality of integrated reporting and the cost of capital (Barth et al. 2017:57).

In 2018, Bernardi and Stark (2018:16) examined the association between the integrated reporting regime change in South Africa and analyst forecast accuracy. The purpose of this study was to investigate investors' perceptions of the usefulness of integrated reporting. The study used a sample of 41 South African firms, focusing on data for the period between 2008 and 2012. Bernardi and Stark (2018:20) argued that since integrated reporting intends to link ESG disclosure with financial performance, the impact of integrated reporting should thus be higher for firms with higher ESG disclosure. They found a positive association between ESG disclosures and analyst forecast accuracy after the introduction of integrated reporting (Bernardi & Stark 2018:25).

Cosma, Soana and Venturelli (2018:78) investigated the association between high integrated reporting quality and firm value for South African listed firms between 2013 and 2016. The study used a sample of firms recognised for having the best integrated reporting practices by the Ernst and Young Excellence in Integrated Reporting Awards, the PwC Excellence in Reporting Awards, the Chartered Secretaries Southern Africa Integrated Reporting Awards and the Nkonki Top 100 companies in Integrated Reporting Awards. The findings of their study showed a positive association between award announcements and market prices (Cosma et al. 2018:87).

Conway (2019:604) investigated an association between the mandatory introduction of integrated reporting in South Africa and three areas, namely financial performance, risk, and the percentage of institutional holdings. Additionally, the test for these potential associations was also compared to data from firms listed on the Nigerian and Egyptian stock exchanges which had not adopted integrated reporting. The study used a sample of 163 JSE-listed firms, 177 Nigerian firms and 100 Egyptian firms for the period between 2006 and 2015. Three measures of financial performance were used in the study, namely Tobin's Q, the market-to-book ratio and return on assets. The findings showed that financial performance declined after the mandatory introduction of integrated reporting in South Africa. Additionally, the study found that there was no decrease in risk after the introduction of integrated reporting in South Africa; there was

also a negative association between institutional holdings and integrated reporting (Conway 2019:628).

A study by Moloi and Iredele (2020:1) investigated the association between integrated reporting quality and firm value, as proxied by Tobin's Q. The study used a sample of 20 firms listed on the JSE between 2013 and 2017. The proxy for integrated reporting quality was based on Ernst and Young Excellence in Integrated Reporting Awards. The findings showed a positive association between firm value and higher integrated reporting quality. One limitation of this study, according to Moloi and Iredele (2020:11), was the small sample size of only 100 observations, which limited the generalisability of the study's findings.

Tlili et al. (2019:642) investigated the association between organisational capital and firm value after the introduction of integrated reporting in South Africa. The study used a sample of JSE-listed firms between 2006 and 2015. Using Ohlson's (1995) model to perform the regression analyses, the findings of the study showed a positive association between intellectual capital disclosures in integrated reports and firm value (Tlili et al. 2020:653).

Caglio et al. (2020:55) investigated the value relevance of textual attributes and external assurance of integrated reporting in South Africa. This study used a sample of the Top 160 JSE-listed firms between 2011 and 2016. Using Tobin's Q as a proxy for firm value, the study found that the readability, conciseness and tone bias of the integrated report were positively associated with firm value. These findings by Caglio et al. (2020:69) were in line with findings by Du Toit (2017:629), who found that the complex nature of language used in integrated reports by JSE-listed firms limited the usefulness of such reports for various stakeholders.

Zúñiga et al. (2020:635) examined the association between integrated reporting quality and liquidity and analyst forecast accuracy. The study used a sample of 111 JSE-listed firms between 2013 and 2015. The study used an index developed by Integrated Reporting and Assurance Services as a proxy for integrated reporting quality. The findings of the study showed a positive association between integrated reporting quality and market liquidity. A negative association was found between integrated reporting quality and analyst forecast error. These results suggest that integrated

reporting does provide useful information to providers of financial capital (Zúñiga et al. 2020:645).

Ngcobo and Sibanda (2021:1) investigated the association between integrated reporting on the one hand, and cost of equity and analyst forecast error on the other, for 37 mining firms listed on the JSE between 2013 and 2018. The study used a self-constructed integrated reporting index as a proxy for integrated reporting. The findings of the study showed a negative association between integrated reporting and the cost of equity and analyst forecast error (Ngcobo & Sibanda 2021:7).

A doctoral thesis by Mohaimen (2021:1) examined the value relevance of accounting information in a voluntary and mandatory integrated reporting setting. The sample for the mandatory integrated reporting setting consisted of JSE-listed firms from 2003 to 2017, and considered the years 2003 to 2009 (prior to integrated reporting) versus the years 2010 to 2017 (since the introduction of integrated reporting). For the voluntary integrated reporting setting sample, a list of European and Japanese firms from the IIRC Examples Database was used. The findings revealed that the value relevance of accounting information was enhanced in South Africa after the mandatory implementation of integrated reporting (Mohaimen 2021:136). For the voluntary setting, the findings showed that integrated reporting did not have an effect on the value relevance of accounting information; however, the study found that excluding the United Kingdom from the sample of voluntary adopters resulted in a positive association between integrated reporting and the value relevance of accounting information (Mohaimen 2021:88).

In summary, the majority of the studies reviewed above used cost of equity and analyst forecast error as proxies for financial performance or firm value, for example, Ngcobo and Sibanda (2021:1), Zúñiga et al. (2020:635), Bernardi and Stark (2018:16), Barth et al. (2017:43), and Zhou et al. (2017:94). These studies document a positive association between integrated reporting and firm value. Another group of studies used Tobin's Q as a proxy for firm value, and these tended to document contradictory findings. For example, Conway (2019:628) reported a negative association between Tobin's Q and integrated reporting, but Caglio et al. (2020:69), Moloi and Iredele (2020:11) and Lee and Yeo (2016:1236) noted a positive association between integrated reporting and firm value. Two of the studies reviewed above used Ohlson's

(1995) model (Mohaimen 2021:73; Baboukardos & Rimmel 2016:5) to focus on testing the association between share prices and summary accounting information under an integrated reporting approach. These two studies split the sample between the period prior to integrated reporting (the years before 2010) and the period since the introduction of integrated reporting (the years from 2010 onwards). A criticism that can be levelled against the methodology employed by these two studies is that the authors did not include a proxy for integrated reporting.

3.2.3 Value relevance of integrated reporting globally and in the United Kingdom

Although integrated reporting has developed quickly globally, empirical research on the value relevance of integrated reporting is still limited (Veltri & Silvestri 2020:1; Zhou et al. 2017:96). This is evidenced by the low number of empirical studies reporting on the value relevance of integrated reporting in voluntary settings (Wahl et al. 2020:2544). These studies often use an international sample from different countries (instead of a single country) in a single study, using data obtained from the IIRC examples database. One of the concerns raised about using voluntary integrated reporting adopters listed on the IIRC website is self-selection bias (Barth et al. 2017:46). This list of integrated reporting voluntary adopters may therefore only include the best integrated reports, which may not be an accurate representation of the real state of integrated reporting globally or in a particular country. A review of such studies is provided below.

One of the early studies in this area is a master's thesis by Wijnhoven (2014:5), who investigated whether integrated reporting increased value for 260 European firms from 2011 to 2013. The study used a self-constructed index based on the International <IR> Framework. Using Tobin's Q as a proxy for firm value and return on assets as a proxy for accounting performance, the study found no association between these measures and integrated reporting.

A study by García-Sánchez and Noguera-Gámez (2017:959) examined the association between integrated reporting and cost of capital. The study used a sample of 995 firms from 27 countries (excluding South Africa) from 2009 to 2013. As a proxy for integrated reporting, the study used an indicator variable which equalled 1 if a firm

disclosed an integrated report, and 0 otherwise. The findings showed that firms which disclosed integrated reports had a lower cost of capital than firms which did not disclose integrated reports (García-Sánchez & Noguera-Gámez 2017:972).

Maniora (2017:755) conducted a study with two objectives. The first objective was to examine whether integrated reporting adoption was associated with ESG disclosures. The second objective was to examine whether integrated reporting adoption was associated with higher economic performance. The study used a sample of global firms, split into firms that had adopted integrated reporting and non-adopters, from 2002 to 2011. The findings of the study showed that firms did not benefit from changing from standalone ESG disclosures to integrated reports. The study also found that integrated reporting was negatively associated with ESG integration level and with economic and ESG disclosures performance (Maniora 2017:782).

Camodeca, Almici and Sagliaschi (2018:1) investigated the value relevance of sustainability disclosure in integrated reporting in Europe from 2013 to 2018. Camodeca et al. (2018:33) found that sustainability disclosure in integrated reporting resulted in “a cheap talk’s bubbling equilibrium” and was not value relevant to investors, because of the non-verifiability of an integrated report.

A study by Cortesi and Vena (2019:745) examined the value relevance of integrated reporting by using a sample of 636 firms from 57 countries as listed on the Integrated Reporting Examples Database between 2011 and 2017. The study used an indicator variable which equalled 1 if a firm had produced an integrated report, and 0 otherwise. In terms of the valuation model, the study used Ohlson’s (1995) model to run the regression analyses. The findings of the study showed that integrated reporting reduces information asymmetry and increases the quality of reported earnings, but it does not have a positive influence on the value relevance of the book value of equity (Cortesi & Vena 2019:745).

Pavlopoulos et al. (2019:12) investigated the value relevance of integrated reporting disclosures by means of an analysis of a sample of 82 international firms from 25 countries between 2011 to 2015. The authors of this study adopted a different approach: they developed an index for integrated reporting disclosure quality based on eight chapters of *King III*. This was different from the studies mentioned above,

which developed the integrated reporting indices using aspects of the International <IR> Framework. The findings of Pavlopoulos et al. (2019:12) showed a positive association between financial performance as proxied by return on assets and integrated reporting quality.

Cooray, Gunarathne and Senaratne (2020:1) investigated the value relevance of integrated reporting in Sri Lanka between 2016 and 2018, using a sample of 39 firms that had produced integrated reports over that period. The study developed an index to assess integrated reporting quality which was formulated from the guiding principles of the International <IR> Framework, the principles of Global Reporting Initiatives and lastly, on IASB's Conceptual Framework. The study found no association between integrated reporting and firm value. However, the study did find a positive association between return on equity and firm value (Cooray et al. 2020:15).

Similarly, Dey (2020:195) investigated the value relevance of integrated reporting in Bangladesh. The sample comprised only 144 firm-year observations from banks, using data from 2013 to 2018. The author developed a scoring index using the International <IR> Framework and used it as a proxy for integrated reporting. Tobin's Q was used as a proxy for firm value. The study showed a positive association between integrated reporting and firm value. Dey (2020:204) warns, however, that the findings of the study should be interpreted with caution, since the sample size was small.

Gal and Akisik (2020:1226) examined the association between internal control systems, integrated reporting and the market value of firms from North America for the years 2011 to 2016. An indicator variable was used as a proxy for integrated reporting, which equalled 1 if a firm issued an integrated report, and 0 otherwise. The study found that integrated reports only added value for shareholders if the reports were audited (Gal & Akisik 2020:1237).

Gerwanski (2020:2299) examined whether integrated reporting reduces the cost of debt. The study used a sample of 834 European firms, looking at the years from 2015 to 2017. The study had two proxies for integrated reporting. The first proxy was an indicator variable which equalled 1 if a firm issued an integrated report, and 0 otherwise. This was used as a proxy for integrated reporting. The second proxy was an indicator variable which equalled 1 if a firm produced an integrated report according

to the GRI database, and 0 otherwise. Using cost of debt as a proxy for firm value, the study found that integrated reporting was negatively associated with the cost of debt, particularly for firms with lower ESG performance. This negative association with the cost of debt held only for firms from environmentally sensitive industries (Gerwanski 2020:2308).

Haleem, Ahamed and Kumarasinghe (2020:372) examined the value relevance of integrated reporting using a sample of banks listed on the Colombo Stock Exchange between 2010 and 2019. The authors analysed the integrated reports of firms in the sample by using a checklist based on the International <IR> Framework. The final sample consisted of only 100-year observations. The findings of the study showed that summary accounting information (earnings and book value of equity) were associated with the market value of equity, while summary accounting information was not associated with return on equity (Haleem et al. 2020:379).

Landau et al. (2020:1750) investigated the value relevance of integrated reporting between 2010 and 2016, using a sample of 50 European firms. Using Ohlson's (1995) valuation model, the authors found that integrated reporting has a negative influence on market valuation unless firms assure their integrated reports using one of the Big Four auditing firms (KPMG, PwC, Ernst & Young and Deloitte). This implies that assuring integrated reports provides value to investors, because investors perceive assured reports to be more reliable (Landau et al. 2020:1760). This finding is in line with agency theory, which posits that one of the ways to reduce information asymmetry is to use effective corporate governance mechanisms, for example, an audit committee (Ho & Wong 2001:144).

Vitolla, Salvi, Raimo, Petruzzella and Rubino (2020:519) confirmed previous findings that integrated reporting does reduce the cost of capital. The study examined the association between integrated reporting and the cost of capital using a sample of 116 international firms that adopted integrated reporting. This list was obtained from the Integrated Reporting Examples Database. The authors measured integrated reporting through a self-constructed scoreboard model. This model was based on the guiding principles of the International <IR> Framework and on attributes of quality assessment derived from the prior literature. The study found a negative association between integrated reporting quality and the cost of capital (Vitolla, Salvi et al. 2020:525).

Wahl et al. (2020:1) investigated the value relevance of integrated reporting, using a sample of 167 international firms which voluntarily adopted integrated reporting during 2011 to 2018. The list of firms was obtained from the IIRC Examples Database. Integrated reporting was proxied by an indicator variable which equalled 1 if a firm had produced an integrated report, and 0 otherwise. Tobin's Q was used as a proxy for firm value; analyst forecast error was used as a proxy for analyst forecast accuracy. The study found no association between integrated reporting and Tobin's Q, and no association between integrated reporting and analyst forecast accuracy (Wahl et al. 2020:11).

A doctoral thesis by Gregorovious (2021:2) examined whether integrated reporting is associated with higher profits using a sample of 20 United States (US) listed firms between 2015 to 2019. The study used financial ratio analysis as a proxy for profitability. It found no association between integrated reporting and profitability. However, the small sample size used in this study makes the findings of the study questionable (Gregorovious 2021:76).

Hsiao et al. (2021:786) examined the determinants of voluntary adoption of the International <IR> Framework. The study also investigated the association between voluntary adoption of the International <IR> Framework and the cost of equity. The sample consisted of firms from different countries from the Integrated Reporting Examples Database, and firms from the GRI database with self-declared integrated reports. The findings showed no association between voluntary adoption of the International <IR> Framework and the cost of equity or firm value (Hsiao et al. 2021:797).

Maama and Marimuthu (2021:381) investigated the association between integrated reporting and the cost of capital of 147 listed firms in sub-Saharan African countries from 2009 to 2018. The study developed a checklist to evaluate integrated reporting disclosure. The findings of the study showed a negative association between integrated reporting and the cost of capital (Maama & Marimuthu 2021:393), suggesting that integrated reporting is value relevant.

A recent doctoral thesis by Jablowski (2021:6) is closely related to the current study. Jablowski (2021:6) investigated the degree of voluntary integrated reporting in

Germany and the United Kingdom. The study further investigated the association between the degree of voluntary adoption and the market value of equity. The sample for the study included the 50 largest German firms and the 50 largest firms in the United Kingdom by market capitalisation between 2014 and 2018. The study developed a proxy for integrated reporting based on the content elements of the International <IR> Framework, as well as an overall impression score based on the guiding principles. The study used the market value of equity as a proxy for firm value. It employed Ohlson's (1995) model to perform the regression analyses. The findings of the study showed a positive association between the degree of voluntary integrated reporting adoption and the market value of equity in each country. However, the study also found that there was no increase in the value relevance of integrated reporting during the sample period. Jablowski (2021:210) cited the small sample (500 firm-year observations) as a limitation of the study which limits the generalisability of the study's findings. Whereas Jablowski's (2021) study was performed using a sample of firms from two countries where integrated reporting is voluntary, the current study will add to the literature by providing comparative findings from a country with mandatory integrated reporting adoption and a country with voluntary integrated reporting adoption. In addition, the current study employed a second valuation model, namely Tobin's Q, to test the value relevance of integrated reporting.

The last study to be reviewed in this section is that of Permatasari and Narsa (2021:666). They examined the value relevance of integrated reporting and also investigated whether integrated reporting is more value relevant than sustainability reporting, or vice versa. The sample used in their study consisted of 41 firms from South Africa and 890 firms from various countries in Europe (for a list of countries, see Permatasari & Narsa 2021:673) for the years 2009 to 2015. Ohlson's (1995) valuation model was used in the study to perform the regression analyses with the market value of equity as a proxy for firm value. The study used an indicator variable which equalled 1 if a firm had produced an integrated report, and 0 if it produced a sustainability report. The findings showed that sustainability information had higher value relevance than integrated reporting. Interestingly, the findings also showed that integrated reporting was value relevant only when it was used together with accounting information. The methodological limitation of Permatasari and Narsa's (2021:672) study was that it used indicator variables as proxies for sustainability and integrated reporting. It is not clear

how these proxies measured the extent of these two forms of reporting. Furthermore, using indicator variables is not a strong proxy for comparing the value relevance between these two types of reporting. The authors do cite this issue as their study's limitation (Permatasari & Narsa 2021:680).

In summary, studies on the value relevance of integrated reporting using global samples provide mixed findings. One group of studies show no association between integrated reporting and firm value, as proxied by share prices or the market value of equity (for example, Permatasari & Narsa 2021:672), by Tobin's Q (for example, Wahl et al. 2020:11; Wijnhoven 2014:45), by accounting-related measures of financial performance (for example, Gregorovious 2021:76), or by the cost of equity (for example, Hsiao et al. 2021:794). By contrast, another group of studies document a positive association between integrated reporting and firm value as proxied by the cost of equity (for example, Maama & Marimuthu 2021:393; Gerwanski 2020:2308), by share prices (for example, Jablowski 2021:189; Cortesi & Vena 2019:750), by Tobin's Q (for example, Dey 2020:204), or by accounting-related measures of financial performance (for example, Pavlopoulos et al. 2019:12). One study by Landau et al. (2020:1760) documents a negative association between integrated reporting and the market value of equity. Therefore, there is still a need to investigate the value relevance of integrated reporting further, using international samples from different countries.

3.2.4 Summary and gaps in the literature

A total of 32 studies on value relevance of integrated reporting in South Africa and globally was reviewed in Sections 3.2.2 and 3.2.3 above. Of those studies, 13 used South African data and 19 studies used data either from single countries or firms from a number of different countries with voluntary integrated reporting adoption, as can be seen in Figure 3.1.

The literature review also showed that the highest number of studies were published in 2020, with only one study published in 2014. This could be expected, since empirical studies rely on a sufficient number of observations to conduct statistical analyses. This constraint is evidenced by a few of the studies reviewed above which cited small sample sizes as limitations, such as the studies by Gregorovious (2021:2), Jablowski

(2021:210), Dey (2020:204), and Moloi and Iredele (2020:11). The current study aims to overcome this limitation by testing the value relevance of integrated reporting over a longer sample period (from 2011 to 2018).

It is also clear that none of the studies reviewed above examined the impact of the introduction of *King IV* in South Africa. Zúñiga et al. (2020:647) called for future studies in this regard. It is thus still unclear whether the introduction of *King IV*, which was a change in the integrated reporting regime for South African firms, had any impact on the value relevance of integrated reporting. One of the objectives of this study was to investigate the value relevance of integrated reporting in South Africa before *King IV* was introduced and after *King IV* became effective.

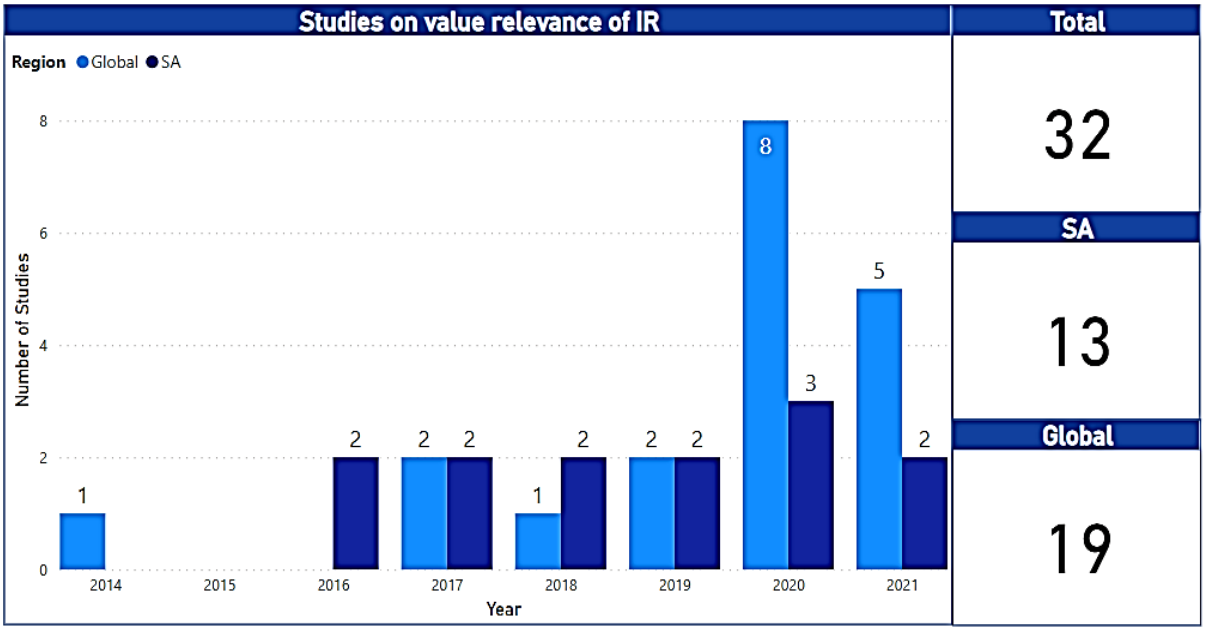

Figure 3.1: Studies on the value relevance of integrated reporting

Source: Own compilation

With regard to studies in voluntary settings, most studies provide mixed findings on the value relevance of integrated reporting. Some studies show a positive association between integrated reporting and firm value or financial performance, while other studies show no association. In addition, out of all the studies reviewed above, only one recent study, that by Jablowski (2021:6), has investigated the value relevance of integrated reporting in the United Kingdom. The review of literature above clearly shows a dearth of studies investigating the value relevance of integrated reporting

using the United Kingdom as a sample country, thus it would be useful to determine the value relevance of integrated reporting in the United Kingdom. The findings of the current thesis will add to the findings of Jablowski's (2021:6) study.

Lastly, some studies on the value relevance of integrated reporting (for example, those by Gal & Akisik 2020:1231; Gerwanski 2020:2304; Landau et al. 2020:1756; Cortesi & Vena 2019:749; García-Sánchez & Noguera-Gámez 2017:962) used indicator variables as proxies for integrated reporting, which is not a true representation of actual integrated reporting disclosure (Hossain et al. 2022:19). This limits the generalisability of the findings from such studies. This study overcomes this limitation by using a proxy for integrated reporting which is formulated from both the guiding principles and the content elements of the International <IR> Framework.

3.3 THEORETICAL FRAMEWORK: INTEGRATED REPORTING

To understand the concept of theory in research better, it is helpful to consider how Gray, Owen and Adams (2009:6) describe theory, namely as "a conception of the relationship between things". Such a conception influences how we see and perceive things. It is important to use theory to analyse, understand and evaluate, and make proposals or predict the future of any practice (Gray et al. 2009:6). A combination of interconnected concepts is referred to as a theoretical framework, which may include a single theory or a combination of theories (Fernando & Lawrence 2014:150). Speziale (2019:14) asserts that even though integrated reporting is a recent phenomenon, most studies in the field rely on multiple theories to enhance the understanding of this reporting framework. Moreover, the practice of integrated reporting as a form of corporate reporting can be explained through multiple theoretical lenses (Chikutuma 2019:14). For the purposes of this research, and as part of working towards an original contribution, the researcher devised a theoretical framework. The theoretical framework places the research into the central school of thought adopted by other researchers such as Jablowski (2021:102), Hsiao et al. (2021:789) and Zúñiga et al. (2020:636), namely, agency theory, signalling theory and voluntary disclosure theory, as indicated in Figure 3.2 and explained further in Section 3.3.2.

The literature has classified research into positive research or normative research (Deegan 2013:10). Positive accounting research is defined as research that seeks to

explain and predict a particular phenomenon, whilst normative accounting research is defined as research that prescribes a particular action (Omran & El-Galfy 2014:259). The current study focused on positive accounting research, as it sought to explain the value relevance of integrated reporting (the association between integrated reporting and firm value). Integrated reporting is an important interpretation and statement of the status of all capitals that are valued by the firm and the firm's key stakeholders (IIRC 2013:11). Hence, integrated reporting forms a benchmark in terms of firm value, measured in this study through the market value of equity and Tobin's Q (see Section 4.6).

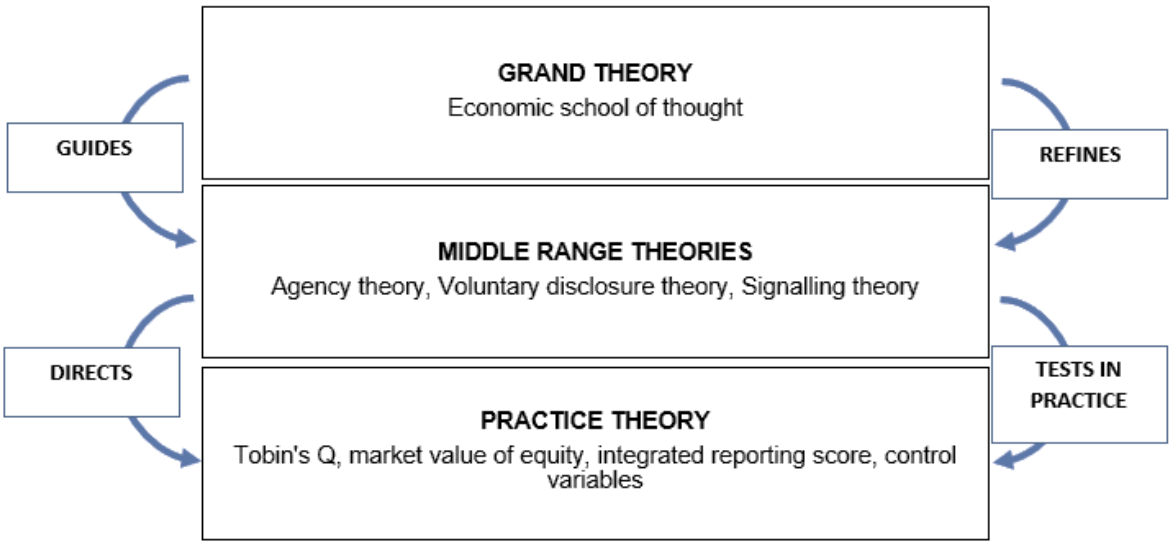

Figure 3.2: Theoretical framework adopted in the study

Source: Adapted from Walker and Avant (2005:13)

Positive accounting theory assumes that markets are efficient (Deegan 2013:256). The efficient market hypothesis suggests that market prices will always reflect all publicly available information (Gamerschlag 2013:327). Positive accounting theories can therefore be classified into socio-political theories and economics-based theories (Gray, Kouhy & Lavers 1995:52). Socio-political theories such as stakeholder theory, legitimacy theory and institutional theory focus on how firms react to societal or political pressures. Thus socio-political theories are not concerned with wealth maximisation (Sun 2021:32). It is not surprising, then, that stakeholder, legitimacy and institutional theory are often used in the literature to explain firm disclosure practices. By contrast,

economics-based theories, such as agency theory, voluntary disclosure theory, and signalling theory, are embedded in firms' primary goal, namely wealth maximisation (Gray et al. 1995:52).

3.3.1 Socio-political theories

This section provides an overview of socio-political theories which have been used in the literature to explain integrated reporting adoption practices, namely stakeholder theory, legitimacy theory, and institutional theory (Speziale 2019:15). The discussion of these three theories serve to provide a comprehensive understanding of the theoretical framework underpinning integrated reporting practices.

3.3.1.1 Stakeholder theory

This theory focuses on the relationship between a firm and its various stakeholders (Fernando & Lawrence 2014:157). For a firm to be successful, it has to manage relationships with its stakeholders (stakeholder management). The literature has shown that stakeholder management is associated with favourable performance by a firm (Freeman, Wicks & Parmar 2004:364). Thus stakeholder management is critical for a firm's sustainability and should be reflected in integrated reporting (De Villiers & Maroun 2018:57). Stakeholder theory seeks to explain how firms interact with various stakeholders – primary stakeholders and secondary stakeholders (Clarkson 1995:105). Primary stakeholders are those stakeholders on whom the survival of the firm relies, whilst secondary stakeholders are those stakeholders that are not essential for a firm's survival (Deegan 2013:348). Stakeholders have been classified into various groups, the most common ones of which are the government, employees, regulators, suppliers, investors, political groups, trade associations, customers and communities (Deegan 2013:348).

With regard to the stakeholders of integrated reporting, the International <IR> Framework advocates that an integrated report should "provide insight into the nature and quality of the organisation's relationships with its key stakeholders" (IIRC 2013:17). Furthermore, the International <IR> Framework defines stakeholders as "those groups or individuals that can reasonably be affected by an organisation's business activities, outputs or outcomes, or whose actions can reasonably be expected to significantly affect the ability of the organisation to create value over time"

(IIRC 2013:33). It is thus imperative for integrated reporting to create value for the firm's key stakeholders.

The literature classifies stakeholder theory into two branches: an ethical branch and a managerial branch (Deegan 2013:347). Ethical branch theory assumes that firms will act in the best interest of all stakeholders (Deegan 2013:347). Ethical branch theory has been used in the literature to explain the use of integrated reporting in providing ethical and social information, which is also important in estimating firm value (Pavlopoulos et al 2019:15). However, the challenge with ethical branch theory is that it is almost impossible for firms to treat all stakeholders fairly, particularly when there are different and conflicting interests (Fernando & Lawrence 2014:159). By contrast, managerial branch theory assumes that firms will cater for the needs of the most powerful stakeholders (Deegan 2013:347). Since the International <IR> Framework specifies that the key stakeholders of a firm are the providers of financial capital (IIRC 2013:7), it is therefore expected that information disclosed in the integrated report should explain how the firm will create value in the short, medium and long term (Dameri & Ferrando 2021:745).

Criticism of stakeholder theory in the context of this study

While stakeholder theory plays an important role in explaining that firms practice integrated reporting to meet the needs of the most powerful stakeholders – providers of financial capital in the current study's context (based on the managerial branch of stakeholder theory) – it does not go far enough in explaining how integrated reporting might create value for key stakeholders (Dameri & Ferrando 2021:740). In this regard, an early study by Phillips, Freeman and Wicks (2003:486) argues that stakeholder theory is not consistent with firms' wealth maximisation objective, since it prioritises *all* stakeholders. Additionally, the ethical branch of stakeholder theory suggests that firms should still provide disclosures to satisfy the needs of all stakeholders, not only to powerful stakeholders, which is often impossible, given the multiplicity of demands that such an approach would create (Fernando & Lawrence 2014:160). Likewise, stakeholder theory has been criticised for encouraging the managers of firms to serve "too many masters", which ends up having a negative impact on the delivery to all stakeholders (Conway 2019:611). Therefore, based on the layers of expectations around stakeholder theory, the theory was not deemed the best fit for this study in

terms of providing a clear trajectory to explain the value relevance of integrated reporting.

3.3.1.2 Legitimacy theory

Legitimacy theory stems from the idea of an implicit social contract between a firm and the society in which the firm operates (Chouaibi, Belhouchet, Almallah & Chouaibi 2021:5; Magness 2006:541). Legitimacy theory postulates that firms constantly strive to ensure that they are perceived by society as being legitimate, implying that a firm's survival is threatened if it breaches its social contract (Deegan 2013:327). A seminal study by Dowling and Pfeffer (1975:122) argues that if there is a disparity between the firm's activities and the norms of socially acceptable behaviour, it will result in a threat to organisational legitimacy. These threats emanate from legal, economic and social sanctions imposed on the organisation or firm by the society in which it operates (Dowling & Pfeffer 1975:122).

An early study by Lindblom (1994:2) defines legitimacy as "a condition or status which exists when an entity's value system is congruent with the value system of the larger social system of which the entity is a part". From the definition, it is evident that firms have to strive to appear legitimate in terms of the social contract, otherwise the firm's survival might be threatened. If there are conditions where the firm is not fulfilling its social contract in relation to society's expectations, then it would experience a "legitimacy gap" (Campbell, Craven & Shrives 2003:560). In instances where a legitimacy gap arises, firms can repair it by using disclosure strategies, which include integrated reporting (Velte & Stawinoga 2017:281). Most importantly, legitimacy is not static; a legitimacy gap can arise at any time during a firm's operations, for example, because of changes in a firm's activities or the occurrence of negative events in which the firm is involved (De Villiers & Maroun 2018:29). Environmental and social crises have also been found to be linked with increased corporate disclosure (De Villiers & Maroun 2018:64). Thus, firms are expected to disclose more information after a crisis to attempt to repair their organisational legitimacy. Thus, integrated reporting offers an effective reporting tool that firms can use to ensure continuous legitimisation (Velte & Stawinoga 2017:281).

However, to legitimise the activities of a firm, a firm might focus on disclosing positive news rather than negative news (Fernando & Lawrence 2014:156) thus drawing on impression management theory, which stems from legitimacy theory (Speziale 2019:26). However, regardless of the type of news disclosed, whether it is positive or negative, mandatory and voluntary disclosures are one of the strategies that a firm can adopt to legitimise the firm's operations (Magness 2006:542). With regard to integrated reporting, firms may disclose favourable information in integrated reports to influence other stakeholder's perceptions about the firm (Melloni, Caglio & Perego 2017:224).

Criticism of legitimacy theory in the context of this study

Legitimacy theory seeks to explain the process of firms adopting integrated reporting to legitimise the firm's operations, but this theory does not explain the effect that integrated reporting has on firm value. Furthermore, legitimacy is not directly observable in empirical studies. This implies that it cannot be measured, which makes it difficult to incorporate into a study (Nishitani, Unerman & Kokubu 2021:5). Therefore, legitimacy theory was not used in the current study.

3.3.1.3 Institutional theory

Institutional theory originated in the 1970s and early 1980s, when researchers such as Meyer and Rowan (1977:340) and DiMaggio and Powell (1983:147) investigated why firms displayed a high degree of similarity. Institutional theory plays a vital role in explaining how firms become institutionalised to exhibit similar disclosure practices and attain conformity and standardisation (Islam 2020:230). This theory serves as link between stakeholder theory and legitimacy theory. It seeks to provide an understanding of how firms respond to changing societal and institutional pressures (Deegan 2013:357).

The prior literature has classified institutional theory into two main dimensions: isomorphism and decoupling (Sun 2021:30). Isomorphism and decoupling were first researched within the structure of the firm and the internal responses of the firm (Meyer & Rowan 1977:341). Institutionalism then expanded to consider how external stakeholders perceived firms; neo-institutionalism was conceptualised (Alvesson & Spicer 2019:2). Within the considerations of institutionalism and neo-institutionalism, the firm's institutionalising behaviour in pursuit of legitimacy is thus viewed as a

comprehensive and complex remit of stakeholders, which is explained by actions which fall within institutional theory and the theory's new developments (Alvesson & Spicer 2019:3).

In terms of the definitions of the dimensions of institutional theory, DiMaggio and Powell (1983:149) define isomorphism as "a constraining process that forces one unit in a population to resemble other units that force the same set of environmental conditions". In the context of integrated reporting, this implies that if some firms in a particular country choose to adopt integrated reporting voluntarily, other firms might also be coerced into adopting integrated reporting to maintain their social contract (Higgins, Stubbs & Love 2014:1091). Isomorphism can occur in three different processes, as described by DiMaggio and Powell (1983:150), namely coercive isomorphism, mimetic isomorphism and normative isomorphism.

Coercive isomorphism arises when firms change their practices due to pressure from key stakeholders (in line with the managerial branch of stakeholder theory as described above). This often results from regulatory requirements, shareholder influence and employee influence (Martínez-Ferrero & García-Sánchez 2017:103; Fernando & Lawrence 2014:163). Coercive isomorphism is driven by compliance to rules, monitoring, and punishment in case of deviation (Vaz, Fernadez-Feijoo & Ruiz 2016:578). Failure to adhere to these rules and regulations has negative consequences for a firm, as the firm's legitimacy will be threatened.

Mimetic isomorphism arises when firms seek to emulate the behaviour of competitors to gain competitive advantage (Speziale 2019:23; Vaz et al. 2016:578). This is often done to illustrate innovative practices, as failure to do so might threaten the legitimacy of that particular firm. If industry leaders adopt integrated reporting, other smaller firms might also adopt it to try to be innovative and thus gain competitive advantage. The same integrated reporting practices can be expected for similar firms in the same country and industry (Vaz et al. 2016:578). Huang and Watson (2015:5) argue that gaining competitive advantage and becoming an industry leader is also one of the motivating factors for firms to engage in corporate responsibility reporting.

Normative isomorphism relates to pressure that firms experience to adopt institutional practices from group norms and professionals in the field of interest (Speziale

2019:23). This could mean that firms would voluntarily engage in integrated reporting to comply with strategies promoted by these professionals to access technical expertise or knowledge (Martínez-Ferrero & García-Sánchez 2017:104; Maroun & Van Zijl 2016:222).

DiMaggio and Powell (1983:150) emphasise that the three types of isomorphism are often interlinked, and it is not always possible to determine which one is operating, as they can all operate simultaneously. Similarly, Higgins, Stubbs and Love (2014:1094) refer to the same institutional pressures as either regulatory (where firms risk being punished for not complying with the norm), normative (pressure to do the right thing) or cognitive (alternatives are not considered simply because something is viewed as normal), and these often require a certain type of response from firms.

Lastly, decoupling refers to situations where the information that a firm discloses is different from the actual practice (Deegan 2013:364). This is where firms voluntarily disclose information in their reports to construct a firm's image which could be different from the firm's actual performance (García-Sánchez, Hussain, Khan & Martínez-Ferrero 2022:120). In an integrated reporting environment where the disclosure of information is discretionary, decoupling could explain why some firms choose to disclose favourable information only in the integrated reports, and limit unfavourable information.

Criticism of institutional theory in the context of this study

Institutional theory has been used in the literature to explain internal processes which motivate firms to publish integrated reports (Speziale 2019:23). For example, in South Africa, Ernst and Young conducts an annual Excellence in Integrated Reporting Awards designed to reward excellent integrated reports in line with the International <IR> Framework of the Top 100 JSE-listed firms. One can argue that this is a form of isomorphism which is likely to encourage all Top 100 JSE-listed firms to improve their integrated reporting and align it with the International <IR> Framework. However, institutional theory also suggests that firms may provide certain limited and impression-management disclosures which are not an actual representation of the firm's performance (Deegan 2013:364). Since institutional theory is more concerned about explaining firms' means to institutionalise their behaviour and patterns, which may also

be expressed through their disclosure practices rather than the capital market implications of such disclosures, the theory was not seen as the best fit for this study.

3.3.2 Economics-based theories

This section provides a discussion of economics-based theories (agency theory, voluntary disclosure theory and signalling theory) which have been used in empirical studies on the association between integrated reporting and firm value, for example, in studies by Cooray et al. (2020:9), Dey (2020:197) and Zhou et al. (2017:98).

3.3.2.1 Agency theory

Agency theory focuses on agency problems which occur when a person who is not involved in the firm's daily operations (the principal) engages another person (an agent) to run the firm on his or her behalf (De Villiers & Maroun 2018:50; Jensen & Meckling 1976:308). Due to this separation between ownership and control, managers of firms are better informed than shareholders, which creates information asymmetry. The assumption in agency theory is that the agents (the managers) are driven by self-interest. Therefore the principal (owner or shareholder) will expect the agent to make decisions that are detrimental to the economic welfare of the principal, resulting in agency conflicts (Deegan 2013:265). This situation results in information asymmetry, because principals or shareholders are not actively involved in the daily operations of the firm and therefore do not have access to the same information as managers do (Healy & Palepu 2001:409). Therefore, in order for shareholders to make accurate estimates about the future earnings of a firm and thus of share prices, accurate information is required (De Villiers & Marques 2016:9; De Klerk & De Villiers 2012:25).

Criticism of agency theory in the context of this study

Agency theory assumes that individuals or managers (agents) of firms are driven by self-interest and tend to make decisions that are not in the best interests of firms or of the owners of firms (principals) (Bosse & Phillips 2016:276). However, an early study by Noreen (1988:359) argues that this is not always the case, since agents may act in the best interest of the firm on the basis of their own ethical conscience. This rejection of the argument of self-interest behaviour by agents led to the emergence of stewardship theory, which argues that agents are good stewards and will act in the

best interest of principals (Panda & Leepsa 2017:78; Shapiro 2005:268). In addition, agency theory has been criticised for only focusing on financial stakeholders and thus neglecting other stakeholders that are the main drivers of social and environmental reporting, which form part of integrated reporting (Parker 2005:846).

Arguments in favour of agency theory in the context of this study

A number of reasons have been cited in the literature to support the use of agency theory to explain the association between disclosures and firm value (De Villiers & Maroun 2017:2). The provision of information through mandatory and voluntary disclosures by firms is a common practice to reduce information asymmetries (Frias-Aceituno, Rodriguez-Ariza & Garcia-Sanchez 2012:221). In this regard, Speziale (2019:28) asserts that the provision of disclosures by firms provides relevant information and thus improves the decision-making of shareholders and investors. Fasan and Mio (2017:292) show that the disclosure of environmental information reduces information asymmetry. Furthermore, Lee and Yeo (2016:1225) also found that integrated reporting reduces information asymmetry between a firm's managers and the providers of financial capital. It therefore follows that if firms adopt integrated reporting, which provides additional information, information asymmetries will be reduced, and shareholders will be able to make accurate estimations of firm value. Agency theory was therefore selected in this study due to its ability to explain the link between integrated reporting and firm value in South Africa and the United Kingdom.

3.3.2.2 Voluntary disclosure theory

Voluntary disclosure theory originated from two seminal studies published in the 1980s, the studies by Dye (1985:123) and Verrecchia (1983:179). This theory posits that firms are motivated to disclose good news to set themselves apart from firms with bad news (Verrecchia 1983:181). While this theory was initially applied to voluntary financial information studies, it has been widely used and accepted in voluntary non-financial information studies (Grassmann et al. 2019:881; Dhaliwal, Radhakrishnan, Tsang & Yang 2012:725; Clarkson, Li, Richardson & Vasvari 2008:304). The assumption underlying these studies underpinned by voluntary disclosure theory is that non-financial information is value relevant, and that it often depends on the

information environment of the firm (Speziale 2019:29; Hoque 2017:245; Zhou et al. 2017:100).

Moreover, Hummel and Schlick (2016:4) argue that a firm that discloses voluntary information in addition to mandatory information reveals the nature of its performance and consequently increases its market value. Other cited benefits of voluntary disclosures are lower cost of financing, reduced information asymmetry, and improved firm performance and leverage (Clarkson et al. 2008:314). This is also in line with agency theory, which posits that firms tend to disclose information voluntarily to decrease agency costs and improve stock liquidity (Jaffar, Nor & Selamat 2018:107; Dilling & Caykoylu 2019:3; Healy & Palepu 2001:429).

Criticism of voluntary disclosure theory in the context of this study

Criticism which has been levelled against voluntary disclosures includes that firms prefer to disclose only information that is favourable to the firms and is likely to increase the firm's stock price, in other words, to engage in impression management (Dye 2001:184). Impression management is defined as a reporting style which is motivated by management's opportunistic reporting behaviour, aimed at only voluntarily disclosing information that is favourable to the firm, particularly in narrative disclosures (Speziale 2019:26). Given that integrated reporting is voluntary in the United Kingdom, firms there can choose what to disclose and the extent of their disclosures (Jablowski 2021:124). It is thus possible that firms in the United Kingdom may disclose mainly favourable information in their integrated reports, which may not be a true representation of a firm's performance.

Arguments in favour of voluntary disclosure theory in the context of this study

A reduction in agency costs and the provision of the required information to stakeholders has been cited as a reason for voluntary disclosures (Dong & Stetler 2011:274). This notion is further supported by Healy and Palepu (2001:420), who argue that voluntary disclosure of information in listed firms reduces information asymmetry between the owners and the managers of firms, thus enhancing the functioning of the capital market. Additionally, Lundholm and Winkle (2006:43) posit that voluntary disclosures reduce information asymmetry, since such disclosures are provided in addition to mandatory disclosures. As already mentioned, integrated

reporting in the United Kingdom is voluntary, and therefore it can be expected that the provision of integrated reports will reduce information asymmetries and have a positive effect on firm value. This proposition is supported by Dey (2020:204), who has reported that firms in Bangladesh which voluntarily engaged in integrated reporting had high firm value. Voluntary disclosure theory was therefore selected in this study due to its ability to explain the link between voluntary integrated reporting in the United Kingdom and the resulting decrease in information asymmetry, which potentially increases firm value.

3.3.2.3 Signalling theory

Signalling theory is used in the literature to describe behaviour when two different parties do not have access to the same information (Connelly et al. 2011:39). In simple terms, one party (the signaller) communicates information about a firm, and the other party (the receiver who has limited or no information) interprets what that information signals about the quality of the firm (Omran & El-Galfy 2014:261). This signal is either information which was not known previously, or information additional to information previously held by the receiver (Yasar, Martin & Kiessling 2020:1312). This relationship between the signaller, the signal and the receiver in the context of integrated reporting is illustrated and summarised in Figure 3.3 below.

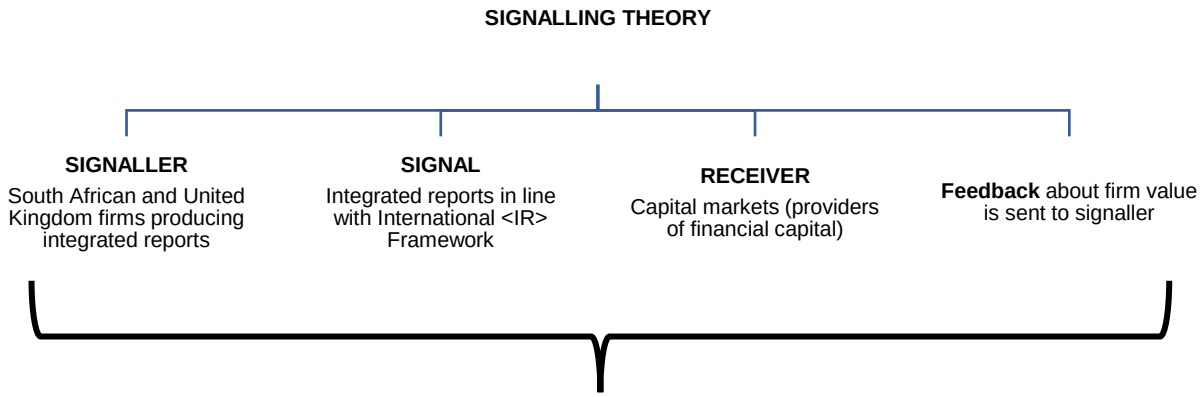

Figure 3.3: Signalling environment and value relevance of integrated reporting

Source: Adapted from Connelly et al. (2011:44)

Signalling theory originated from Spence (1973:355), who employed this theory to explain the uncertainties that exist between employers and job candidates in the labour market, and which result in information asymmetry. Since then, signalling theory has been used in the literature to explain the effect of information asymmetry in different research contexts, ranging from corporate governance studies, entrepreneurship studies and diversity studies (Jablowski 2021:106; Connelly et al. 2011:40).

In capital markets research, signalling theory has been used to explain investors' hesitancy in investing in a firm because of the information asymmetry that exists between managers of firms and investors (Maama & Marimuthu 2021:385). The argument made in the literature is that disclosures signal the superior performance of the firm, which in turn increases firm value (Hsiao & Kelly 2018:8). Voluntary disclosures are regarded as signalling mechanisms employed by firms to showcase their superior performance (Shehata 2014:20). It can thus be argued that integrated reporting as a voluntary disclosure for firms in the United Kingdom, and furthermore the extent of disclosures in line with the International <IR> Framework for firms in both the United Kingdom and South Africa, is a signalling mechanism for such firms.

Criticism of signalling theory in the context of this study

Signalling theory is built on the notion that the signaller makes certain disclosures, which in turn send out positive signals to the receiver and ultimately decrease information asymmetry (Bergh, Connelly, Ketchen & Shannon 2014:1341). However, for the signal to be effective, the receiver needs to be attentive to the signal and to interpret the signal correctly so as to avoid weak signals (Ilmola & Kuusi 2006:911). Unfortunately, the signals sent to the receiver are not always positive; negative signals may unintentionally be sent to the receiver and result in confusion for the receiver about the signalling process, thus raising questions about the relevance of signalling theory (Taj 2016:2).

Arguments in favour of signalling theory in the context of this study

Notwithstanding the above-mentioned critique of signalling theory, signalling still serves as an important mechanism to reduce the agency problem between the signaller and the receiver (Jablowski 2021:109). For example, a study by Van Zijl, Maroun and Wöstmann (2017:80) employed signalling theory to demonstrate that

integrated reporting reduces information asymmetry, lowers the cost of capital, and limits the risk of adverse selection. This stems from the signalling theory hypothesis that firms with superior performance use disclosures to send positive signals to the capital markets (Hawashe 2019:3).

In terms of integrated reporting, Sun (2021:22) asserts that voluntary disclosures in corporate reports can send a signal to capital markets about the superior quality of the firm. This argument is in line with findings by Barth et al. (2017:43), who found a positive association between the integrated reporting quality of JSE-listed firms and firm value. In addition, Zhou et al. (2017:102) argue that integrated reports closely aligned with the International <IR> Framework reduce information asymmetry, which enables analysts to make accurate forecasts about the firm. Signalling theory was therefore chosen in this study to explain how the level of integrated reporting in line with the International <IR> Framework in each country may send a signal about the superior quality of the firm, thus reducing information asymmetry and consequently increasing firm value. These signals may thus be interpreted or perceived to make statements about the firm's value and influence market behaviour (Connelly et al. 2011:43).

3.4 HYPOTHESIS DEVELOPMENT

This section provides a discussion of the development of hypotheses on the value relevance of integrated reporting in South Africa and the United Kingdom, based on economics-based theories, as displayed in Figure 3.2, and formulated on the basis of the review of the literature presented above. As discussed in Section 3.3.2, integrated reporting, despite its various complexities, remains value relevant if it reduces information asymmetry between firms and the providers of financial capital (Barth et al. 2017:46).

3.4.1 Hypothesis 1

To recap, the first objective of this study was to investigate the association between integrated reporting and firm value in South Africa and the United Kingdom. A number of scholars have employed economics-based theories to argue that integrated reporting reduces information asymmetry. For instance, Maama and Marimuthu (2021:381) argue that integrated reporting reduces the cost of capital because of its

ability to send a signal to the capital markets about a firm's superior performance. Similarly, Lee and Yeo (2016:1226) argue that the provision of information through integrated reports enables providers of financial capital to allocate capital efficiently. Cosma et al. (2018:81) argue that shareholders react positively to high quality integrated reports. Moreover, Tlili et al. (2019:642) examined the association between organisational capital and firm value after the mandatory introduction of integrated reporting in South Africa, which is relevant as it is one of the countries in the study; they concluded that organisational capital was value relevant after the mandatory implementation of integrated reporting. In addition, Zhou et al. (2017:94) suggest that integrated reporting provides incrementally relevant information to capital markets. It therefore follows that if the decision-making abilities of investors improve, then these investors will be able to make more accurate estimations of firm value.

In addition, because integrated reporting is voluntary in the United Kingdom, the other country in the study, any firm that produces an integrated report in a voluntary setting is likely to set itself apart from the rest of the firms that do not produce integrated reports (Pavlopoulos et al. 2019:15). According to signalling theory, firms in the United Kingdom may issue integrated reports to send a signal to the markets and thus attract investments and enhance their reputation (Menicucci & Paolucci 2018:557). These firms may also use integrated reports to signal their superior financial performance, which is in line with voluntary disclosure theory (Grassmann et al. 2019:882). Similarly, voluntary disclosures convey a signal to the market to reduce information asymmetry, therefore reducing financing costs and increasing firm value (Baiman & Verrecchia, 1996:10).

Other studies have found that firms that engage in voluntary reporting may signal a higher quality of reporting than firms that do not engage in voluntary reporting, which may in turn increase firm value (Martinez 2016b:9; Baiman & Verrecchia 1996:17). According to this theory, firms will disclose all relevant information that is favourable to them, thereby sending a signal to capital markets that their financial performance is superior (García-Sánchez & Noguera-Gámez 2017:973). Oktorina, Siregar, Adharian and Mita (2021:43) argue that voluntary integrated reporting improves the firm's information environment, which in turn sends a signal to shareholders about the firm's super performance. Dey (2020:197) posits that integrated reporting improves the firm's

reporting environment, which enhances the decision-making of investors. Dey (2020:204) also reported a positive association between the integrated reporting of banking firms in Bangladesh and firm value, as proxied by Tobin's Q.

Therefore, if integrated reporting decreases information asymmetry and further provides incremental information to capital markets in South Africa, it can be expected that there will be a positive association between integrated reporting and firm value. Additionally, if firms which produce integrated reports in voluntary settings such as the United Kingdom send a positive signal about the quality of the firm, it can be expected that capital markets will react positively to such voluntary disclosures.

In line with the above-mentioned arguments and findings from the literature, the first hypothesis was therefore stated as follows:

> *$H_{1(a)}$: Integrated reporting in South Africa is positively associated with firm value.*
>
> *$H_{1(b)}$: Integrated reporting in the United Kingdom is positively associated with firm value.*

3.4.2 Hypothesis 2

The second hypothesis that was investigated looked at whether integrated reports prepared according to the International <IR> Framework are evaluated differently by capital markets than integrated reports which have not been prepared in accordance with the International <IR> Framework. Integrated reporting consolidates financial and non-financial information into a single report, with the aim of enhancing the quality of information to providers of financial capital (Caglio et al. 2020:59). The providers of financial capital are seen as principals in an agency relationship in the context of integrated reporting (Wang et al. 2020:637). Based on this agency theory perspective, the role of the principals is to ensure that good corporate mechanisms, particularly those which favour shareholders, are in place to effect integrated reporting quality, which is value relevant (Wang et al. 2020:637). One of the mechanisms is to ensure that firms apply the International <IR> Framework when they prepare integrated reports (Amirrudin, Abdullah & Saleh 2021:86). This is supported by Zhou et al. (2017:94), who found that integrated reports of JSE-listed firms which aligned with the International <IR> Framework tended to reduce analyst forecast error. Furthermore,

Zhou et al. (2017:94) reported that increased alignment with the International <IR> Framework was associated with reduced cost of capital.

Similarly, firms whose integrated reports are aligned to the International <IR> Framework have been found to have reduced information asymmetry (Martinez 2016a:1). Because the International <IR> Framework is principle-based, it is likely that the level of integrated reporting in line with the International <IR> Framework can still differ from one firm to another (Zúñiga et al. 2020:638). Nevertheless, Barth et al. (2017:43) found a positive association between integrated reporting quality and firm value in South Africa. Therefore, the expectation in this study was that integrated reports with a high level of integrated reporting in line with the International <IR> Framework is likely to be evaluated differently by capital markets compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework.

A study by Amirrudin et al. (2021:85) investigated the relationship between corporate reputation and integrated reports prepared according to the International <IR> Framework. Using a sample of self-declared integrated reports of 120 firms during the years from 2014 to 2016, their study found that firms that had high quality integrated reports (integrated reports prepared in accordance with the International <IR> Framework) sent a positive signal to the users of integrated reports, and this signal improved the firm's reputation.

Considering that integrated reporting is voluntary in the United Kingdom, the current study argued that firms issuing integrated reports may not align their reports with the International <IR> Framework as suggested by the IIRC, or there may be a variation in the level of alignment. It is imperative to note that, in voluntary settings, firms are free to decide what they disclose, so firms may use their discretion in terms of what to disclose in their integrated reports, and this variation between integrated reports may be considerable (Bakker et al. 2020:77). In this regard, another study by Cooray et al. (2020:7) predicted a positive association between the level of application of the International <IR> Framework in integrated reports and firm value; however, the findings from that study did not support the argument.

Furthermore, signalling theory posits that firm disclosures signal the quality of the firm, which reduces the risk of adverse selection (Oktorina et al. 2021:9; Omran & El-Galfy 2014:261). It therefore follows that integrated reports of high quality (a high level of integrated reporting in line with the International <IR> Framework) will advantage the reporting firm by reducing information asymmetry. Jablowski (2021:124) argues, however, that integrated reporting will only send a positive signal to investors if integrated reports have been prepared in line with the International <IR> Framework. Therefore, integrated reports with a high level of integrated reporting in line with the International <IR> Framework are expected to have a positive association with firm value, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework, which may have no association or a negative association with firm value.

Therefore, following the theoretical framework formulated above, as well as the prior literature, Hypotheses 2(a) and 2(b) were stated as follows:

> *$H_{2(a)}$: Integrated reports with a high level of integrated reporting in line with the International <IR> Framework in South Africa are evaluated differently by capital markets, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework.*
>
> *$H_{2(b)}$: Integrated reports with a high level of integrated reporting in line with the International <IR> Framework in the United Kingdom are evaluated differently by capital markets, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework.*

3.4.3 Hypothesis 3

The third objective of the current study was to examine whether the value relevance of integrated reporting in South Africa is statistically different from the value relevance of integrated reporting in the United Kingdom due to different integrated reporting settings in these two countries (mandatory and voluntary). Section 2.4.2 provided a discussion of the country-level similarities which exist between South Africa and the United Kingdom and which may influence integrated reporting practices in these countries. As discussed in Section 2.4.2, both countries possess similar institutional characteristics: both have market-oriented financial systems, common law legal

environments and sophisticated reporting environments. These characteristics have been found to have a positive effect on integrated reporting (Jensen & Berg 2012:299).

As highlighted in Section 2.4.2.1, firms in market-oriented financial systems provide information to various stakeholders via published reports. This results in increased disclosures, and often causes a capital market reaction when disclosures are made available (Ali & Hwang 2000:20). It is therefore likely that capital markets may react to information contained in integrated reports, as this information may reduce information asymmetry between firms and providers of financial capital. In addition, firms from common law countries experience high information demand from investors, so they tend to respond to this pressure by producing more disclosures (Choi & Meek 2008:44). The prior literature has found that increased disclosures reduce information asymmetry (Oktorina et al. 2021:9).

Most South African studies discussed in Section 3.2.2 suggest that integrated reporting is value relevant, for example, Caglio et al. (2020:22), Zúñiga et al. (2020:635) and Tlili et al. (2019:642). While global studies on the value relevance of integrated reporting have produced mixed findings, for example, Permatasari and Narsa (2021:680), Gerwanski (2020:2308) and Landau et al. (2020:1760), the one study that tested the value relevance of integrated reporting specifically in the United Kingdom documented a positive association between integrated reporting and market prices (Jablowski 2021:190).

Although integrated reporting is mandatory in South Africa and voluntary in the United Kingdom, the country-level similarities which exist between the two countries (as discussed in detail in Section 2.4.2), might affect the value relevance of integrated reporting equally, hence the third hypothesis was stated in the null form, as follows:

> *H_3: The value relevance of integrated reporting in South Africa is not statistically different compared to the value relevance of integrated reporting in the United Kingdom.*

3.4.4 The relationship between agency, signalling and voluntary disclosure theories

Figure 3.2 in Section 3.3 provides an introduction to the theoretical levels that shape the theoretical framework for the study. It was important to introduce this theoretical framework at the beginning of Section 3.3 because Lester (2005:459) encourages researchers to identify explicitly and articulate the theoretical framework which guides a study. The theoretical framework adopted in this study therefore served as a conceptual guide to the posited direction of the study, in line with similar studies in the literature, for example, studies by Sun (2021:12) and Jablowski (2021:97).

Even though each of the three theories (agency, signalling and voluntary disclosure theory) can be partly applied to interpret the association between integrated reporting and firm value, the researcher did not deem using a single theory as useful to comprehensively support and illuminate the postulated hypotheses. Authors such as Fuhrmann (2019:170) agree that one theory may not be sufficient. In order to address this, the researcher used a confluence of theories which overlap, and which provide a greater potential to support the data and contribute towards original knowledge (Lester 2005:460).

As described above, agency theory is founded on the premise of information asymmetry which occurs when managers of firms and providers of financial capital have different information. Therefore, to reduce this information asymmetry and avoid adverse selection costs, firms have to provide integrated reports which include information that providers of financial capital need to make accurate estimations about the firm. Consequently, accurate estimations about the firm may result in increased firm value. In the United Kingdom, integrated reporting is voluntary, while in South Africa it is mandatory, although the application of the International <IR> Framework varies from firm to firm. Therefore, it follows that firms which publish integrated reports in line with the International <IR> Framework may set themselves apart from other firms. Therefore, such firms which publish voluntary integrated reports in addition to other mandatory reporting requirements may have increased firm value (in terms of voluntary disclosure theory) (see Section 3.3.2). Similarly, voluntary integrated reports in line with the International <IR> Framework may send a signal to capital markets

about the superior performance of the firm. This signal will therefore reduce information asymmetry and consequently result in increased firm value.

Therefore, it was this theoretical framework which was applied in this study which both guided and complemented the methodology to investigate the research objectives. This theoretical framework was thus used deliberately in the methodology to develop the integrated reporting score which evaluated the level of integrated reporting in line with the International <IR> Framework (see Figure 3.4). The framework then also assisted with the analysis of the data, as is appropriate for such frameworks in empirical studies (Sun 2021:12). As noted, the theoretical framework was developed using agency theory, voluntary disclosure theory and signalling theory. Figure 3.4 provides a summary of how the economics-based school of thought provides an overarching grand theory and then disaggregates to the middle range theories (as detailed) and the practice variables adopted for this study.

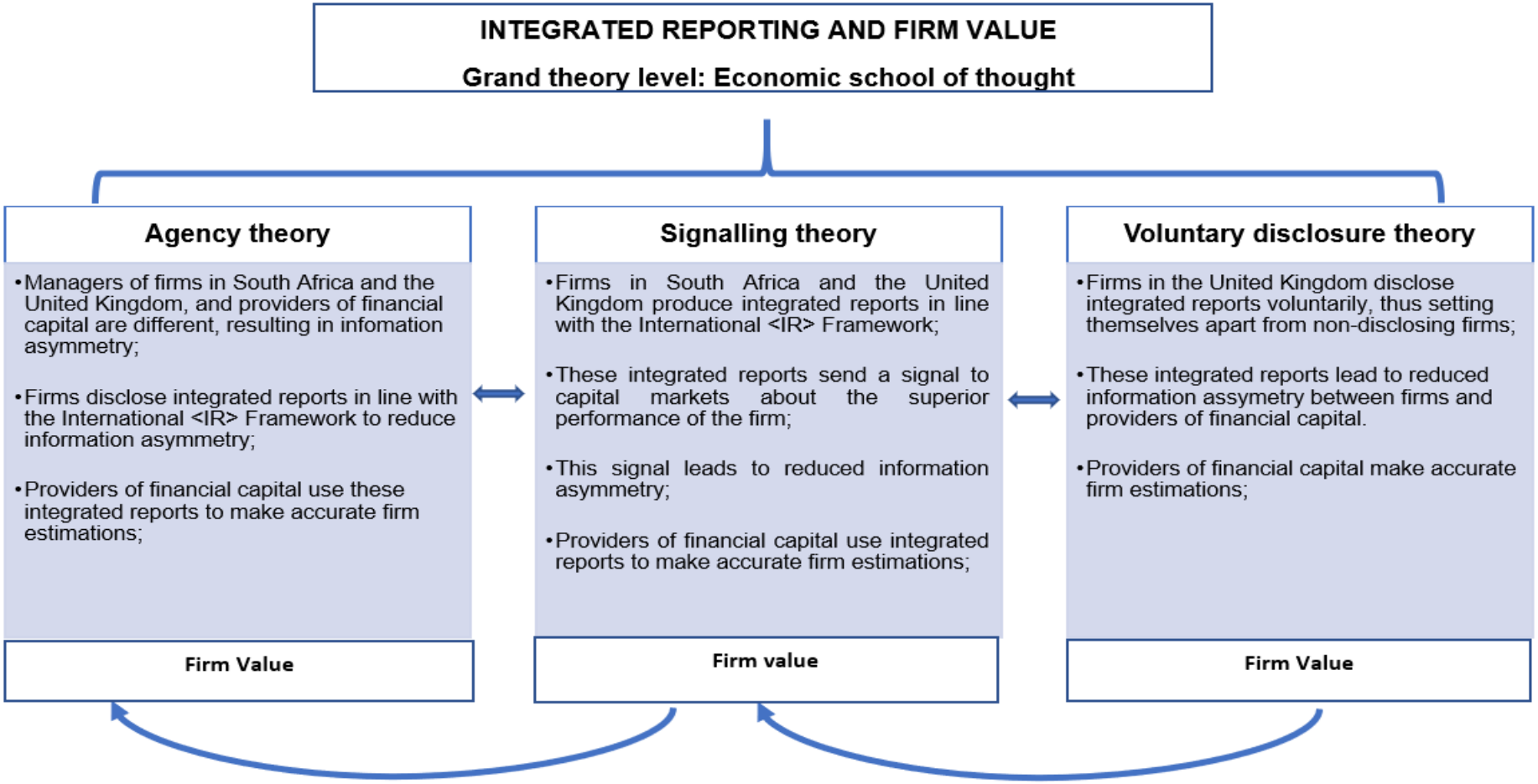

Figure 3.4: Overview of the theoretical framework adopted in this study

Source: Own compilation

3.5 CONCLUSION

This chapter has provided an overview of the literature regarding the value relevance of integrated reporting in South Africa and globally. A discussion of socio-political theories in integrated reporting has also been provided. This was followed by a discussion of the theoretical framework underpinning this current study, as well as the hypotheses developed.

Based on the above literature review, this study predicted that integrated reporting in South Africa and the United Kingdom is positively associated with firm value. The study also predicted that integrated reports with a high level of integrated reporting, in line with the International <IR> Framework have a stronger value relevance than integrated reports with a low level of integrated reporting, in line with the International <IR> Framework. The study did not make any prediction in terms of whether the association between integrated reporting and firm value in South Africa differs statistically from the association between integrated reporting and firm value in the United Kingdom.

The remainder of the thesis is structured as follows: Chapter 4 discusses the research methodology in detail; Chapter 5 presents the descriptive statistics and regression results in respect of the association between integrated reporting and firm value; Chapter 6 provides the results of additional analyses, and Chapter 7 concludes the thesis.

CHAPTER 4
RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter begins by disclosing the research philosophy (Section 4.2) and research method adopted in the study (Section 4.3). This is followed by information on the process followed in selecting the initial sample (Section 4.4). Section 4.5 provides a detailed discussion of the development of the integrated reporting scoring index which was used in the current study to evaluate integrated reporting in the chosen sample of firms in South Africa and in the United Kingdom in line with the International <IR> Framework. Section 4.6 explains the empirical model adopted in this study to test the hypotheses (as set out in Section 3.4). This is followed by Section 4.7, which indicates the additional statistical tests performed in this study to test the robustness of the results. Lastly, Section 4.8 concludes the chapter.

An overview of what underpins the study and the research process adopted in this study are shown in Table 4.1. The details are described further in the sections that follow.

Table 4.1: An overview of the research underpinnings and process adopted in the study

Methodology	Choice	Suitability for the study	References
Paradigm	Positivist	The research process followed can be summarised as follows: Theory >> hypotheses >> testing through empirical analysis >> results >> theory	Samy and Robertson (2017:11) Swanson and Holton (2005:19)
Method	Quantitative	Numerical data were collected and statistically analysed and tested	Goertzen (2017:12) Creswell (2002:340)
Design	Non-experimental	In line with the purpose of the study, which was to describe the association between dependent and independent variables, without the manipulation of any variables	Holton and Burnett (2005:32) Creswell (2002:337)
Sample	Probability	100 largest firms by market capitalisation in each country (South Africa and the United Kingdom) were selected as the sample	Sun (2021:108) Etikan, Musa and Alkassim (2016:1)
Methods of data collection	Secondary data analysis	Integrated reports and financial data analysed in the study were collected from secondary sources	Johnston (2017:619)
Data analysis	Statistical analysis	Descriptive and inferential statistics were used to summarise the data from the sample, test the data and interpret the data	Mishra, Pandey, Singh, Gupta, Sahu & Keshri (2019:67)
Validity	Statistical accuracy and validity testing	Inferential conclusions were drawn which enable the interpretation of the data in context, consistent with quantitative studies	Sun (2021:108) Park, Konge & Artino (2020:691) Mishra et al. (2019:71)

Source: Own compilation

4.2 RESEARCH PHILOSOPHY

Research is described as a systematic process of collecting, analysing and interpreting data to understand a particular phenomenon (Johnston 2017:621). Research can be conducted by using any of the research methods found in the literature: qualitative research, quantitative research and/or mixed-methods research (Creswell 2002:2).

According to Collis and Hussey (2013:10), the first step in designing a research methodology is identifying the research paradigm. Collis and Hussey (2013:10) define a research paradigm as a framework that guides the process of conducting research. This framework is based on people's ways of thinking about the world and the nature of knowledge, and people's ideological views. Similarly, a seminal methodology study by Tashakkori, Teddlie and Teddlie (1998:3) define a paradigm as a belief system that guides researchers. A research paradigm fundamentally influences how knowledge is obtained and how data are interpreted in a study (Mackenzie & Knipe 2006:2).

Amongst others, there are three types of research paradigm that have been widely used and written up in scholarship, namely the positivist paradigm, the constructivist or interpretivist paradigm, and the pragmatism paradigm (Rahi 2017:1). The identification of the most appropriate research paradigm to use in a study relies on assumptions about the realities and nature of the world that a researcher encounters during the research (ontology), the methods adopted to uncover or create knowledge (epistemology) and the researcher's own values and ethics, which all influence the research (axiology) (Park et al. 2020:690; Saunders, Lewis & Thornhill 2009:130). In considering the paradigm and research structure, it is useful to clarify the research process by explaining the methodological logic of the current research and to indicate how the research structure was chosen and used to make an original contribution to a particular body of knowledge.

4.2.1 Positivist paradigm

In terms of their ontology, positivist researchers believe that reality is singular, objective, and independent (Aliyu, Bello, Kasim & Martin 2014:81). With regard to epistemology, a positivist researcher's main aim is to establish a relationship between objects, in other words, to identify cause and effect or association (Arghode 2012:157).

To establish this relationship, a positivist researcher has to focus on empirical and scientific methods based on facts or data which are not influenced by human bias (Saunders et al. 2009:20). In terms of their axiology, positivist researchers strive to conduct research that is unbiased, and thus to offer value-free research (Aliyu et al. 2014:81). In respect of their research methodology, positivist researchers mainly adopt quantitative methods (Sun 2021:123).

4.2.2 Constructivist or interpretivist paradigm

A constructivist or interpretivist paradigm is underpinned by collecting and analysing data to create meaning through people's subjective lenses (Antwi & Hamza 2015:218). The ontological assumption in the constructivist or interpretivist paradigm is that reality is subjective and multiplicitous (Saunders et al. 2009:24). From an epistemological perspective, a constructivist researcher's main aim is to contribute to the literature by creating new knowledge and an adapted worldview (Saunders et al. 2009:21). To create this worldview, constructivist researchers often adopt qualitative research methods to conduct the research, for example, they use surveys including questionnaires, and text analysis (Saunders et al. 2009:21). In terms of axiology, constructivist researchers view themselves as part of the research process and thus offer value-bound research (Sun 2021:106). In a constructivist or interpretivist paradigm, the researcher relies heavily on the participants' view of the problem that is being investigated (Mackenzie & Knipe 2006:3).

Unlike a positivist researcher, who begins the research process with a developed theory, in other words, uses a deductive approach, a constructivist researcher does not begin the research process with a theory; instead, the constructivist researcher develops a pattern of meanings or employs theory in a data grounded manner, throughout the research process, thus an inductive approach (Collis & Hussey 2013:7).

4.2.3 Pragmatism paradigm

The opposite and conflicting views between the positivist and constructivist paradigms have led positivist researchers and constructivist researchers sometimes to reject each other's paradigms, thus resulting in what has been termed "paradigm wars" or the "quantitative-qualitative debate" (Tashakkori et al. 1998:7). In an attempt to end

the paradigm wars, as well as to acknowledge the continuum of research assumptions, a pragmatism paradigm was introduced, which contains elements of both the positivist paradigm and the constructivist paradigm (Tashakkori et al. 1998:5).

Pragmatism allows the researcher to be free from the constraints posed by choosing a single paradigm (Feilzer 2010:8). Pragmatist researchers view the research problem as more important than the research method adopted (Rahi 2017:1). From an ontological perspective, the pragmatism paradigm accepts that reality can be singular and multiple, as well objective and subjective simultaneously (Kaushik & Walsh 2019:6). In terms of its epistemology, pragmatism paradigm is concerned with using all the available methods (mixed-methods, qualitative, quantitative) or the best method to understand and solve the research problem (Mackenzie & Knipe 2006:4). The axiology of pragmatism assumes that research is value driven (Saunders at al. 2009:21).

4.2.4 Choice of paradigm for this study

A positivist research paradigm was deemed to be the best suited for this study. The first reason for this decision is that the research process followed in this study was similar to research processes adopted by other positivist researchers in similar research, for example, in studies by Cooray et al. (2020:13), Haleem et al. (2020:376), and Pavlopoulos et al. (2019:17). A second reason is that the objectives of this study were in line with the main aim of positivist research, which is to produce explanatory associations which can lead to predictions about a phenomenon (Park et al. 2020:691). A similar line of thought is followed by Samy and Robertson (2017:11), who maintain that the main outcome of positivist research is theory-testing and theory-generation. In this regard, Park et al. (2020:690) elucidate that the research process adopted by positivist researchers is a circular process which typically involves the following steps:

- identifying theory from the literature – agency theory, signalling theory and voluntary disclosure theory were identified as the theories best suited to this study (see Section 3.3);
- building testable hypotheses – the theoretical framework adopted in this study guided the formulation of the hypotheses as developed and discussed in Section 3.4;

- identifying variables to measure – firm value in this study was proxied by two dependent variables (Tobin's Q and the market value of equity) which were identified and measured; additionally, independent variables as well as control variables were selected and measured (see Section 4.6);
- performing the empirical study – statistical analyses (descriptive and inferential) were performed to summarise the data and infer conclusions about the sample; and
- interpreting results to inform theory – the results from the statistical analyses were evaluated and interpreted in relation to the theoretical framework adopted in the study (see Chapters 5 and 6).

4.3 RESEARCH METHOD

As discussed above, in Section 4.2, a study's research paradigm influences the choice of its research method. The three most common research methods are the qualitative and the quantitative methods, or a combination of both (mixed methods).

Qualitative research stems from the constructivist paradigm. This type of research method is used to describe and interpret data and is thus exploratory (Antwi & Hamza 2015:219). Qualitative research techniques often entail using case studies, content analysis, ethnography, grounded theory and phenomenology to analyse qualitative data (Williams 2007:68). A qualitative researcher does not rely on statistical procedures to analyse the data, but rather on words or images to create meanings or themes (Creswell 2002:19).

On the other hand, quantitative research originates from the positivist paradigm, where the researcher and the research are regarded as being independent of one another (Tashakkori et al. 1998:3). Quantitative research usually begins with a specific theory, which results in hypotheses being developed. Then these hypotheses are measured, quantified and analysed using scientific and statistical methods (Swanson & Holton 2005:49). The main objective of quantitative research is to explain the relationship, association or correlation between objects or things with the purpose of forming generalisations which ultimately contribute to theory (Creswell 2002:340).

Last but not least, mixed research methods entail using both qualitative and quantitative methods or different research paradigms within a single study to collect,

analyse and interpret data (Antwi & Hamza 2015:223; Migiro & Magangi 2011:3757; Tashakkori et al. 1998:5). Mixed research methods enable researchers to solve and understand complex research problems which may not be solved by using a single method (Creswell 2003:24).

Regarding the choice of an appropriate research method, Antwi and Hamza (2015:223) point out that each researcher has his or her own view about reality and it is this worldview which informs the research paradigm adopted in a study. Positivist researchers seek to describe and predict phenomena, while constructivist researchers seek to understand the meanings of phenomena (Tuli 2010:103). This study was embedded in a positivist research paradigm, as discussed and justified in Section 4.2.4, since the study sought to describe the association between integrated reporting and firm value. A quantitative research method was therefore adopted in the study.

According to Creswell (2002:340), quantitative research methods, as used by quantitative researchers, usually involve the following steps:

- the investigation of the association, relationship or correlation between two or more variables – the current study examined the association between integrated reporting and firm value (the value relevance of integrated reporting);
- the collection of data – financial data were collected from the integrated reports of firms included in the sample (see Section 4.4); in addition, a research instrument was used in this study to collect integrated reporting disclosure information, and this disclosure information was converted into a numeric format (see Section 4.5).
- the analysis of data collected – data from integrated reports were analysed using the integrated reporting index developed by the researcher, and other financial data were also analysed and prepared for statistical analyses (the raw data were numerical, consistent with quantitative content analysis);
- the use of statistical techniques to test the relationship, association or correlation between variables – various statistical packages were used in this study to run the regressions to test the association between the variables used in this study; and
- the interpretation of data from the statistical analysis – the results from the statistical analysis are discussed and interpreted (see Chapters 5 and 6).

Therefore, this study adopted a quantitative research strategy, since the purpose of this study was to examine the value relevance of integrated reporting over two sample groups. Regression analyses were performed to test the hypotheses. The models used in the current study were similar to those used in prior studies which examined the association between accounting information, non-accounting information, integrated reporting and firm performance (Jablowski 2021:173; Permatasari & Narsa 2021:672; Wahl et al. 2020:8; Bernardi & Stark 2018:20). In line with the literature, the researcher used two valuation constructs to measure firm performance, namely the market value of equity and Tobin's Q (Barth et al. 2017:52; Lee & Yeo 2016:1231) as discussed in more detail in Section 4.6.

4.3.1 Research design

Creswell and Poth (2016:5) define the research design as "the entire process of research from conceptualising a problem to writing research questions, and to data collection, analysis and interpretation and report writing". Figure 4.1 provides an overview of different types of research design which are often used in quantitative studies.

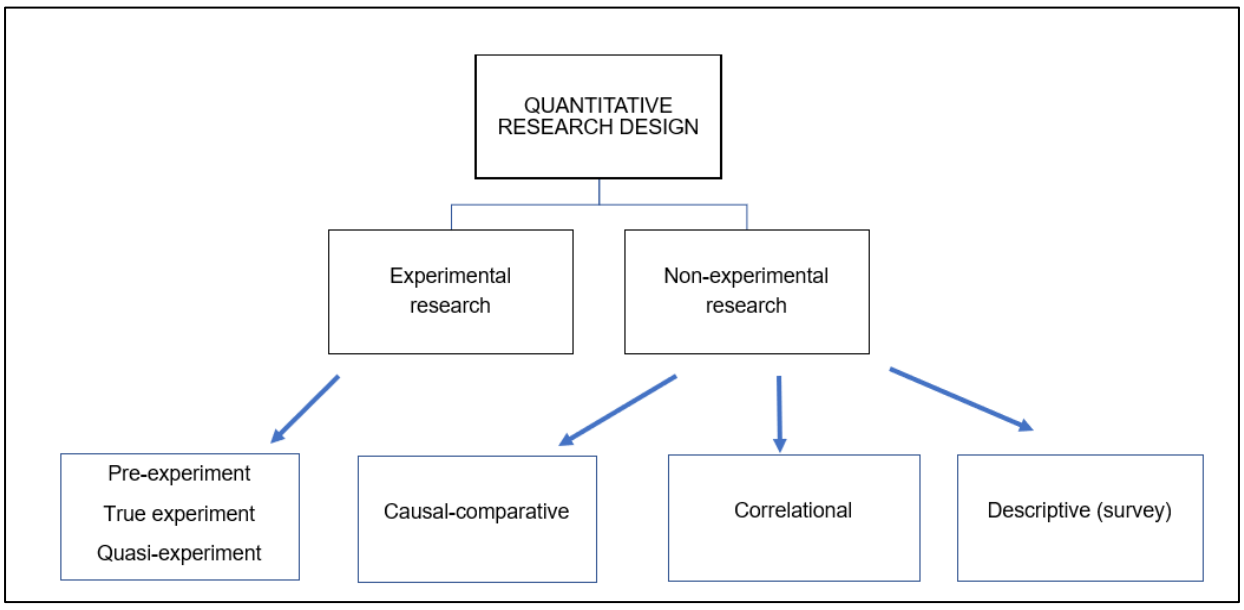

Figure 4.1: An overview of quantitative research designs

Source: Adapted from Holton and Burnett (2005:32)

Experimental research design entails research where variables are manipulated and their effects on other variables are observed (Campbell & Stanley 2015:1). In other words, the researcher manipulates the independent variable(s) while holding all other variables constant and then observes the changes in the dependent variable(s) (Lowhorn 2007:2). An example of an experimental study on integrated reporting is that of Reimsbach, Hahn and Gürtürk (2018:559), who examined the effect of the choice of reporting format and integration on voluntary assurance of sustainability reporting. Using an experimental research design, they randomly assigned participants to two experimental groups, and manipulated the variables of integration and assurance. One experimental group received sustainability information in a traditional sustainability report, while the other experimental group received this information in an integrated report. The results of the study indicated that the integration of sustainability and financial information did not improve the acquisition of such information (Reimsbach et al. 2018:575).

Experimental research designs are therefore useful to researchers who want to test cause and effect (the influence that one variable has on another variable) (Rogers & Revesz 2020:1). Experimental studies often include an experimental group and a control group (Rogers & Revesz 2020:2). This research design was therefore not applicable to the current study, since no experiments were conducted in this study. For a comprehensive discussion on experimental research designs, see Walliman (2010:106). The research design adopted in this study was non-experimental, since there were no set conditions created to test the hypotheses through experiments, as described by Holton and Burnett (2005:32). In addition, there was no manipulation of any variable to observe the effects on other variables (Gregorovious 2021:74).

Correlational research design was therefore deemed to be the most suitable for the current study. Creswell (2002:21) defines correlational research as “procedures in quantitative research in which investigators measure the degree of association (or relation) between two or more variables using the statistical procedure of correlational analysis”. Similarly, Akoglu (2018:91) defines correlation as a relation between things which tend to vary, to be associated or to occur together. Therefore, a correlational research design is useful to researchers who want to investigate the association or relation between two or more variables without manipulating any variable (Seeram

2019:176). Correlation studies often involve establishing correlations between variables and conducting multiple regressions to establish the degree of association between variables based on the coefficient of determination, the p-values or the size of the coefficient, and then interpreting the results (Walliman 2010:9; Creswell 2002:342).

In the current study, a correlational research design was therefore chosen because this research design enabled the researcher to investigate the association between integrated reporting and firm value. The selection of a correlational research design to conduct the analysis was consistent with other association studies in the literature, such as the studies by Permatasari and Narsa (2021:676), De Villiers, Venter and Hsiao (2017:951), and Zhou et al. (2017:104). In this study, correlation analyses were performed between variables; in addition, multiple regression analyses were performed between the dependent and independent variables to test the association between the variables, consistent with the research process adopted in correlational studies (Samy & Robertson 2017:11; Holton & Burnett 2005:41).

Causal-comparative research design is similar to correlational design (both research designs test hypotheses developed from theory). One of the differences between the two research designs is that a causal-comparative design infers causality between variables or objects, whereas a correlational research design does not (Holton & Burnett 2005:32). The main objective of this study was not to infer causality between integrated reporting and firm value, but to establish whether or not there is any association between the dependent and independent variables. It is important to note that association does not imply causation (Seltman 2012:193). Therefore, a statistically significant relationship between variables, if it is found, implies an association between variables, but not causality (Creswell 2002:356).

4.4 INITIAL SAMPLE SELECTION

The purpose of the current study was to investigate the value relevance of integrated reporting in a country where integrated reporting is considered mandatory (South Africa, see Section 2.3.1) and a country where integrated reporting is voluntary (United Kingdom). The Top 100 JSE-listed firms provided a sample for the mandatory setting, while the Top 100 LSE-listed firms provided a sample for the voluntary setting. A

simple random probability sampling method, where all Top 100 firms on the JSE and LSE were selected, was adopted in selecting the sample.

4.4.1 South African sample

The initial sample consisted of the Top 100 JSE-listed firms by market capitalisation, as reported on 31 December of each year from 2011 to 2018. Financial data for these firms were collected from the IRESS Research Domain (formerly known as INET BFA Research). From 1 March 2010, *King III* required all South African firms listed on the JSE to issue and publish integrated reports on a apply or explain basis (IoDSA 2013:4). It was therefore expected that some firms began integrated reporting for the financial years from the end of 2011 onwards. *King III* made provision for firms that did not produce integrated reports to explain the reason for non-compliance. This approach was supported by Ernst and Young, who commenced their Excellence in Integrated Reporting Awards in 2011, a year after integrated reporting was mandated for JSE-listed firms. (A full discussion of the debate on mandatory integrated reporting in South Africa is set out in Section 2.3.1.)

The initial sample composition of the Top 100 JSE-listed firms is shown in Table 4.2. Basic Materials, Consumer Goods, Consumer Services and Financials constituted a large percentage of the total sample. Integrated reports for these firms were hand collected from the firms' websites. In some instances, integrated reports were not available if a firm ceased to exist during the sample period; such firms were excluded from the sample. Market and financial data for firms included in the sample was collected from the JSE and IRESS Research Domain for the years 2011 to 2018.

Table 4.2: South Africa – composition of the initial sample

Industry	Code	2011	2012	2013	2014	2015	2016	2017	2018	Total
Basic Materials	1000	23	21	21	20	17	22	18	19	161
Consumer Goods	3000	11	11	12	13	11	11	12	9	90
Consumer Services	5000	14	13	13	13	15	14	13	15	110
Financials	8000	30	30	31	33	35	36	38	40	273
Health Care	4000	6	6	6	5	5	4	4	5	41
Industrials	2000	10	13	11	9	9	8	7	7	74
Oil and Gas	0001	0	0	0	0	1	0	0	1	2
Technology	9000	3	3	3	4	4	2	4	1	24

Telecommunications	6000	3	3	3	3	3	3	4	3	25
Grand total		**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**800**

Source: Own compilation

4.4.2 United Kingdom sample

The initial sample consisted of Top 100 LSE-listed firms by market capitalisation, as reported on 31 December of each year from 2011 to 2018. Financial data for these firms was collected from Refinitiv. Integrated reports were collected from the websites of the firms. The initial sample composition of the Top 100 LSE-listed firms is shown in Table 4.3. It is evident from the analysis that Financials, Consumer Services, Industrials and Consumer Goods constituted the largest groups in the total sample.

For a Top 100 LSE-listed firm to be included in the sample, there had to be data available for the firm for the years 2011 to 2018. This data entailed integrated reports, financial records and market data. Information also had to be publicly available, either on the firm's website or in other public domains. Variables were extracted from the above-mentioned sources of data, and all amounts were converted to South African rand (ZAR) based on the exchange rate on 31 December of each year.

Table 4.3: United Kingdom – composition of the initial sample

Industry	Code	2011	2012	2013	2014	2015	2016	2017	2018	Total
Basic Materials	1000	14	15	9	9	9	10	10	11	87
Consumer Goods	3000	10	10	12	13	14	12	13	12	96
Consumer Services	5000	14	16	19	19	19	21	20	21	149
Financials	8000	23	20	20	24	24	23	23	22	179
Health Care	4000	4	4	4	4	5	7	6	5	39
Industrials	2000	16	18	20	17	15	15	16	16	133
Oil and Gas	1	9	8	7	5	4	3	3	4	43
Technology	9000	2	2	2	2	2	2	2	2	16
Telecommunications	6000	2	2	2	2	3	2	2	2	17
Utilities	7000	6	5	5	5	5	5	5	5	41
Grand total		**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**800**

Source: Refinitiv (2020)

4.5 CONSTRUCTION OF THE INTEGRATED REPORTING SCORE

This section presents a discussion of the development of an integrated reporting scoring index (IRSCORE), which is a tool that measures the level of integrated reporting provided by sample firms. Integrated reporting could potentially lead to a reduction in information asymmetry between providers of financial capital and firms, provided that reports contain elements such as those informed by frameworks such as this study's theoretical framework (agency theory, signalling theory and voluntary disclosure theory). The constructed measure of integrated reporting, IRSCORE, was used as an independent variable in the regression models to test the association between IRSCORE (the variable of interest) and firm value, as discussed in Section 4.6. The purpose of IRSCORE was to measure the level of disclosure in integrated reports in line with the International <IR> Framework issued by the IIRC in 2013.

The process followed to develop this index was similar to the process followed by other empirical studies examining the quantity and quality of integrated reporting (see Sections 3.2.2 and 3.2.3). For example, Barth et al. (2017:61) developed their integrated reporting quality index using score sheets obtained from the Ernst and Young Excellence in Integrated Reporting Awards. Ernst and Young uses a mark plan based on the guiding principles and selected content elements to evaluate the quality of integrated reporting of Top 100 JSE-listed firms annually (Ernst & Young 2019:17). It should be noted that Barth et al. (2017:44) had proprietary access to Ernst & Young's score sheets for all JSE-listed firms which were part of their sample. Since the researcher in this study did not have access to Ernst and Young's score sheets, and this study included a sample from the United Kingdom, the researcher in this study developed her own integrated reporting scoring index using the guiding principles and content elements of the International <IR> Framework as shown in Table 4.4.

According to Creswell (2002:14), one method used by quantitative researchers to collect data is to use an instrument or a tool to measure the variables in a study. This tool is used to collect data and convert the data into a numeric form. Examples of such tools include questionnaires, checklists, indices or standardised tests. Once data has been converted into a numeric form, it can then be analysed using relevant statistical techniques. The current study developed an integrated reporting disclosure index

which was used to collect information from integrated reports and converted those data into a numerical form. Liu, Jubb and Abhayawansa (2019:241) define a disclosure index as a research tool which consists of pre-selected disclosure items to evaluate the level of disclosure.

Scoring indices have been used by researchers since the early 1980s. For instance, a seminal study by Wiseman (1982:53) examined the annual reports of firms in sensitive industries to determine the quality and accuracy of environmental disclosures. Wiseman (1982:55) developed an indexing procedure where each disclosure item received a score of 0 if it was not present in the report, and 1, 2 or 3 if it was present in the report.

Two scoring methods have commonly been used in the literature, namely a weighted approach and a non-weighted approach or a combination of both. A weighted approach evaluates the *type* of information which has been disclosed, and additionally evaluates *how* that information has been disclosed (Haji & Anifowose 2016:204). One advantage of using a weighted approach is that this approach enables researchers to assess the quality of the information disclosed (Boesso & Kumar 2007:275). However, one of the main disadvantages of using a weighted approach is the high level of researcher subjectivity and inconsistency involved in assigning scores to various disclosure items (Dumay & Cai 2015:139). By contrast, a non-weighted approach (dichotomous approach) assigns equal values (0 or 1; yes or no) to disclosure items, regardless of how information has been disclosed (Dumay & Cai 2015:139). An advantage of using a non-weighted scoring method is the elimination of researcher subjectivity from assigning scores to various disclosure items (Haji & Anifowose 2016:204). The researcher in this study was interested in evaluating whether the information disclosed in integrated reports was in line with the International <IR> Framework or not, hence this study adopted a non-weighted scoring process.

A non-weighted approach has been commonly used method in prior integrated reporting studies (Nguyen et al. 2021:12; Zhou et al. 2017:131; Kılıç & Kuzey 2018:316; Haji & Anifowose 2016:204; Frias-Aceituno, Rodríguez-Ariza & García-Sánchez 2013:48). The scoring index used in this study could be 1 (the information was present in the integrated report) or 0 (the information was not present in the integrated report). Consistent with Hoang et al. (2020:380), the scoring process was

performed by reading the integrated reports of the sample firm against the integrated reporting scoring index developed in this study. In line with Zhou et al. (2017:108), the higher the total integrated reporting score, the higher the level of integrated reporting in line with the International <IR> Framework.

Examples of other empirical studies which have developed self-constructed indices to evaluate the level of integrated reporting include those of Sun, Ip, Arunachalam and Davey (2022:124); Nguyen et al. (2021:12), Sun (2021:156), Cooray et al. (2020:18), Dey (2020:205), Hoang et al. (2020:380), Pavlopoulos et al. (2019:36), Pistoni, Songini and Bavagnoli (2018:494); Zhou et al. (2017:131), and Lee and Yeo (2016:1245). According to Healy and Palepu (2001:427), one of the benefits of using self-constructed indices is that a self-constructed index captures what the researcher intends it to capture. However, Healy and Palepu (2001:427) do caution against subjectivity in using such self-constructed indices. An early study by Marston and Shrives (1991:208) concede that the subjectivity of the researcher cannot be completely eliminated when using self-constructed indices, and that it is unreasonable to expect that it can be completely eliminated. To guard against subjectivity in the current study, the validity and reliability were carefully considered, as discussed in Section 4.5.3.

The section below describes the process which was followed in this study to evaluate the presence or absence of disclosure items using the non-weighted approach in the integrated reports of sample firms, by following the guiding principles and content elements of the International <IR> Framework (IIRC 2013).

4.5.1 Guiding principles

The International <IR> Framework provides seven guiding principles which underpin the preparation of an integrated report, and which subsequently inform the content of the integrated report (IIRC 2013:5). Following a similar approach adopted by Erin and Adegboye (2021:444) and Haji and Anifowose (2016:2220), the researcher evaluated whether an integrated report was in line with the guiding principles as recommended by the IIRC (2013:16). A discussion of the metrics adopted in this study to evaluate each guiding principle is provided below. For each question formulated from the International <IR> Framework, a score of 1 was allocated for “yes”, and 0 for “no”.

4.5.1.1 Strategic focus and future orientation

The International <IR> Framework states that an integrated report should provide insight into the strategy of the firm and explain how the strategy relates to the ability of the firm to create value in the short, medium and long term (IIRC 2013:16). The current study used the balanced scorecard to evaluate the strategic focus and future orientation of the integrated report. The balanced scorecard is a widely accepted strategic management system and was introduced in the 1990s by Kaplan and Norton (1992) as a strategy performance management tool (Cobbold & Lawrie 2002:1). The balanced scorecard not only focuses on financial measures, but also encompasses other non-financial aspects (Kaplan & Norton 1992:39).

Kaplan and Norton (1992:72) classify the measures that drive a firm's overall performance into four perspectives. The first perspective of the balanced scorecard is the financial perspective. This refers to the firm's ability to create value for shareholders over the long term. The second perspective of the balanced scorecard is the internal business perspective. This refers to the firm's ability to understand and use internal processes which contribute to the success of the firm. This requires firms to identify business processes where they should excel in order to satisfy their investors and customers. Managers of firms need to ensure that employees are adequately skilled to meet the needs of customers. The third perspective of the balanced scorecard is the innovation and learning perspective. This refers to the firm's ability to learn, grow and adapt to new innovative ways of doing business. The fourth perspective is the customer perspective, which refers to the firm's ability to satisfy the needs of its customers and other stakeholders (Kaplan and Norton 1992:72)

Kaplan and Norton (1992:76) suggest various metrics for the above-mentioned perspectives. Therefore, this study evaluated whether the following metrics (as recommended by Kaplan and Norton 1992:76) were disclosed in a firm's integrated report:

- *Financial perspective – return on equity:*
  Does the integrated report include a measure of performance (return on equity)?
- *Internal business perspective – staff development initiatives:*
  Does the integrated report disclose how value is created for the employees? This could be disclosure related to staff or employee development initiatives.

- *Innovation and learning perspective – the firm's innovation practices:*
  Does the integrated report disclose the firm's innovative practices?
- *Customer perspective – client or customer satisfaction:*
  Does the report disclose how value is created for its customers or clients (customer or client satisfaction)?

4.5.1.2 Connectivity of information

The International <IR> Framework states that the integrated report should provide a link which connects all the factors that affect the ability of the organisation to create value over time (IIRC 2013:16). According to the IIRC (2013:16), the integrated report should demonstrate connectivity between the content elements; the past, present and future performance; the six capitals; financial and other information; quantitative and qualitative information; and management, board information and information reported externally.

To evaluate the connectivity of information disclosed in the integrated report, the researcher followed Erin and Adegboye (2021:444) and the IIRC (2013:16) to formulate the following questions:

- Does the integrated report disclose an analysis of past, present and future performance?
- Does the integrated report describe how the six capitals (human, intellectual, financial, manufactured, natural, social and relationships) are used to create value and connected to one another?
- Does the integrated report disclose financial (quantitative) and non-financial (qualitative) information? (Examples of non-financial information evaluated for disclosure consisted of non-financial key strategic objectives of the firm, such as information on the revenue and employee growth prospects of the firm and the relationship that the firm has with its key stakeholders).
- Does the integrated report include board and other related management information, for example, governance structures, management remuneration information and other management information?

4.5.1.3 Stakeholder relationships

The International <IR> Framework recommends that an integrated report describe the relationship of the firm with its key stakeholders, and how the key needs and interests of stakeholders are fulfilled (IIRC 2013:17). The managerial branch of stakeholder theory suggests that a firm should cater for and prioritise the needs of the most powerful stakeholders (Deegan 2013:350). This implies that firms tend to focus on meeting the needs of powerful stakeholders when they prepare integrated reports, and not those of all the stakeholders. According to the International <IR> Framework, these powerful stakeholders are providers of financial capital, for example, investors and shareholders, but analysts and regulators also play an important role.

Consistent with Erin and Adegboye (2021:444), this study evaluated whether the integrated report describes the stakeholder engagement process and the value creation process for providers of financial capital. The following question was formulated:

- Does the integrated report describe the stakeholder engagement process and how value is created for providers of financial capital?

4.5.1.4 Materiality

An early study by Rose, Beaver, Becker and Sorter (1970:138) infers that materiality is one of the most difficult concepts in accounting practice, since it affects both the quality and the quantity of accounting information to be disclosed in the financial reports. According to Eccles and Youmans (2016:4), “[m]ateriality forms the conceptual bedrock of corporate reporting, yet no authoritative definition of it exists”. Different stakeholders have indicated that there is no standardised understanding of what constitutes material information (Simnett & Huggins 2015:39). In accounting terms, information is material if its omittance, misstatement or obscurement would have a negative effect on the decision-making of the primary users of financial statements (IASB 2018 par 1.7). However, materiality is a pervasive concept, as its definition varies from one firm to another (Ngu & Amran 2018:2). This often poses a measurement problem, as it is a firm-specific measure (Eccles & Youmans 2016:3). The uniqueness of materiality to each firm makes it hard to develop a construct for

materiality that can be applied across various firms. This makes reporting and disclosing material information in integrated reports a difficult process.

With regard to materiality, the International <IR> Framework states that an integrated report should disclose material information which affects the organisation's ability to create value (IIRC 2013:18). However, this presents its own challenges, as the application of materiality in non-financial settings comes with its own difficulties (Lai, Melloni & Stacchezzini 2017:535). Additionally, the International <IR> Framework states that judgement should be applied in determining which information to disclose about material matters. This implies that different firms will apply their own judgement in determining which information should be included in the report and which information should be excluded. However, the International <IR> Framework does provide a materiality determination process guideline which firms may use to disclose material items. Notwithstanding, it should still be noted that the disclosure of materiality assessment process remains a voluntary decision for firms (Beske, Haustein & Lorson 2020:163).

To evaluate materiality, the researcher followed the prior literature (for example, a study by Cooray et al 2020:23) in how to evaluate whether a firm describes the materiality determination process in the integrated report. The purpose of this section was to evaluate whether firms report their materiality determination *process.* Thus, the focus was on the presence of such a process, and not on the quality of the process. Additionally, following Lai et al. (2017:539) and Eccles and Krzus (2014:2), materiality was evaluated by assessing whether those charged with governance are involved in the determination of material factors in a firm. This assessment relies on whether those charged with governance of the firm participate actively in determining material issues (Lai et al. 2017:539). Lastly, since judgement is applied in identifying material issues, the IIRC (2013:19) recommends a material issues approval process by the firm to ensure that the integrated report meets its primary purpose. Therefore, in line with Erin and Adegboye (2021:444), and Haji and Anifowose (2016:23), the researcher evaluated whether the integrated report disclosed a material issues identification and approval process.

The following questions were formulated to evaluate materiality:

- Does the integrated report disclose a materiality determination process or material issues process?
- Is the material issues identification and approval process described?
- Are those charged with governance of the firm actively involved in the materiality determination process?

4.5.1.5 Conciseness

The International <IR> Framework prescribes that an integrated report should be concise (IIRC 2013:21). In relation to this principle, Chikutuma (2019:78) argues that the concept of conciseness in integrated reporting is highly subjective, since there is no standardised measure for it. However, some studies have used the length of integrated reports as a proxy for conciseness (for example, Caglio et al. 2020:65; Melloni et al. 2017:226). Dilling and Caykoylu (2019:16) have also documented a negative correlation between integrated reporting quality and the length of the report. This is because longer reports are more difficult to read, which has a negative impact on the report's quality (Li 2008:225).

Tirado-Valencia, Cordobés-Madueño, Ruiz-Lozano and De Vicente-Lama (2019:436) analysed how the preparers of non-financial information in state-owned enterprises report on the integrated thinking concept. Using a content analysis of 68 integrated reports, their study found that the average number of pages of an integrated report was 188 (Tirado-Valencia et al. 2019:444). Their study used the page length of 188 as a proxy for an integrated report's conciseness (Tirado-Valencia et al. 2019:444). Similarly, the Ernst and Young Excellence in Integrated Reporting Awards report states that the judges of the award assess the conciseness of integrated reports using the average length (in pages) of the integrated report (Ernst & Young 2019:13), considering 157 pages to be concise. In 2018 – which was the last sample year in the current study – the average page length of an integrated report was 157 pages, and hence, this was the proxy number of pages chosen for conciseness in the current study.

As an additional measure for conciseness, other studies have associated conciseness of the integrated report with logical flow, the use of infographics, and the length of the report (Ernst & Young 2019:13). Du Toit (2017:629) investigated the readability of

integrated reports of JSE-listed firms in 2015 and 2016. The author found that the complex way in which integrated reports are written makes integrated reports difficult to read. A study by Caglio et al. (2019:69) found that firms that produce integrated reports that are easy to read have a higher market value than those with integrated reports that are difficult to read.

Therefore, consistent with Tirado-Valencia et al. (2019:444) and Ernst and Young's (2019:18) proxy for conciseness and the average page length of an integrated report in this study, this study formulated the following questions to evaluate conciseness:

- Is the report 157 pages or shorter?
- Does the integrated report use graphics, tables and/or infographics as part of its disclosure to describe the firm's operations?

4.5.1.6 Reliability and completeness

According to the IIRC (2013:21), reliability refers to faithful representation of facts, while completeness refers to all material information, both negative and positive, that is included in the integrated report. The IIRC (2013:21) posits that reliability in the integrated reporting context is enhanced when internal control systems (for example, internal audit, external audit and stakeholder engagement) are used. In this regard, Caglio et al. (2019:55) found that audited integrated reports are positively associated with market value, as such assurance enhances the reliability of the integrated report. Serafeim (2015:35) also argues that integrated reports that have been audited are more reliable than those that are not audited. Therefore, in line with Pistoni et al. (2018:494) and Stent and Dowler (2015:106), a score of 1 was allocated if the integrated report was audited (internally or externally) and a score of 0 if it was not audited.

Furthermore, the IIRC (2013:21) recommends that firms keep an audit trail when they prepare integrated reports in order to assist those charged with governance to review the firm's integrated reporting process. Following Hoang et al. (2020:381), Zhou et al. (2017:132) and Haji and Anifowose (2016:224), the researcher evaluated whether an integrated report was signed off by the board or whether the integrated report included a discussion of the integrated report approval process.

In terms of completeness, the International <IR> Framework states that consideration should be given to what firms in the same industry are reporting on, because this is likely to affect all firms in a particular industry (IIRC 2013:22). Therefore, a score of 1 was allocated if an integrated report included the disclosure of the firm's performance against industry benchmarks, and 0 if not (Kılıç & Kuzey 2018:319).

Therefore, the following questions were formulated to evaluate reliability and completeness:

- Has the integrated report been audited by an auditor?
- Has the integrated report been signed off by the board or does the integrated report provide a discussion of the approval process?
- Does the integrated report consider what other firms in the same industry are reporting?

4.5.1.7 Consistency and comparability

The International <IR> Framework states that the information contained in an integrated report should be consistent and that it should be presented in a way that allows comparison between one firm and another, to the extent that it is material to the ability of the firm to create value over time (IIRC 2013:22). The IIRC (2013:22) also suggests that reporting policies adopted by firms be followed consistently from one period to the next in order to ensure consistency of the integrated report. Therefore, in line with Erin and Adegboye (2021:445) and the IIRC (2013:22), the researcher evaluated whether information areas contained in the report, such as the reporting policies followed by the firm, were consistent from one period to the next.

With regard to comparability, the International <IR> Framework suggests that firms disclose integrated reports which enable comparisons with other firms' integrated reports (IIRC 2013:23). Furthermore, a suggestion of tools which enhance comparability are provided, such as the use of ratios to present information, and the use of regional or industry data (IIRC 2013:23). In line with Cooray et al. (2020:24), this study thus evaluated the comparability of integrated reports by looking at whether the integrated report disclosed information such as ratios and segmental or regional information.

The following questions were formulated to evaluate consistency and comparability:

- Have the reporting policies of the firm and the key performance indicators (KPIs) reported been consistently presented from one period to the next?
- Does the integrated report make use of ratios to report information?
- Does the integrated report provide segment or regional reporting?

4.5.2 Content elements

The International <IR> Framework states that each integrated report must possess interrelated content elements (IRC 2013:24). The section below provides a discussion of the measures which were used in this study to evaluate whether each integrated report was prepared according to these content elements. The process that this study followed to evaluate the level of application of content elements with the International <IR> Framework was similar to the process adopted by Lee and Yeo (2016:1246), who investigated the association between integrated reporting and firm valuation, using an analysis of integrated reporting disclosure based on the International <IR> Framework. Furthermore, Kılıç and Kuzey (2018:306) formulated disclosure items for each content element to analyse the level of the alignment of each content element with the International <IR> Framework. Following a similar approach as the studies of Lee and Yeo (2016:1246), Kılıç and Kuzey (2018:306) and prior studies reviewed in Section 3.2, this study evaluated each integrated report using metrics developed from content elements as described below. Again, for each question, a score of 1 was allocated for “yes”, and 0 for “no”.

4.5.2.1 Organisational overview and external environment

An integrated report should be able to clearly describe the operations of the organisation and the circumstances under which it operates (IIRC 2013:24). Consistent with Lee and Yeo (2016:1246), this study evaluated whether the vision, mission, culture and ethics of each firm were clearly stipulated and described in the integrated report. In addition, consistent with Hoang et al. (2020:380) and Zhou et al. (2017:131), this study also evaluated whether the integrated report included a description of the scope and boundaries of the firm, as this section provides information about the firm’s operations and its environment.

Therefore, the following questions were formulated to evaluate organisational overview and external environment:

- Are the scope and boundaries of the firm described in the integrated report?
- Does the integrated report provide the firm's mission and vision statement or a disclosure of its culture, ethics and values?

4.5.2.2 Governance

Marrone (2020:26) examined whether corporate governance variables influence integrated reporting policies. Marrone's (2020:26) study used board size, board members' average age, board gender diversity, and chief executive officer duality as variables. Marrone (2020:26) found that a large board size with a diverse set of skills has a positive influence on the level of alignment of the integrated report with the International <IR> Framework. The first metric that Marrone's study used to measure governance was board size. According to prior research, large boards are associated with more skills and resources, compared to small boards (Hidalgo, García-Meca & Martínez 2011:492). Moreover, firms with large boards are usually able to disclose information in integrated reports in such a manner that it caters for providers of financial capital, which results in increased firm value (Pucheta-Martínez & Gallego-Álvarez 2019:614; Alfiero, Esposito, Doronzo & Cane 2018:41).

However, a question which has long been debated by scholars is the ideal size of an effective board (Raheja 2005:283). Seminal studies in this regard, such as those by Jensen (1993:865), and Lipton and Lorsch (1992:67) argue that an optimal board number which enables the board to be effective in making decisions is eight or nine. A recent study by Ghabayen, Jaradat, Hardan and Al-Shbail (2018:232) concluded that the optimal board size is between nine and twelve directors. Ghabayen et al.'s (2018:232) study argues that boards with fewer than nine members were small and thus ineffective. Therefore, in line with the above-mentioned studies, this study awarded a score of 1 if a board had nine or more members (this was considered large), and 0 otherwise.

The second metric that this study used to measure governance was the average age of board members. Marrone (2020:28) argues that older board members have more experience than young board members. This wealth of experiences enables a firm to govern its business effectively and efficiently. In line with Alfiero et al. (2017:45), Fasan and Mio (2017:296) and Hidalgo et al. (2011:488), the current study measured board

experience as the average board member's age. The researcher calculated the mean of the average board member age for the South African sample, which was 48 years. The mean of the average board member age for the United Kingdom's sample was calculated at 44 years. If the average board member age for a firm-year equalled or was greater than the mean of the average age, a score of 1 was awarded, 0 otherwise.

Board diversity has been associated with a more productive board (see Cooray et al. 2020:4; Fasan & Mio 2017:288; Huse & Solberg 2006:121). Board diversity can refer to either ethnic diversity or gender diversity (Fasan & Mio 2017:293). The current study focused on gender diversity, because data were available regarding this fact. The presence of women in the board has been found to be associated with better decision-making by the board (Gerwanski et al. 2019:753; Alfiero et al. 2017:44). Furthermore, according to a study by Huse and Solberg (2006:119), women have a higher participation rate in board meetings than men, because women prepare more thoroughly for board meetings. Therefore, a board that has more women members than men will potentially ensure that a firm produces an integrated report in line with the International <IR> Framework, as women pay more attention to sustainability issues (Vitolla, Raimo & Rubino 2020:1156).

Kramer, Konrad, Erkut and Hooper (2006:19) conducted a study to investigate the minimum number of women directors needed to benefit boards. The findings of their study revealed that three or more women on a board bring more positive contributions than in a board that has fewer women. Kramer et al. (2006:19) found that their study's participants reported that women on boards that had three or more women felt that they could confidently raise issues in board meetings, as they were part of boards because of their talents, and not just gender. Therefore, in line with the findings of Kramer et al. (2006:19), this study awarded a score of 1 if a board had three or more women, and 0 otherwise.

Therefore, the following questions were formulated to evaluate governance:

- Does the board consist of nine or more members?
- Is the average board member age equal to or greater than the mean of the average board member age?
- Does the board include three or more women?

4.5.2.3 Business model

The integrated report of a firm should answer the following question: “What is the organisation’s business model?” (IIRC 2013:25). According to the IIRC (2013:25), the integrated report should describe the business model of a firm, as well as the process that the firm uses to transform inputs into outputs. In line with Cooray et al. (2020:23), Kılıç and Kuzey (2018:311) and Lee and Yeo (2016:1246), the current study evaluated whether the integrated report disclosed the business model and description of its key inputs, business activities and outputs.

The following question was formulated to evaluate the business model:

- Is the firm’s business model described in the integrated report?

4.5.2.4 Risks and opportunities

An integrated report should describe the specific risks and opportunities of a firm and how these affect the ability of the firm to create value (IIRC 2013:27). Consistent with Hoang et al. (2020:380) and Zhou et al. (2017:131), the current study used a SWOT (strengths, weaknesses, opportunities and threats) analysis to assess whether risks and opportunities have been disclosed and addressed in the reports. Prior studies show that a SWOT analysis can be used to analyse the internal and external risks faced by firms, as well strategies to mitigate such risks (Dyson 2004:632; Pickton & Wright 1998:103).

The following question was formulated to evaluate risks and opportunities:

- Are risks or challenges and opportunities or strengths disclosed in the integrated report, or is risk management disclosed?

4.5.2.5 Strategy and resource allocation

An integrated report should describe the firm’s short-, medium- and long-term strategic objectives (IIRC 2013:27). In addition, the IIRC recommends that the integrated report should include a resource allocation plan (IIRC 2013:27). Consistent with Cooray et al. (2020:23) and Kılıç and Kuzey (2018:333), this study evaluated whether a firm disclosed its strategic objectives, competitive advantage and resource allocation plans.

Therefore, the following questions were formulated to evaluate strategy and resource allocation:

- Are the short-, medium- and long-term strategies of the firm disclosed in the integrated report?
- Does the integrated report include disclosure of the firm's competitive advantage?
- Is the resource allocation plan described and disclosed?

4.5.2.6 Performance

An integrated report should describe whether a firm was able to achieve its strategic objectives for the period under review (IIRC 2013:28). One of the ways in which firms can track their performance is by setting KPIs which measure both financial and non-financial performance (Samy 2019:9). Consistent with Hoang et al. (2020:381) and Lee & Yeo 2016:1247), this study evaluated whether the integrated report disclosed both financial KPIs and non-financial KPIs to measure the performance of the firm for the period.

The following questions were formulated to evaluate performance:

- Are financial KPIs disclosed in the integrated report?
- Are non-financial KPIs disclosed in the integrated report?

4.5.2.7 Outlook

An integrated report should identify and disclose the challenges and uncertainties that are likely to affect the ability of the firm to create value in future (IIRC 2013:28). Consistent with Hoang et al. (2020:381) and IIRC (2013:23), this study evaluated whether an integrated report included the disclosure of the firm's expectations about future uncertainties and a plan of action to respond to such uncertainties.

Therefore, the following question was formulated to evaluate outlook:

- Is the firm's strategy to address future uncertainties outlined or disclosed in the integrated report?

4.5.2.8 Basis of presentation

According to the IIRC (2013:29), an integrated report should include a description of the firm's materiality determination process (already discussed and evaluated in

Section 4.5.1.4), the reporting boundary, as well as a summary of the significant frameworks and methods used to quantify or evaluate material matters. In line with prior studies (Cooray et al. 2020:21; Hoang et al. 2020:381; Lee & Yeo 2016:1248) the current study evaluated whether the integrated report included the firm's reporting boundaries and a summary of the significant frameworks and methods used to quantify or evaluate material matters.

Therefore, the following questions were formulated to evaluate basis of presentation:

- Are the reporting boundaries disclosed in the integrated report?
- Does the integrated report include a summary of the frameworks or methods used to evaluate material matters?

The full set of questions in the Integrated Reporting Score Index used in the current study is presented in Table 4.4. It should be noted that there were questions which evaluated a number of items in a single question, in such cases, a score of "1" was awarded if all items in that question were present in the report, "0" otherwise.

Table 4.4: The Integrated Reporting Score Index

GUIDING PRINCIPLE	QUESTION OF INTEREST FROM THE INTERNATIONAL <IR> FRAMEWORK (IIRC 2013)	METRIC	WEIGHTING	LITERATURE REFERENCE
Strategic focus and future orientation	Does the integrated report disclose how an organisation uses various capitals to achieve its strategic objectives in future and create value? (IIRC 2013:16)	Does the integrated report include a measure of performance (return on equity)?	0.25	Sun (2021), Kılıç and Kuzey (2018), Nakib and Dey (2018), Zhou et al (2017)
		Does the integrated report disclose the firm's innovative practices?	0.25	Cooray et al. (2020), Kılıç and Kuzey (2018), Nakib and Dey (2018)
		Does the integrated report disclose how value is created for the employees? This could be disclosure related to staff or employee development initiatives.	0.25	Terblanche and De Villiers (2019), Haji and Anifowose (2017), Rivera-Arrubla, Zorio-Grima and García-Benau (2017), Lee and Yeo (2016)
		Does the integrated report disclose how value is created for its customers or clients (customer or client satisfaction)?	0.25	Terblanche and De Villiers (2019), Haji and Anifowose (2017), Rivera-Arrubla et al. (2017), Lee and Yeo (2016)
			1	
Connectivity of information	Does the integrated report provide a link between the content elements? (IIRC 2013:17)	Does the integrated report disclose an analysis of past, present and future performance?	0.25	Erin and Adegboye (2021), Hoang et al. (2020), Zhou et al. (2017)
		Does the integrated report describe how the six capitals (human, intellectual, financial, manufactured, natural, social and relationships) are used to create value and connected to one another?	0.25	Cooray et al. (2020), Erin and Adegboye (2021), Hoang et al. (2020), Lee and Yeo (2016)
		Does the integrated report disclose financial (quantitative) and non-financial (qualitative) information?	0.25	Cooray et al. (2020), Hoang et al. (2020), Kılıç and Kuzey (2018)
		Does the integrated report disclose board and other related management information, for example, governance structures, management remuneration information and other management information?	0.25	Cooray et al. (2020), Hoang et al. (2020)
			1	

Stakeholder relationships	Does the integrated report disclose how key stakeholders' needs are met? (IIRC 2013:17)	Does the integrated report describe the stakeholder engagement process and how value is created for providers of financial capital?	**1**	Erin and Adegboye (2021), Hoang et al. (2020), Zhou et al (2017)
Materiality	Does the integrated report disclose relevant matters which may have an ability to affect an organisation's ability to create value? (IIRC 2013:18)	Does the integrated report disclose a materiality determination process or material issues process?	0.33	Cooray et al. (2020), Nakib and Dey (2018), Rivera-Arrubla et al. (2017), Lai et al. (2017)
		Is the material issues identification and approval process described?	0.33	Erin and Adegboye (2021), Haji and Anifowose (2016)
		Are those charged with governance of the firm actively involved in the materiality determination process?	0.33	Nakib and Dey (2018), Rivera-Arrubla et al. (2017), Lee and Yeo (2016)
			1	
Conciseness	Is the integrated report clear and concise, with easy language? (IIRC 2013:21)	Is the integrated report 157 pages or shorter?	0.50	Ernst & Young (2019), Tirado-Valencia et al. (2019)
		Does the integrated report include graphics, tables or infographics as part of its disclosure to describe the firm's operations?	0.50	Cooray et al. (2020), Pistoni et al. (2018), Rivera-Arrubla (2017)
			1	
Reliability and Completeness	Reliability – is the integrated report reliable? (IIRC 2013:21)	Has the integrated report been audited by an auditor?	0.33	Cooray et al. (2020), Pistoni et al. (2018), Rivera-Arrubla et al. (2017), Sofian and Dumitru (2017)
		Has the integrated report been signed off by the board or does the integrated report provide a discussion of the approval process?	0.33	Haji and Anifowose (2017), Sofian and Dumitru (2017)
	Is the integrated report complete? (IIRC 2013:22)	Does the integrated report consider what other firms in the same industry are reporting?	0.33	Kılıç and Kuzey (2018), Stent and Dowler (2015)
			1	
Consistency and Comparability	Is the integrated report consistent? (IIRC 2013:23)	Have the reporting policies of the firm and the KPIs reported been consistently presented from one period to the next?	0.33	Erin and Adegboye (2021), Sun (2021), Cooray et al. (2020), Nakib and Dey (2018)
	Is the integrated report comparable? (IIRC 2013:23)	Does the integrated report make use of ratios to report information?	0.33	Cooray et al. (2020)
		Does the integrated report provide segment or regional reporting?	0.33	Cooray et al. (2020), Sofian and Dumitru (2017), Stent and Dowler (2015)
			1	
		SUB-TOTAL FOR GUIDING PRINCIPLES	**7**	

CONTENT ELEMENT	QUESTION OF INTEREST	METRIC	WEIGHTING	REFERENCE
Organisational overview and external environment	What does the organisation do and what are the circumstances under which it operates? (IIRC 2013:24)	Are the scope and boundaries of the firm described in the integrated report?	0.50	Cooray et al. (2020), Dey (2020), Kılıç and Kuzey (2018), Lee and Yeo (2016)
		Does the integrated report provide the firm's mission and vision statement or a disclosure of its culture, ethics and values?	0.50	Cooray et al. (2020), Dey (2020), Hoang et al. (2020), Lee and Yeo (2016)
			1	
Governance structure	How does the organisation's governance structure support its ability to create value in the short, medium, and long term? (IIRC 2013:25)	Does the board consist of nine or more members?	0.33	Cooray et al. (2020), Dey (2020), Hoang et al. (2020, Fasan and Mio (2017), Lee and Yeo (2016), Kramer et al. (2006)
		Is the average board member age equal to or greater than the mean of the average board member age?	0.33	Alfiero et al. (2017), Hidalgo et al. 2011
		Does the board include three or more women?	0.33	Terblanche and De Villiers (2019), Kılıç and Kuzey (2018), Alfiero et al. (2017)
			1	
Business Model	What is the organization's business model? (IIRC 2013:25)	Is the firm's business model described in the integrated report?	**1**	Sun (2021), Dey (2020), Kılıç and Kuzey (2018), Zhou et al (2017), Lee and Yeo (2016)
Strategy and resource allocation	Where does the organisation want to go and how does it intend to go there? (IIRC 2013:27)	Are the short-, medium- and long-term strategies of the firm disclosed in the integrated report?	0.33	Cooray et al. (2020), Kılıç and Kuzey (2018), Lee and Yeo (2016)
		Does the integrated report include disclosure of the firm's competitive advantage?	0.33	Cooray et al. (2020), Dey (2020)
		Is the resource allocation plan described and disclosed?	0.33	Cooray et al. (2020)
			1	
Risks and opportunities	What are the specific risks and opportunities that affect the organisation's ability to create value over the short, medium and long term, and how is the organization dealing with them? (IIRC 2013:27)	Are risks or challenges and opportunities or strengths disclosed in the integrated report, or is risk management disclosed?	**1**	Cooray et al. (2020), Hoang et al. (2020), Dey (2020), Kılıç and Kuzey (2018), Zhou et al. (2017), Lee and Yeo (2016)

Performance	To what extent has the organisation achieved its strategic objectives for the period and what are its outcomes in terms of effects on the capitals? (IIRC 2013:28)	Are financial KPIs disclosed in the integrated report?	0.50	Cooray et al. (2020), Dey (2020), Hoang et al. (2020, Kılıç and Kuzey (2018), Lee and Yeo (2016)
		Are non-financial KPIs disclosed in the integrated report?	0.50	Cooray et al. (2020), Dey (2020), Hoang et al. (2020), Kilic and Kuzey (2018)
			1	
Outlook	What challenges and uncertainties is the organisation likely to encounter in pursuing its strategy, and what are the potential implications for its business model and future performance? (IIRC 2013:28)	Is the firm's strategy to address future uncertainties outlined or disclosed in the integrated report?	**1**	Cooray et al. (2020), Dey (2020), Hoang et al. (2020), Kılıç and Kuzey (2018), Lee and Yeo (2016)
Basis of presentation	How does the organisation determine what matters to include in the integrated report and how are such matters quantified or evaluated? (IIRC 2013:29)	Are the reporting boundaries disclosed in the integrated report?	0.50	Cooray et al. (2020), Dey (2020)
		Does the integrated report include a summary of the frameworks or methods used to evaluate material matters?	0.50	Hoang et al. (2020), Lee and Yeo (2016)
			1	
		SUB TOTAL FOR CONTENT ELEMENTS	**8**	
OVERALL IRSCORE TOTAL (7 guiding principles plus 8 content elements). The final IRSCORE consisted of 50% of guiding principles score and 50% of content elements score (see Section 4.5.4 for explanation).			**15**	

Source: Own compilation

4.5.3 The validity and reliability of the integrated reporting index (*IRSCORE*)

In order for valid inferences to be drawn from the data obtained from self-constructed indices, researchers need to ensure that the instruments used to collect the data are reliable (Guthrie, Petty, Yongvanich & Ricceri 2004:288). Researchers can implement various steps to ensure reliability and validity of self-constructed disclosure indices in integrated reporting studies (Nguyen et al. 2021:13). These include developing the disclosure index from the International <IR> Framework (Nguyen et al. 2021:13), developing disclosure metrices from the relevant literature (Guthrie et al. 2004:289) and performing a pilot test of the disclosure index (Sun 2021:128).

Saunders and Lewis (2012:451) suggest that researchers conduct a pilot test to evaluate the validity of the research instrument. In this study, consistent with previous studies, for example, those of Sun (2021:128), Zhou et al. (2017:108), Lee and Yeo (2016:1245), and Melloni (2015:670), two researchers (the PhD candidate who is the researcher for the current study and a research assistant) conducted a pilot test using 20 integrated reports. A pilot test is a pre-test that is conducted before the overall coding process to evaluate the validity of a research instrument (Sun 2021:128). In the current study, a random sample of 20 integrated reports was selected and evaluated using the initial scoring index. Upon completion, the results of the principal researcher and the research assistant for the 20 integrated reports were compared, and any discrepancies and differences in the scoring index were resolved. There was consensus on the items. The purpose of conducting a pilot test using a small sample of integrated reports is to ensure calibration of the disclosure index (Nguyen et al. 2021:13). Once the pilot test was completed, the researcher proceeded and evaluated all the integrated reports included in the study's sample using the scoring index. It should be noted that the research assistant was only involved in conducting the pilot test, consistent with other doctoral studies in the field (Sun 2021:128).

According to Melloni (2015:670) and Guthrie et al. (2004:289), one of the methods to achieve reliability in using self-constructed indices is to develop and extract disclosure categories from recognised, peer-reviewed prior research. The literature, as discussed in Sections 4.5.1 and 4.5.2, was considered in the study to formulate the questions that evaluated the level of disclosure set out in Table 4.4. Furthermore, the disclosure items used in the scoring index, as well as the questions formulated to evaluate

disclosure, were extracted from the guiding principles and content elements of the International <IR> Framework, as recommended by Nguyen et al. (2021:13).

In order to assess the internal consistency of the guiding principles disclosure items and content elements disclosure items in the integrated reporting scoring index, the average inter-item correlations between items were calculated. The purpose of calculating the average inter-item correlation was to assess internal consistency between items, in other words, to evaluate the extent to which items on a scale assess the same content, which would indicate reliability (BrckaLorenz, Chiang & Laird 2013:1). According to Clark and Watson (1995:316), the recommended average inter-item correlation values range between 0.15 and 0.50. Values lower than 0.15 indicate that items are not well correlated, while values above 0.50 indicate that items are too close to one another, almost repetitive. The Cronbach alpha coefficient was not considered as a measure of internal consistency in the current study, as it is influenced by the number of items (Vaske, Beaman, & Sponarski 2017:163). Furthermore, Streiner (2003:217) argues against blind use of the Cronbach alpha, specifically in the context of indices which may not exhibit homogeneity amongst the items.

Average inter-item and item-total correlations for the guiding principles and content elements for each sample country are presented in Tables 4.5, 4.6, 4.7 and 4.8. The overall mean inter-item correlation for the guiding principles for the South African sample was 0.254 (see Table 4.5), and the overall mean average inter-item correlation for content elements was 0.466 (see Table 4.6). The overall mean average inter-item correlation for guiding principles for the United Kingdom's sample was 0.242 (see Table 4.7), and the overall mean average inter-item correlation for content elements for the United Kingdom's sample was 0.484 (see Table 4.8). As indicated above, all the values for average inter-item correlation were within the acceptable range recommended by Clark and Watson (1995:316).

Table 4.5: Average inter-item means and correlations: Guiding principles (South Africa)

Summary item statistics						
	Mean	**Minimum**	**Maximum**	**Range**	**Maximum / Minimum**	**Variance**	**Number of items**
Item Means	0.254	0.038	0.757	0.719	20.000	0.024	20

Inter-item correlation matrix																				
	r1	r2	r3	r4	r5	r6	r7	r8	r9	r10	r11	r12	r13	r14	r15	r16	r17	r18	r19	r20
r1	1.000	0.366	0.172	0.116	0.036	0.085	0.072	0.122	0.185	0.130	0.121	0.070	-0.056	0.033	0.148	0.070	-0.050	-0.024	0.431	-0.026
r2	0.366	1.000	0.206	0.235	-0.003	0.188	0.021	0.086	0.293	0.213	0.200	0.249	-0.044	0.059	0.187	0.212	0.041	-0.080	0.190	-0.033
r3	0.172	0.206	1.000	0.147	0.119	0.050	-0.019	0.262	0.254	0.171	0.102	0.142	-0.021	0.175	-0.005	0.124	0.047	-0.018	0.124	-0.035
r4	0.116	0.235	0.147	1.000	0.029	0.127	0.003	0.067	0.219	0.118	0.073	0.148	-0.057	0.149	0.115	0.143	0.029	0.088	0.063	0.097
r5	0.036	-0.003	0.119	0.029	1.000	0.000	-0.006	-0.008	-0.009	-0.031	0.028	-0.011	0.001	-0.013	-0.025	0.009	-0.008	-0.018	-0.030	-0.021
r6	0.085	0.188	0.050	0.127	0.000	1.000	0.057	0.074	0.322	0.340	0.321	0.381	0.171	0.085	-0.048	0.226	0.074	-0.004	0.104	-0.063
r7	0.072	0.021	-0.019	0.003	-0.006	0.057	1.000	-0.006	0.069	0.044	0.051	0.051	-0.009	-0.010	0.025	-0.031	-0.006	0.112	0.058	-0.017
r8	0.122	0.086	0.262	0.067	-0.008	0.074	-0.006	1.000	0.118	0.120	0.066	0.066	0.038	0.187	-0.082	0.009	-0.008	-0.018	0.033	-0.021
r9	0.185	0.293	0.254	0.219	-0.009	0.322	0.069	0.118	1.000	0.374	0.273	0.336	-0.097	0.130	0.058	0.327	0.118	0.054	0.186	0.038
r10	0.130	0.213	0.171	0.118	-0.031	0.340	0.044	0.120	0.374	1.000	0.506	0.439	-0.011	0.140	-0.030	0.299	0.044	-0.037	0.095	-0.056
r11	0.121	0.200	0.102	0.073	0.028	0.321	0.051	0.066	0.273	0.506	1.000	0.741	0.067	0.079	0.025	0.162	0.028	-0.082	0.051	0.000
r12	0.070	0.249	0.142	0.148	-0.011	0.381	0.051	0.066	0.336	0.439	0.741	1.000	0.050	0.094	0.125	0.170	0.066	-0.102	0.062	0.015
r13	-0.056	-0.044	-0.021	-0.057	0.001	0.171	-0.009	0.038	-0.097	-0.011	0.067	0.050	1.000	-0.010	-0.029	-0.131	-0.036	0.078	-0.014	-0.025
r14	0.033	0.059	0.175	0.149	-0.013	0.085	-0.010	0.187	0.130	0.140	0.079	0.094	-0.010	1.000	-0.097	0.161	0.067	-0.008	0.023	-0.017
r15	0.148	0.187	-0.005	0.115	-0.025	-0.048	0.025	-0.082	0.058	-0.030	0.025	0.125	-0.029	-0.097	1.000	0.075	0.033	0.042	0.117	0.084
r16	0.070	0.212	0.124	0.143	0.009	0.226	-0.031	0.009	0.327	0.299	0.162	0.170	-0.131	0.161	0.075	1.000	0.205	0.080	0.093	-0.005
r17	-0.050	0.041	0.047	0.029	-0.008	0.074	-0.006	-0.008	0.118	0.044	0.028	0.066	-0.036	0.067	0.033	0.205	1.000	0.080	-0.030	-0.021
r18	-0.024	-0.080	-0.018	0.088	-0.018	-0.004	0.112	-0.018	0.054	-0.037	-0.082	-0.102	0.078	-0.008	0.042	0.080	0.080	1.000	-0.033	0.112
r19	0.431	0.190	0.124	0.063	-0.030	0.104	0.058	0.033	0.186	0.095	0.051	0.062	-0.014	0.023	0.117	0.093	-0.030	-0.033	1.000	0.076
r20	-0.026	-0.033	-0.035	0.097	-0.021	-0.063	-0.017	-0.021	0.038	-0.056	0.000	0.015	-0.025	-0.017	0.084	-0.005	-0.021	0.112	0.076	1.000

Source: Own compilation

Table 4.6: Average inter-item means and correlations: Content elements (South Africa)

Summary item statistics							
	Mean	**Minimum**	**Maximum**	**Range**	**Maximum / Minimum**	**Variance**	**Number of items**
Item Means	0.466	0.139	0.985	0.846	7.075	0.060	15

Inter-item correlation matrix															
	r21	**r22**	**r23**	**r24**	**r25**	**r26**	**r27**	**r28**	**r29**	**r30**	**r31**	**r32**	**r33**	**r34**	**r35**
r21	1.000	0.085	0.097	-0.036	-0.024	-0.031	-0.009	-0.027	0.007	0.047	0.031	-0.006	-0.014	-0.023	0.089
r22	0.085	1.000	0.244	0.163	0.243	0.246	0.148	0.144	0.208	0.179	0.195	0.057	-0.009	0.180	-0.025
r23	0.097	0.244	1.000	0.136	0.127	0.102	0.169	0.008	0.233	0.203	0.243	0.010	0.011	0.151	-0.003
r24	-0.036	0.163	0.136	1.000	0.214	0.132	0.021	0.082	0.070	0.017	0.160	0.040	0.003	0.098	-0.024
r25	-0.024	0.243	0.127	0.214	1.000	0.216	0.002	0.031	0.077	0.042	0.217	-0.031	-0.009	0.101	-0.033
r26	-0.031	0.246	0.102	0.132	0.216	1.000	-0.016	0.077	0.088	0.051	0.055	0.010	0.228	0.075	-0.022
r27	-0.009	0.148	0.169	0.021	0.002	-0.016	1.000	-0.047	-0.018	0.167	0.017	-0.011	-0.024	0.101	-0.029
r28	-0.027	0.144	0.008	0.082	0.031	0.077	-0.047	1.000	0.531	0.093	-0.027	0.020	-0.047	0.106	-0.001
r29	0.007	0.208	0.233	0.070	0.077	0.088	-0.018	0.531	1.000	0.084	0.156	0.022	-0.007	0.149	0.109
r30	0.047	0.179	0.203	0.017	0.042	0.051	0.167	0.093	0.084	1.000	0.095	0.080	0.039	0.129	0.052
r31	0.031	0.195	0.243	0.160	0.217	0.055	0.017	-0.027	0.156	0.095	1.000	0.202	0.077	0.087	-0.008
r32	-0.006	0.057	0.010	0.040	-0.031	0.010	-0.011	0.020	0.022	0.080	0.202	1.000	0.080	-0.030	-0.021
r33	-0.014	-0.009	0.011	0.003	-0.009	0.228	-0.024	-0.047	-0.007	0.039	0.077	0.080	1.000	-0.033	0.112
r34	-0.023	0.180	0.151	0.098	0.101	0.075	0.101	0.106	0.149	0.129	0.087	-0.030	-0.033	1.000	0.076
r35	0.089	-0.025	-0.003	-0.024	-0.033	-0.022	-0.029	-0.001	0.109	0.052	-0.008	-0.021	0.112	0.076	1.000

Source: Own compilation

Table 4.7: Average inter-item means and correlations: Guiding principles (United Kingdom)

Summary item statistics							
	Mean	**Minimum**	**Maximum**	**Range**	**Maximum / Minimum**	**Variance**	**Number of items**
Item Means	0.242	0.011	0.396	0.385	34.846	0.010	20

Inter-item correlation matrix																				
	r1	r2	r3	r4	r5	r6	r7	r8	r9	r10	r11	r12	r13	r14	r15	r16	r17	r18	r19	r20
r1	1.000	0.096	0.233	0.196	0.084	0.111	0.082	0.082	-0.131	0.046	0.097	0.009	0.055	0.090	0.061	0.229	0.040	0.023	0.185	0.061
r2	0.096	1.000	0.378	0.170	0.086	0.060	0.108	0.108	0.054	0.158	0.129	0.083	-0.211	0.171	0.030	0.105	0.034	0.115	0.377	0.030
r3	0.233	0.378	1.000	0.377	0.218	0.049	0.188	0.188	0.012	0.223	0.144	0.111	-0.242	0.170	0.080	0.347	0.104	0.212	0.362	0.080
r4	0.196	0.170	0.377	1.000	0.015	0.105	0.087	0.087	-0.020	0.134	0.086	0.045	-0.228	0.259	0.120	0.242	0.118	0.027	0.176	0.067
r5	0.084	0.086	0.218	0.015	1.000	-0.765	0.147	0.147	-0.104	0.054	0.081	0.059	-0.045	-0.081	0.056	0.062	0.017	0.071	0.271	0.056
r6	0.111	0.060	0.049	0.105	-0.765	1.000	0.009	0.009	0.011	-0.033	-0.123	-0.089	0.009	0.112	0.018	0.086	0.028	0.016	0.042	0.018
r7	0.082	0.108	0.188	0.087	0.147	0.009	1.000	1.000	0.031	0.045	0.030	0.024	0.032	0.082	0.499	0.106	0.331	0.576	0.220	0.499
r8	0.082	0.108	0.188	0.087	0.147	0.009	1.000	1.000	0.031	0.045	0.030	0.024	0.032	0.082	0.499	0.106	0.331	0.576	0.220	0.499
r9	-0.131	0.054	0.012	-0.020	-0.104	0.011	0.031	0.031	1.000	0.266	0.238	0.300	-0.146	0.133	0.063	-0.078	0.007	0.054	-0.016	0.063
r10	0.046	0.158	0.223	0.134	0.054	-0.033	0.045	0.045	0.266	1.000	0.637	0.477	-0.212	0.085	0.090	0.024	0.080	0.078	0.205	0.006
r11	0.097	0.129	0.144	0.086	0.081	-0.123	0.030	0.030	0.238	0.637	1.000	0.728	-0.183	0.127	0.061	0.157	0.092	0.053	0.138	-0.027
r12	0.009	0.083	0.111	0.045	0.059	-0.089	0.024	0.024	0.300	0.477	0.728	1.000	-0.234	0.150	0.049	0.136	0.074	0.042	0.111	0.001
r13	0.055	-0.211	-0.242	-0.228	-0.045	0.009	0.032	0.032	-0.146	-0.212	-0.183	-0.234	1.000	-0.237	-0.023	-0.105	-0.021	0.005	-0.192	-0.023
r14	0.090	0.171	0.170	0.259	-0.081	0.112	0.082	0.082	0.133	0.085	0.127	0.150	-0.237	1.000	0.112	0.252	0.247	0.142	0.160	0.060
r15	0.061	0.030	0.080	0.120	0.056	0.018	0.499	0.499	0.063	0.090	0.061	0.049	-0.023	0.112	1.000	0.213	0.495	0.575	0.327	0.496
r16	0.229	0.105	0.347	0.242	0.062	0.086	0.106	0.106	-0.078	0.024	0.157	0.136	-0.105	0.252	0.213	1.000	0.321	0.184	0.232	0.090
r17	0.040	0.034	0.104	0.118	0.017	0.028	0.331	0.331	0.007	0.080	0.092	0.074	-0.021	0.247	0.495	0.321	1.000	0.574	0.129	0.327
r18	0.023	0.115	0.212	0.027	0.071	0.016	0.576	0.576	0.054	0.078	0.053	0.042	0.005	0.142	0.575	0.184	0.574	1.000	0.250	0.575
r19	0.185	0.377	0.362	0.176	0.271	0.042	0.220	0.220	-0.016	0.205	0.138	0.111	-0.192	0.160	0.327	0.232	0.129	0.250	1.000	0.212
r20	0.061	0.030	0.080	0.067	0.056	0.018	0.499	0.499	0.063	0.006	-0.027	0.001	-0.023	0.060	0.496	0.090	0.327	0.575	0.212	1.000

Source: Own compilation

Table 4.8: Average inter-item means and correlations: Content elements (United Kingdom)

Summary item statistics							
	Mean	**Minimum**	**Maximum**	**Range**	**Maximum / Minimum**	**Variance**	**Number of items**
Item Means	0.484	0.137	0.991	0.854	7.238	0.079	15

Inter-item correlation matrix															
	r21	**r22**	**r23**	**r24**	**r25**	**r26**	**r27**	**r28**	**r29**	**r30**	**r31**	**r32**	**r33**	**r34**	**r35**
r21	1.000	0.271	0.338	0.049	0.133	-0.005	0.313	0.071	0.053	0.190	0.150	0.469	0.816	0.311	0.706
r22	0.271	1.000	0.407	0.097	0.015	-0.154	0.340	0.077	0.037	0.079	0.209	0.310	0.217	0.415	0.183
r23	0.338	0.407	1.000	0.083	0.005	-0.088	0.537	0.128	0.114	0.111	0.021	0.143	0.272	0.191	0.232
r24	0.049	0.097	0.083	1.000	0.277	-0.009	0.078	0.105	0.061	-0.016	-0.004	-0.094	0.011	0.159	0.070
r25	0.133	0.015	0.005	0.277	1.000	0.022	0.009	-0.002	-0.012	-0.005	0.113	0.019	0.098	0.171	0.075
r26	-0.005	-0.154	-0.088	-0.009	0.022	1.000	-0.065	0.017	-0.049	-0.072	-0.081	-0.110	-0.031	-0.017	-0.007
r27	0.313	0.340	0.537	0.078	0.009	-0.065	1.000	0.258	0.209	0.238	0.018	0.139	0.253	0.289	0.217
r28	0.071	0.077	0.128	0.105	-0.002	0.017	0.258	1.000	0.811	0.090	0.095	-0.002	0.049	0.256	0.035
r29	0.053	0.037	0.114	0.061	-0.012	-0.049	0.209	0.811	1.000	0.214	0.248	0.018	0.097	0.195	0.018
r30	0.190	0.079	0.111	-0.016	-0.005	-0.072	0.238	0.090	0.214	1.000	0.180	0.264	0.314	0.035	0.128
r31	0.150	0.209	0.021	-0.004	0.113	-0.081	0.018	0.095	0.248	0.180	1.000	0.321	0.184	0.232	0.090
r32	0.469	0.310	0.143	-0.094	0.019	-0.110	0.139	-0.002	0.018	0.264	0.321	1.000	0.574	0.129	0.327
r33	0.816	0.217	0.272	0.011	0.098	-0.031	0.253	0.049	0.097	0.314	0.184	0.574	1.000	0.250	0.575
r34	0.311	0.415	0.191	0.159	0.171	-0.017	0.289	0.256	0.195	0.035	0.232	0.129	0.250	1.000	0.212
r35	0.706	0.183	0.232	0.070	0.075	-0.007	0.217	0.035	0.018	0.128	0.090	0.327	0.575	0.212	1.000

Source: Own compilation

4.5.4 Summary

The final integrated reporting scoring index (IRSCORE) had 35 questions (20 guiding principles questions and 15 content element questions) as shown in Table 4.4. If an answer to a question was “yes”, a score of 1 was awarded, otherwise 0 was awarded for that specific question. With regard to the unequal number of items between guiding principles and content elements, a study by Mio, Marchini and Medioli (2020:2217) found that most firms disclose more future-oriented information on certain aspects of the integrated reports, for example, on risks and opportunities, strategy and resource allocation sections, and disclose less future-oriented information on the business model section. It is therefore expected that the integrated reporting score will not evaluate all aspects of the International <IR> Framework equally. This is also highlighted by Zhou et al. (2017:107), who note the variations in the integrated reports prepared by JSE-listed firms.

However, it was still imperative to control for the unequal weighting between guiding principles and content elements to ensure that the results of the analyses were not skewed towards either the guiding principles or content elements. Therefore, to ensure equal weighting for all items used in the index, the following measures were taken:

- Each guiding principle and content element was weighted equally, out of 1. This ensured that the sub-items within the guiding principles and content elements were weighted equally, regardless of the number of questions that assessed each guiding principle or content element. The overall score for the guiding principles was 7 and the overall score for the content elements was 8.
- Thereafter, the subtotal for guiding principles (7) and subtotal for content elements (8) were expressed in percentages so they were each out of a 100%.

In summary, each integrated report’s level of disclosure was evaluated against the 35 components, with subcomponents weighted equally so each guiding principle weighed a total of 1 and each content element weighed a total of 1. In total, the seven guiding principles had a score of 7 and eight content elements had a total of 8. The final IRSCORE consisted of 50% for the guiding principles score and 50% for the content elements score.

4.6 EMPERICAL MODEL: VALUE RELEVANCE OF INTEGRATED REPORTING

This section provides a discussion of the empirical model adopted in the current study to examine the value relevance of integrated reporting (the association between integrated reporting and firm value in South Africa and the United Kingdom). Two valuation models were used in this study to perform the regression analyses, namely a modified Ohlson's model, where the market value of equity was a proxy for firm value, and Tobin's Q model, with Tobin's Q as the second proxy for firm value.

4.6.1 Market value of equity as a measure of firm value

Value relevance studies test the association of accounting, environmental, social and other areas with financial performance or firm value, as already discussed in Section 3.2.1. In this regard, Barth et al. (2001:95) describe two methods that can be used to measure the value of a firm: the levels approach and the changes approach. The research question determines the most appropriate method to be chosen. If the research question tests the value of a firm at a point in time, then a levels approach is beneficial. A levels approach was thus used in the current study, since it aligned with the objective of the study, which was to examine the association between integrated reporting and firm value at a point in time, as discussed in Section 4.4.

A seminal study by Ball and Brown (1968:159) investigated the association between accounting performance measures and firm values. An important aspect is that association studies do not establish any causal connections between information and firm value, as market participants have access to other timely information which may also be associated with firm value (Kothari 2001:116).

The first valuation model adopted in this study was Ohlson's (1995) model, which is a widely accepted valuation model in which the market value of equity is a function of the book value of equity and earnings (accounting information) and other non-accounting information (Lo & Lys 2000:337). Similar to studies which investigated the value relevance of integrated reporting and other non-accounting information (for example, Jablowski 2021:173; Permatasari & Narsa 2021:671; Tlili et al. 2019:649; De Klerk & De Villiers 2012:28), the current study used a modified Ohlson's model to test the association between integrated reporting and the market value of equity ($H_{1(a)}$

and $H_{1(b)}$). The accounting variables were scaled with the number of shares to mitigate for scaling effects, as recommended by Easton (1999:400).

In addition, this study also included several control variables in Ohlson's (1995) valuation model. Following Permatasari and Narsa (2021:675); Cooray et al. (2020:9), Marrone and Oliva (2020:103), Wang et al. (2020:643), Lee and Yeo (2016:1232), Zhou et al. (2017:130), and Baboukardos and Rimmel (2016:443), the current study controlled for

- firm size, which was calculated as the natural logarithm of total assets;
- profitability, which was calculated as return on equity;
- leverage, which was calculated as debt ratio;
- industry sensitivity, which was an indicator variable equal to 1 if the firm belonged to sensitive industries or 0 otherwise; and
- loss, which was an indicator variable equal to 1 if a firm made a loss for the year, or 0 otherwise.

The literature shows that large firms are subject to more public pressure and political scrutiny than smaller firms are (Christensen, Kent & Stewart 2010:377). As a result, large firms often respond to the pressure by making increased disclosures (Oktorina et al. 2021:56). Consistent with agency theory, increased disclosures result in lower information asymmetry (Gibassier et al. 2019:23; Pavlopoulos et al. 2019:20; Dhaliwal, Tsang & Yang 2011:68). In addition, Oktorina et al. (2021:56) argue that large firms have more resources to devote to implementing integrated reporting which aligns with the International <IR> Framework. Following similar studies in the literature, the current study expressed firm size as a natural logarithm of total assets, *LNASSETS* (Cooray et al. 2020:13; Zhou et al. 2017:130; Lee & Yeo 2016:1232).

This study also controlled for profitability. The literature shows that profitability is a determinant of disclosure, since profitable firms have more resources to engage in new and strategic ways of reporting, which consequently reduces information asymmetry (Dhaliwal et al. 2011:68). Additionally, profitable firms have an incentive to communicate their superior performance through increased disclosures, which sends a positive signal to the capital markets (Dey 2020:200). In line with the literature, this study used return on equity (*ROE*) as a proxy for profitability (Dey 2020:199; Hoang et al. 2020:367; Lee & Yeo 2016:1233). By contrast, loss firms may not have the

required resources to invest towards integrated reporting, and this may result in high agency costs (Dilling & Caykoylu 2019:4). Therefore, in line with Zhou et al. (2017:105), this study controlled for loss firms (*LOSS*), which was expressed as an indicator variable equal to 1 if a firm made loss for the financial year, or 0 otherwise.

This study also controlled for leverage (*LEV*), because debt holders demand increased disclosures as an avenue to monitor the debt (Hoang et al. 2020:367; Lee & Yeo 2016:1226; Dhaliwal et al. 2012:750). Consistent with agency theory, it is therefore expected that increased disclosures will reduce information asymmetry (Dey 2020:198; Dilling & Caykoylu 2019:5).

De Villiers, Venter and Hsiao (2017:950) emphasise the importance of controlling for firms that operate in environmentally sensitive industries in integrated reporting studies. De Villiers, Venter and Hsiao (2017:950) argue that firms from environmentally non-sensitive industries, for example, the financial sector, are less affected by environmental issues than firms in environmentally sensitive industries such as mines would be. In line with voluntary disclosure theory, the literature documents that firms from environmentally sensitive industries are inclined to disclose more information voluntarily in integrated reports to reduce information asymmetry (Dilling & Caykoylu 2019:4; Grassmann et al. 2019:889; Cahan et al. 2016:584). To classify which firms are from sensitive industries, the study followed De Klerk and De Villiers (2012:30) and Cahan et al. (2016:606) to classify as sensitive industries the tobacco, mining, oil, gas, metals, forestry, paper and chemicals industries. These were classified as sensitive (*INDSENS*), because these firm's operations have a visible social and environmental impact (Cahan et al. 2016:584). All other industries were classified as non-sensitive industries, given that they have less environmental impact or are subject to less environmental impact. Firms from sensitive industries were allocated an indicator variable that equalled to 1, and firms from non-sensitive industries were allocated an indicator variable that equalled to 0.

After incorporating the dependent variable, independent variables and the control variables into the regression model, the modified Ohlson's (1995) valuation model to test $H_{1(a)}$ and $H_{1(b)}$ was stated as follows:

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 LNASSETS_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (1a)

Where:

MVE	represented market value of equity at reporting date scaled by the number of shares at the end of the year
BVE	represented book value of equity at reporting date divided by the number of shares at the end of the year
EARN	represented net profit for the year divided by the number of shares at the end of the year
IRSCORE	represented integrated reporting score based on the International <IR> Framework
LNASSETS	represented natural logarithm of book value of total assets
ROE	return on equity, calculated as net profit for the year divided by book value of equity
LEV	leverage, calculated as total debt divided by total book value of equity
INDSENS	indicator variable equal to 1 if firm was from a sensitive industry; 0 if not
LOSS	indicator variable equal to 1 if firm made a loss for the year; 0 if not
YR	indicator variable to control for fixed-year effects
IND	indicator variable to control for fixed-industry effects

Subscripts *i* and *t* denote firm and year, respectively. In line with prior studies (Badenhorst & Brümmer 2015:3; Barth & Clinch 2009:283), the study controlled for the effects of scaling problems by deflating *MVE, BVE* and *EARN* in Equation 1(a) with the number of shares outstanding at the end of the respective year. The number of shares outstanding at the end of each financial year was selected as a scaling measure because Barth and Clinch (2009:281) show that it is a reliable scaling measure. This is because the number of shares outstanding at the end of each year does not change greatly from year to year; therefore, this number is less likely to be affected by variations which cause econometric difficulties. Equation 1 was estimated at a specific point in time (price levels approach). Equations 1(a) was run separately for each sample country.

For $H_{2(a)}$ and $H_{2(b)}$, the researcher wanted to examine whether integrated reports with a high level of integrated reporting in line with the International <IR> Framework are evaluated differently by the capital markets from integrated reports with a low level of

integrated reporting in line with the International <IR> Framework in each country. Marrone and Oliva (2020:99) examined the level of integrated reporting alignment with the International <IR> Framework using a sample of 65 South African firms. Their study found that South African firms provided integrated reports with high levels of alignment with the International <IR> Framework. Furthermore, their study found that firm size, profitability and leverage affected the level of alignment of integrated reports with the International <IR> Framework. It was therefore important to control for such variables in this analysis.

The second hypothesis explored whether integrated reports with a high level of integrated reporting in line with the International <IR> Framework in South Africa and the United Kingdom are evaluated differently by capital markets, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework. To test the second hypothesis for each country, this study followed a three-step process. Firstly, the sample for each country was split into two groups: one group with all integrated reports whose score was equal to or greater than the median *IRSCORE*, and a second group whose integrated reports had a score below the median *IRSCORE*. In line with the literature, a high score was considered to be indicative of reports of better quality than a lower score, as a higher score indicates more conformance by the report with the International <IR> Framework (Oktorina et al. 2021:52; Zhou et al. 2017:120).

Secondly, regression analyses for each sample group were run to test for the associations between the level of integrated reporting in line with the International <IR> Framework and firm value. Lastly, to test whether integrated reports with high levels of integrated reporting in line with the International <IR> Framework (*HighIRSCORE*) are evaluated significantly differently from integrated reports with a low level of integrated reporting in line with the International <IR> Framework (*LowIRSCORE*), the Z-statistic test recommended by Paternoster, Brame, Mazerolle and Piquero (1998:860) was performed. The purpose of conducting the Z-statistic test was to test the significance of the difference between the two regression coefficients of interest (Paternoster et al. 1998:865).

The following equations were formulated:

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 HighIRSCORE_{it} + \beta_4 LNASSETS_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (2a)(i)

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 LowIRSCORE_{it} + \beta_4 LNASSETS_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (2a)(ii)

Where:

HighIRSCORE	*HighIRSCORE* denoted all the IRSCORE values above the median
LowIRSCORE	*LowIRSCORE* denoted all the IRSCORE values below the median

Other variables are as previously described.

Once the regressions for each sample group had been run, the Z-statistic test was performed to test whether the coefficient of *HighIRSCORE* was significantly different from the coefficient of *LowIRSCORE*.

For H_3, the purpose of the test was to examine whether the association between integrated reporting and firm value in South Africa was statistically different from the association between integrated reporting and firm value in the United Kingdom. In line with Badenhorst et al. (2016:5) and Gu (2007:1073), this study did not use regression R-squared (R^2) to examine cross-country differences in the models. This decision was taken because Gu (2007:1073) points out that using regression R^2 to explain across-sample differences can lead to incorrect inferences (Gu 2007:1074). R^2 shows the explanatory power of a model, but only applies to that specific sample, making it hard to use it to explain a sampling difference or changes in value relevance (Wu, Hsieh, Yu & Chu 2016:491; Brown, Lo & Lys 1999:83).

Firstly, the Z-statistic test was performed to assess to whether the coefficient of *IRSCORE* in South Africa was significantly different from the coefficient of *IRSCORE* in the United Kingdom in Equation 1(a). If the coefficient of *IRSCORE* for the South African sample was statistically different from the coefficient of *IRSCORE* for the United Kingdom sample, that would suggest that the association between integrated reporting and firm value in South Africa was statistically different from the association

between integrated reporting and firm value in the United Kingdom. Additionally, an indicator variable was introduced in a pooled sample: *SA*, which equalled 1 if the country was South Africa, and 0 if not. Subsequently, an interaction variable between *SA* and *IRSCORE* to represent integrated reporting in South Africa was introduced into the model, leading to the following equation:

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 SA_{it} + \beta_5 SA*IRSCORE_{it} + \beta_6 LNASSETS_{it} + \beta_7 ROE_{it} + \beta_8 LEV_{it} + \beta_9 INDSENS_{it} + \beta_{10} LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (3a)

Where:

SA	Indicator variable equal to 1 if country is SA, 0 otherwise
*SA*IRSCORE*	Interaction variable between SA and IRSCORE

All other variables were as previously described. The main variable of interest was *SA*IRSCORE*. If the coefficient of *SA*IRSCORE* was positive and significant, it would suggest that integrated reporting in South Africa was evaluated as statistically different by the capital markets compared to the overall sample.

4.6.2 Tobin's Q as a measure of firm value

The second valuation model adopted in this study was Tobin's Q model. Tobin's Q is a measure that was first introduced by Tobin in 1969 as a predictor for the future performance of a firm (Tobin 1969:15). Since then, it has become a very popular measure of financial performance amongst accounting scholars (Kyere & Ausloos 2020:1878; Wahl et al. 2020:7; Caglio et al. 2019:66; Barth et al. 2017; Lee & Yeo 2016:1231; De Villiers & Van Staden 2011:515; El-Faitouri 2014:82). Tobin's Q measures the excess of the market value of assets over their book values, and it also incorporates the cost of capital used to discount future cash flows (Barth et al. 2017:52; Lang, Lins & Maffet 2012:765). Tobin's Q is calculated as the market value of equity plus book value of equity plus debt, all divided by total assets (Wahl et al. 2020:7; Caglio et al. 2019:66; Barth et al. 2017:52; Chen & Li 2013:1951; Lang et al. 2012:764; Daske, Hail, Leuz & Verdi 2008:1099).

Tobin's Q is an excellent measure in this integrated reporting setting, because it captures the different capitals of integrated reporting, such as intellectual, human, environmental and social, as well as relationship capital. This makes it an ideal measure in this setting, because it compares the market value of an asset to its replacement value (Wahl et al. 2020:7; Barth et al. 2017:52). An added advantage, according to Crous et al. (2021:14), is that Tobin's Q combines internal performance measures (accounting measures) and external performance measures (market prices). For this reason, Tobin's Q was selected as a second measure for firm value in the current study.

For $H_{1(a)}$ and $H_{1(b)}$, *TOBINQ* was regressed on

- *IRSCORE*;
- the natural logarithm of the book value of assets (a proxy for firm size);
- total debt divided by book value of equity (a proxy for leverage);
- return on assets (a proxy for performance); and
- control variables.

This model also included control variables to improve the goodness of the regression analyses. The control variables were similar to those used by other studies implementing Tobin's Q as a measure of firm performance (see Wahl et al. 2020:8; Barth et al. 2017:52; Lee & Yeo 2016:1232; El-Faitouri 2014:88; Chen & Li 2013:1953; Lang et al. 2012:762). These variables were firm size (*LNASSETS*), sales growth (*SALESG*), the debt ratio (*LEV*), dividend payment or declaration (*DIV*) and loss (*LOSS*).

Sales growth (*SALESG*) was included in the model as a control variable because Obeng, Ahmed and Miglani (2020:10) argue that managers of firms may make poor decisions which result in less revenue, and thus in higher agency costs. Lee and Yeo (2016:1232) and El-Faitouri (2014:88) hold the same position, and therefore controlled for sales growth in their studies' regression analyses.

Chen and Li (2013:1953) assert that the presence of future growth opportunities is associated with high information asymmetry, and thus higher agency costs. This is because firms with high expansion costs often have fewer resources to devote to integrated reporting (Dhaliwal et al. 2011:68). Therefore, in line with Hoang et al. (2020:367), Cahan et al. (2016:590), El-Faitouri (2014:88) and Chen and Li

(2013:1953), the current study controlled for this growth, and used capital expenditure as a variable, expressed as a ratio of the total capital expenditures to total book value of assets, as a proxy for capital expansion (*CAPEXR*).

This study also controlled for dividend pay-out or declaration (*DIV*) in the Tobin's Q model, since Michaels and Grüning (2017:262) assert that a dividend pay-out or declaration signals a firm's growth opportunities, thereby reducing agency costs.

The next equation was therefore stated as follows:

$$TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation **(1b)**

Where:

TOBINQ	TOBINQ was calculated as the total assets minus book value of equity plus market value of equity, all divided by total assets
LNASSETS	represented the natural logarithm of the book value of total assets
LEV	represented leverage, total debt divided by total book value of equity
IRSCORE	Integrated reporting score as discussed in section 4.2
CAPEXR	represented total capital expenditures (cash flows from investments) divided by total book value of assets
ROA	represented net profit for the year divided by total book value of assets
DIV	indicator variable equal to 1 if firm declared or paid dividend in the current year; 0 if not
SALESG	represented sales of the current year minus sales of previous year, divided by sales of previous year
INDSENS	indicator variable equal 1 if firm was from a sensitive industry; 0 if not
LOSS	indicator variable equal to 1 if firm made a loss for the year; 0 if not
YR	indicator variable for fixed-year effects
IND	indicator variable for fixed-industry effects

For the second hypothesis, the researcher was interested in testing whether integrated reports with a higher level of integrated reporting in line with the International <IR> Framework were evaluated significantly differently from integrated reports with a lower level of integrated reporting in line with the International <IR> Framework in South Africa ($H_{2(a)}$) and in the United Kingdom ($H_{2(b)}$). The following equations were used:

$$TOBINQ_{it} = \beta_0 + \beta_1 HighIRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (2b)(i)

$$TOBINQ_{it} = \beta_0 + \beta_1 LowIRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (2b)(ii)

The variables were as previously described.

Once the regressions for each group had been run, the Z-statistic test was performed to test whether the coefficient of *HighIRSCORE* was significantly different from the coefficient of *LowIRSCORE*.

For the third hypothesis, as previously discussed, the aim was to test whether the association between integrated reporting and firm value in South Africa was statistically different from the association between integrated reporting and firm value in the United Kingdom. The process followed for the Tobin's Q valuation model was similar to the process followed for Ohlson's (1995) valuation model as discussed in Section 4.6.1.

Firstly, the Z-statistic test was performed to assess to whether the coefficient of *IRSCORE* in South Africa was significantly different from the coefficient of *IRSCORE* in the United Kingdom in Equation 1(b). If the coefficient of *IRSCORE* for the South African sample was statistically different from the coefficient of *IRSCORE* for the United Kingdom sample, that would suggest that the association between integrated reporting and firm value in South Africa was statistically different from the association between integrated reporting and firm value in the United Kingdom. Additionally, an indicator variable was introduced in a pooled sample: *SA*, which equalled 1 if the country was South Africa, and 0 if not. Subsequently, an interaction variable between *SA* and *IRSCORE* to represent integrated reporting in South Africa was introduced into the model, leading to the following equation, where all other variables were as previously described:

$$TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 SA_{it} + \beta_3 SA*IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 CAPEXR_{it} + \beta_7 LNASSETS_{it} + \beta_8 SALESG_{it} + \beta_9 DIV_{it} + \beta_{10} INDSENS_{it} + \beta_{11} LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (3b)

The main variable of interest was *SA*IRSCORE*. If the coefficient of *SA*IRSCORE* was positive and significant, it would suggest that integrated reporting in South Africa was evaluated statistically differently by the capital markets, compared to the overall sample.

4.7 ADDITIONAL TESTS

Several additional tests were performed in this study to evaluate the robustness of the results for both measures of firm value (Ohlson's model and Tobin's Q). These tests are discussed below.

4.7.1 Individual components of integrated reporting and firm value

One of the secondary objectives of this study was to examine the association between firm value and individual components of *IRSCORE.* The purpose of this section was to examine whether integrated reporting in line with the guiding principles or content elements of integrated reporting affect firm value when they are considered separately. To achieve this, Equations 1(a) and 1(b) were re-estimated, and the researcher split the *IRSCORE* into guiding principles and content elements; hence, the following equations were used:

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 GP_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (4)

$$MVEit = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 CE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (5)

$$TOBINQ_{it} = \beta_0 + \beta_1 GP_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (6)

$$TOBINQ_{it} = \beta_0 + \beta_1 CE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (7)

Where:

GP	represented the total IRSCORE for guiding principles
CE	represented the total IRSCORE for content elements

All the other variables were as previously described. The main variables of interest in the above equations were *GP* and *CE.*

4.7.2 Integrated reporting period prior to and since *King IV* (South African sample)

The sample used in this study was collected from 2011 to 2018. In 2011, at the commencement of the sample period, *King III* was applicable to JSE-listed firms. It required firms to issue integrated reports on an 'apply or explain' basis. However, in November 2016, the IoDSA and the King Committee issued *King IV*, which changed the requirement of integrated reporting for JSE-listed firms to an 'apply and explain' basis; therefore making the application of integrated reporting mandatory. A major change in policy, for example, a decision to adopt IFRS, or, in this instance, a change from *King III* to *King IV* requires appropriate tests to determine the impact of the change (Conway 2019:628). The association between integrated reporting and firm value was therefore tested in order to determine whether the association was different during the two periods, in other words, before *King IV* (2011 to 2016) and since the introduction of *King IV* (2017 to 2018).

In order to test whether there was any difference between the value relevance of integrated reporting in these two periods in South Africa, the South African sample was split into two groups: a pre-*King IV* period (all the years from 2011 to 2016) and a

"since King IV" period (2017 to 2018). Therefore, the following equations were estimated:

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 PreKingIvIRSCORE_{it} + \beta_4 LNASSETS_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (8a)

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 PostKingIvIRSCORE_{it} + \beta_4 LNASSETS_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (8b)

$$TOBINQ_{it} = \beta_0 + \beta_1 PreKingIvIRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (9a)

$$TOBINQ_{it} = \beta_0 + \beta_1 PostKingIvIRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (9b)

Where:

PreKingIvIRSCORE	IRSCORE for all the years 2011 - 2016
PostKingIvIRSCORE	IRSCORE for all the years 2017 - 2018

All other variables were as previously described.

4.7.3 Environmentally sensitive industries

The literature shows that firms from sensitive industries are subject to additional voluntary disclosures in terms of strict regulatory requirements (Fuhrmann 2019:177). Moreover, Dilling and Caykoylu (2019:4) argue that firms from sensitive industries provide more information, especially on non-financial items. Therefore, in line with a study by Fasan and Mio (2017:296), this study split the sample into two groups based on industry classification. One group consisted of all firms from sensitive industries,

(tobacco, mining, oil, gas, metals, forestry, paper and chemicals). The second group consisted of all non-sensitive industries (financials, consumer goods, consumer services, health care and telecommunications). The researcher evaluated the results for both groups using the following equations:

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (10a)

$$TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (10b)

Where the variables were as previously described.

4.7.4 Loss-making firms

Vitolla, Raimo et al. (2020:432) argue that profitable firms are able and willing to devote resources to comprehensive disclosures to demonstrate their ability to maximise shareholder value. Similarly, Frías-Aceituno et al. (2013:52) assert that profitable firms have more resources to invest in integrated reporting than less profitable firms. These arguments stem from signalling theory, which claims that profitable firms will provide more disclosures to distinguish themselves from less profitable firms (Dilling & Caykoylu 2019:4). Equation 1(a) and 1(b) were therefore repeated to exclude loss-making firms to determine the robustness of the results. The equations are the following:

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (11a)

$$TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$$

Equation (11b*)*

Where the variables were as previously described.

4.8 CONCLUSION

This chapter has described the research philosophy, research methodology and research design adopted in this study. The initial sample selection process was described, followed by an explanation of how the integrated reporting score was constructed. This chapter provided a discussion of the regression models which were used to test the hypotheses, as well as the control variables included in the regressions. This chapter also provided a description of all the proxies used in the valuation models, as well as the regression equations.

The remainder of the thesis is structured as follows: Chapter 5 presents the descriptive statistics and the regression results for the main objectives of the study. Chapter 6 presents the results for the additional tests. Chapter 7 concludes the thesis.

CHAPTER 5
RESULTS – VALUE RELEVANCE OF INTEGRATED REPORTING

5.1 INTRODUCTION

This chapter presents results for the value relevance of integrated reporting, looking at the association between integrated reporting and firm value, when firm value is proxied by the market value of equity and Tobin's Q. The first hypothesis of the current study, $H_{1(a)}$ and $H_{1(b)}$, predicted a positive association between integrated reporting and firm value in South Africa and the United Kingdom. The second hypothesis, $H_{2(a)}$ and $H_{2(b)}$, predicted that integrated reports with a high level of integrated reporting in line with the International <IR> Framework are evaluated differently by capital markets from integrated reports with a low level of integrated reporting in line with the International <IR> Framework. The third hypothesis, H_3, was stated in its null form to make no prediction about whether the value relevance of integrated reporting in South Africa is statistically different to the value relevance of integrated reporting in the United Kingdom.

This chapter begins with a discussion of the final sample selection process for the Top 100 JSE-listed firms, as well as the Top 100 LSE-listed firms (Section 5.2). Section 5.3 presents the results on the association between integrated reporting and the market value of equity for each country. Section 5.4 reports on the results of the association between integrated reporting and Tobin's Q for each country. Section 5.5 considers the results on the association between the level of integrated reporting in line with the International <IR> Framework and firm value. The results of the comparison between the value relevance of integrated reporting in South Africa and the United Kingdom are presented in Section 5.6. Following on from a summary of the results Section 5.7, Section 5.8 provides the discussion and interpretation of the results, before Section 5.9 concludes the chapter.

5.2 FINAL SAMPLE

For South African firms, there was a potential sample of 800 observations, as shown in Table 4.1 in the previous chapter. For firms in the United Kingdom, there was also

a potential sample of 800 observations (see Table 4.2). The list and market data for the Top 100 JSE-listed firms was obtained from the JSE, and that for the Top 100 LSE-listed firms and related market data were obtained from Refinitiv.

However, in each sample, some observations were lost for the following reasons:

- data were missing for the financial variables;
- some firms in both samples had a shorter listing period (less than the full eight-year sample period); and
- some firms in both samples did not have integrated reports available on their websites.

Table 5.1: Sample firm-years reconciliation

Sample	**South Africa N Observations**	**United Kingdom N Observations**	**Pooled sample N Observations**
List of firm-years obtained	800	800	1 600
Eliminated:	*279*	*275*	*554*
Missing variables in financial statements	(225)	(252)	(477)
Integrated reports not available	(38)	(12)	(50)
Other	(16)	(11)	(27)
Total sample firm-years/observations	**521**	**525**	**1 046**

Table 5.1 shows a reconciliation of the potential sample firm-years and final sample firm-years. The final sample of firms in South Africa consisted of 521 firm-year observations; the final sample of firms in the United Kingdom consisted of 525 firm-year observations. The total pooled sample consists of 1 046 firm-year observations.

The omission of some firms from the sample also changed the breakdown of the final sample composition per industry. The final breakdown is given in Table 5.2. For the South African sample, Financials, Consumer Services and Basic Materials constituted a large percentage of the sample. For the United Kingdom sample, it was evident that firms Consumer Services and Financials also dominated, but Industrials came up strongly as well, whereas Basic Materials was less prominent.

Table 5.2: Final sample composition for listed firms per industry in South Africa and the United Kingdom

Industry	South Africa JSE-listed	United Kingdom LSE-listed	Pooled sample
Basic Materials	87	57	145
Consumer Goods	61	65	126
Consumer Services	93	115	208
Financials	174	91	267
Health Care	23	21	44
Industrials	49	112	161
Technology	19	6	27
Telecommunications	15	16	31
Oil and Gas	0	16	16
Utilities	0	39	39
Sample firm-years (N)	**521**	**525**	**1 046**

The list for the Top 100 JSE-listed firms was obtained from the JSE, and the financial data were collected from IRESS Research Domain. The list for the Top 100 LSE-listed firms was obtained from Refinitiv, and financial data were collected from the available reports from each firm. Integrated reports were obtained from the website of each firm.

5.3 RESULTS: ASSOCIATION BETWEEN INTEGRATED REPORTING AND THE MARKET VALUE OF EQUITY (HYPOTHESIS 1)

This section presents the results for H_1, which predicted a positive association between integrated reporting and firm value, proxied by the market value of equity in South Africa ($H_{1(a)}$) and in the United Kingdom ($H_{1(b)}$).

5.3.1 Results: South Africa – Hypothesis 1(a)

This section presents the descriptive statistics and correlation coefficients results for $H_{1(a)}$, the South African sample.

5.3.1.1 Descriptive statistics and correlation coefficients: South Africa

The descriptive statistics results for the sample of South African firms are shown in Table 5.3. The accounting variables, the market value of equity (*MVE*), book value of equity (*BVE*) and net profit (*EARN*), were unscaled by the number of the shares. Table 5.3 shows that the firms included in the sample were large, since they were the Top

100 listed firms on the JSE in terms of their market capitalisation. The mean *MVE* was R107 355 million during the sample period, with a median of R35 612 million (the minimum *MVE* was R6 924 million, and the maximum value was R2 466 698 million). The *BVE* had a mean of R54 845 million, with a median of R16 371 million (the minimum value was -R1 020 million and the maximum value was R1 118 475 million). The mean *EARN* was R7 822 million, with a median of R2 131 million (the minimum was -R90 433 million and the maximum value was R638 942 million).

Integrated reporting was measured as *IRSCORE*. The mean for this variable was 0.803 and the median was 0.830 (the minimum value was 0.358 and the maximum value was 0.982). The mean for *IRSCORE* was quite high, which was consistent with the mandatory adoption of integrated reporting in South Africa. The mean for return on equity (*ROE*) was 0.194, and the median was 0.152 (the minimum value was -0.065 and the maximum value was 0.489). The mean for leverage (*LEV*) was 2.653 and the median was 1.123 (the minimum value was 0.199 and the maximum value was 12.031). The mean for the natural log of total assets (*LNASSETS*), which measured size, was 7.692 and the median was 7.599 (the minimum value was 5.880 and the maximum value was 9.550). The mean for the indicator variable for industry sensitivity *(INDSENS*) was 0.250, and the median was 0 (the minimum value was 0 and the maximum value was 1). The mean for the indicator variable for loss-making firms (*LOSS*) was 0.080, and the median was 0 (the minimum value was 0 and the maximum value was 1).

Table 5.3: Descriptive statistics: market value of equity (South Africa)

Equation 1(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 ROE_{it} + \beta_5 LEV_{it} + \beta_6 LNASSETS_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$								
	N	**Minimum**	**Maximum**	**Mean**	**Standard deviation (SD)**	**Median**	**Skewness**	**Kurtosis**
MVE (unscaled)	521	6 924	2 466 698	107 355	263 995	35 612	1.281	1.068
BVE (unscaled)	521	-1 020	1 118 475	54 845	140 328	16 371	1.747	2.648
EARN (unscaled)	521	-90 433	638 942	7 822	34 945	2 131	1.385	1.414
IRSCORE	521	0.358	0.982	0.803	0.126	0.830	-1.084	0.945
ROE	521	-0.065	0.489	0.194	0.134	0.152	0.653	0.279
LEV	521	0.199	12.031	2.653	3.542	1.123	1.791	1.706
LNASSETS	521	5.880	9.550	7.692	0.676	7.599	0.635	0.070
INDSENS	521	0	1	0.250	0.435	0	1.140	0.702
LOSS	521	0	1	0.080	0.274	0	-0.690	-0.286
Note: The descriptive statistics of the variables *MVE, BVE* and *EARN* are denoted in ZAR million. The definitions of all variables are available in Appendix 1: Variable definitions.								

The descriptive statistics for this dataset showed that the data were skewed when unscaled, as supported by the skewness and kurtosis test. To correct for the skewness of the data and scale effects, the accounting variables *MVE, BVE* and *EARN* were then scaled by the number of shares when the regressions were run. This approach was consistent with other studies on the value relevance of integrated reporting using Ohlson's (1995) model (for example, Tlili et al. 2020:650; Cortesi & Vena 2019:750; Baboukardos & Rimmel 2016:6). Additionally, the variables *MVE, BVE, EARN, ROE, LEV* were winsorised at the 5% and 95% level to control for outliers in the sample, in line with similar studies, such as that by Jablowski (2021:178).

Table 5.4 shows the Pearson correlation coefficients between variables included in Equation 1(a) for $H_{1(a)}$. Asuero, Sayago and Gonzalez (2006:47) report that correlations between 0.90 and 1.00 are very high, ones between 0.70 and 0.89 are high, ones between 0.50 and 0.69 are moderate, and ones below 0.49 are low. The Pearson correlations set out in Table 5.4 show a positive and significant correlation between the market value of equity (*MVE*) and accounting variables, the book value of equity *(BVE*) and earnings *(EARN)*. A negative correlation existed between *MVE* and *IRSCORE* (-0.026), but not at a significant level. None of the variables had high correlations that suggested any multicollinearity problems, as none of the variables had correlations above 0.90.

Thompson, Kim, Aloe and Becker (2017:82) recommend that researchers use more than one method to test for multicollinearity between variables; they also suggest the use of the variance inflation factor (VIF) as an alternative or additional test for multicollinearity. In line with this recommendation, the VIFs between the dependent variable and independent variables were calculated in this study to test for potential multicollinearity problems. As reported in Table 5.5, all values were significantly less than 10, which is the acceptable threshold in the literature, thus indicating the absence of multicollinearity (Thompson et al. 2017:82; O'Brien 2007:673).

Table 5.4: Correlation coefficients: market value of equity and integrated reporting (South Africa)

Equation 1(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 ROE_{it} + \beta_5 LEV_{it} + \beta_6 LNASSETS_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable	*MVE*	*BVE*	*EARN*	*IRSCORE*	*ROE*	*LEV*	*LNASSETS*	*INDSENS*	*LOSS*
MVE	1								
BVE	0.590**	1							
EARN	0.708**	0.719**	1						
IRSCORE	-0.026	-0.153**	-0.079	1					
ROE	0.107*	-0.296**	0.189**	0.099*	1				
LEV	-0.025	0.042	0.128**	0.177**	0.109*	1			
LNASSETS	0.329**	0.579**	0.455**	0.028	-0.217**	0.542**	1		
INDSENS	0.090*	0.158**	0.054	0.050	-0.254**	-0.216**	0.022	1	
LOSS	-0.121**	0.015	-0.345**	-0.025	-0.474**	-0.054	0.037	0.210**	1

Pearson correlation coefficients of variables; the definitions of all variables are available in Appendix 1: Variable definitions.

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

Table 5.5: Variance inflation factors (Equation 1a: South Africa)

Variable	Variance inflation factor
BVE	1.428
EARN	1.224
IRSCORE	1.027
ROE	1.185
LEV	1.399
LNASSETS	1.625
INDSENS	1.121
LOSS	1.159
VIFs of independent variable (*MVE*) and independent variables according to Equation 1(a).	

5.3.1.2 Regression analysis results: South Africa

The panel estimated generalised least squares (EGLS) regression results for $H_{1(a)}$ and Equation 1(a) are shown in Table 5.6. $H_{1(a)}$ states that integrated reporting is positively associated with the market value of equity in South Africa.

The coefficients of the accounting variables *BVE* and *EARN* were positive and significant at the 1% level, suggesting that accounting information under an integrated reporting approach is significant (the coefficients were 0.4378 and 4.3570 respectively; the p-values were 0.0023 and 0.0000 respectively). None of the control variables had a positive and significant association with the market value of equity, except for *LOSS*, whose coefficient was positive and significant at the 5% level (the coefficient was 23.9281; the p-value was 0.0109). The coefficients of *ROE, INDSENS* and *LNASSETS* were all positive, but not significant. The coefficient of *LEV* was negative, but not significant.

The coefficient of the main variable of interest, *IRSCORE*, was negative, but not significant, suggesting that integrated reporting was not relevant to investors in estimating the market value of equity (the coefficient of *IRSCORE* was -7.3228 and the p-value was 0.7644). Based on these results, $H_{1(a)}$ was not supported when firm value was proxied by the market value of equity. The F-statistic of the model, which is an indicator of the goodness-of-fit of the model, was highly significant at the 1% level.

In order to test for serial correlations between errors in the regression models, the Durbin-Watson test was calculated for all regression models in this study in line with prior studies (Seltman 2018:220). Some prior studies suggest that Durbin-Watson values between 1.5 and 2.5 indicate the absence of serial correlation in the models (Buallay, Hawaj & Hamdan 2020:1625; Marcia et al. 2015:507). However, Field (2013:311) asserts that, as a conservative rule of thumb, only Durbin-Watson statistic values below 1 and greater than 3 are a serious cause for concern – based on Field (2013:311), values within the range of 1 to 3 were thus regarded as acceptable in this study.

Table 5.6: Panel EGLS regression results: market value of equity and integrated reporting – South Africa ($H_{1(a)}$)

Equation 1(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 ROE_{it} + \beta_5 LEV_{it} + \beta_6 LNASSETS_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
BVE		0.4378***	0.1427	3.0663	0.0023
EARN		4.3570***	0.9709	4.4873	0.0000
IRSCORE		-7.3228	24.4219	-0.2998	0.7644
LEV		-0.1668	1.5369	-0.1085	0.9136
ROE		43.2057	35.2289	1.2264	0.2206
INDSENS		10.0242	19.8604	0.5047	0.6140
LOSS		23.9281**	9.3600	2.5564	0.0109
LNASSETS		7.1185	10.0523	0.7081	0.4792
N	521				
Durbin–Watson statistic	1.4898				
R-squared	0.4588				
Adjusted R-squared	0.4427				
F-statistic	28.5433***				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

Figure 5.1 indicates that the residuals were normally distributed (the thresholds for the regression were 2 for skewness and 7 for kurtosis). The period seemingly unrelated regression (SUR) estimates, which corrected for heteroskedasticity and general correlation of observations within a cross-section were applied, as well as White's (1980:817) diagonal standard errors and covariance, which is a robust standard error estimation method. The purpose of this exercise was to check that the significance values had not been influenced by heteroskedasticity. This exercise was performed for all regression equations performed in the study.

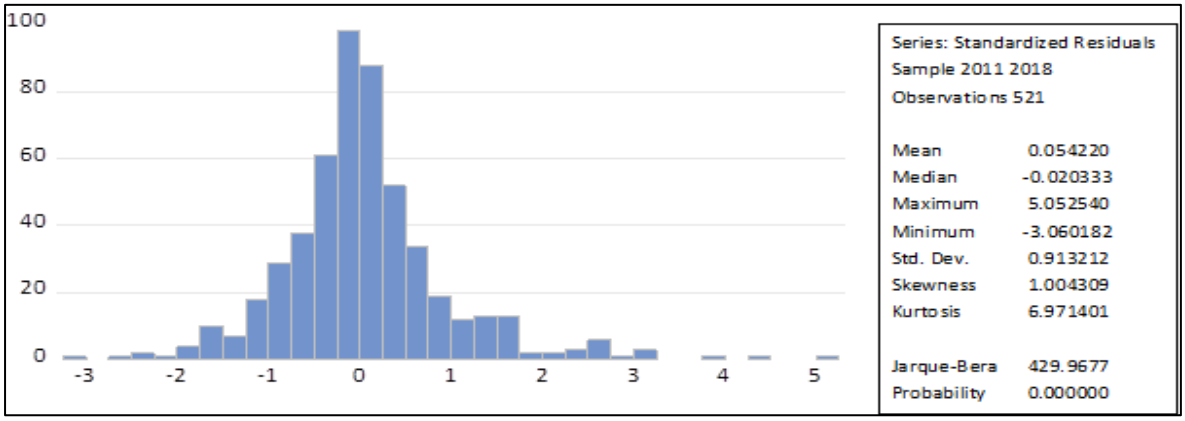

Figure 5.1: Normal distribution of residuals for Equation 1(a): South Africa

Source: Own compilation

5.3.2 Results: United Kingdom – $H_{1(b)}$

This section presents the descriptive statistics and correlation coefficients results for $H_{1(b)}$, in other words, for the United Kingdom sample.

5.3.2.1 Descriptive statistics and correlation coefficients: United Kingdom

The descriptive statistics results for the sample of listed firms in the United Kingdom are shown in Table 5.7. The accounting variables, *MVE, BVE and EARN,* were unscaled by the number of the shares. Table 5.7 shows that firms included in this sample were the largest firms listed on the LSE in terms of market capitalisation. The mean *MVE* was R228 876 million during the sample period, with a median of R118 099 million (the minimum *MVE* was R25 985 million and the maximum was R1 673 516 million). The *BVE* had a mean of R155 931 million, with a median of R53 145 million

(the minimum value was -R19 248 million and the maximum value was R2 909 137 million). The mean for net profit was R17 671 million, with a median of R7 211 million (the minimum was -R131 666 million and maximum was R828 767 million).

Integrated reporting was measured as *IRSCORE*. The mean for this variable was 0.801 and the median was 0.805 (the minimum value was 0.020 and the maximum value was 0.961). The mean for *ROE* was 0.217 and the median was 0.167 (the minimum value was -0.029 and the maximum value was 0.796). The mean for *LEV* was 3.233 and the median was 1.131 (the minimum value was 0.289 and the maximum value was 20.034). The mean for *LNASSETS*, which measured size, was 8.315 and the median was 8.160 (the minimum value was 6.634 and the maximum value was 10.407). The mean for *INDSENS* was 0.190 and the median was 0.00 (the minimum value was 0 and the maximum value was 1). The mean for the indicator variable for loss-making firms (*LOSS*) was 0.050 and the median was 0.00 (the minimum value was 0 and the maximum value was 1).

Compared to the descriptive statistics for the South African sample (see Table 5.3), the descriptive statistics for the United Kingdom sample (see Table 5.7) showed that the average of firms included in the sample in the United Kingdom was larger than the average of firms included in the South African sample. For example, the mean for the *MVE* for the South African sample firms was R106 660 million (the median was R35 653 million), while the mean for the *MVE* for firms in the United Kingdom (see Table 5.7) was R228 876 million (the median was R118 099). The differences were obvious for all the accounting variables shown in the respective tables (see Tables 5.3 and 5.7).

The mean of *IRSCORE* for the South African firms as shown in Table 5.3 was 0.803, slightly higher than the mean of *IRSCORE* for the firms in the United Kingdom, which was 0.801 (see Table 5.7). In addition, the minimum value for the South African *IRSCORE* was higher at 0.358 (see Table 5.3) than the minimum value for the United Kingdom *IRSCORE* at 0.020 (see Table 5.7). These results are in line with the fact that integrated reporting is mandatory for South African JSE-listed firms.

Table 5.7: Descriptive statistics: market value of equity (United Kingdom)

Equation 1(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 ROE_{it} + \beta_5 LEV_{it} + \beta_6 LNASSETS_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

	N	Minimum	Maximum	Mean	SD	Median	Skewness	Kurtosis
MVE (unscaled)	525	25 985	1 673 516	228 876	265 778	118 099	0.962	0.388
BVE (unscaled)	525	-19 248	2 909 137	155 931	342 469	53 145	1.184	0.431
EARN (unscaled)	525	-131 666	828 767	17 671	50 960	7 211	1.278	0.871
IRSCORE	525	0.020	0.961	0.801	0.084	0.805	1.447	0.107
ROE	525	-0.029	0.796	0.217	0.205	0.167	1.488	1.727
LEV	525	0.289	20.034	3.233	4.933	1.131	2.557	5.599
LNASSETS	525	6.634	10.407	8.315	0.709	8.160	0.939	0.701
INDSENS	525	0	1	0.190	0.392	0.00	0.107	0.552
LOSS	525	0	1	0.050	0.221	0.00	1.074	0.649

Note: The descriptive statistics of the variables *MVE, BVE* and *EARN* are denoted in ZAR million.

The definitions of all variables are available in Appendix 1: Variable definitions.

Table 5.8 provides the correlation coefficients between the variables included in Equation 1(a) for the United Kingdom sample. The Pearson correlations, as presented in Table 5.8, show a positive and significant correlation between the *MVE* and the accounting variables, *BVE* and *EARN*. A negative correlation existed between the *MVE* and *IRSCORE* (-0.074), but it was not significant. None of the variables had high correlations to suggest multicollinearity problems, as none of the variables had correlations above 0.90. The correlation coefficients between the other variables ranged from negative to positive, and from insignificant to significant.

Additionally, the VIFs between the dependent variable (*MVE*) and the independent variables (*BVE, EARN, IRSCORE, ROE, LEV, LNASSETS, INDSENS, LOSS*) were calculated to test for potential multicollinearity problems. As reported in Table 5.9, all values were below 10, which is the acceptable threshold reported in the literature (Thompson et al. 2017:82; O'Brien 2007:673).

Table 5.8: Correlation coefficients: market value of equity and integrated reporting (United Kingdom)

Equation 1(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 ROE_{it} + \beta_5 LEV_{it} + \beta_6 LNASSETS_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable	*MVE*	*BVE*	*EARN*	*IRSCORE*	*ROE*	*LEV*	*LNASSETS*	*INDSENS*	*LOSS*
MVE	*1*								
BVE	0.243**	1							
EARN	0.486**	0.577**	1						
IRSCORE	-0.074	0.144**	0.016	1					
ROE	0.234**	-0.234**	0.237**	-0.105*	1				
LEV	-0.107*	-0.147**	-0.115**	-0.038	0.074	1			
LNASSETS	-0.156**	0.035	-0.141**	0.023	-0.303**	0.584**	1		
INDSENS	0.090*	0.077	0.121**	0.021	-0.079	-0.167**	0.043	1	
LOSS	-0.143**	0.013	-0.156**	0.031	-0.237**	0.147**	0.189**	0.020	1

Pearson correlation coefficients of variables. Refer to Appendix 1: Variable definitions

** Correlation is significant at the 0.01 level (2-tailed); * correlation is significant at the 0.05 level (2-tailed).

Table 5.9: Variance Inflation Factors (Equation 1a: United Kingdom)

Variable	Variance Inflation Factor
BVE	1.402
EARN	1.480
IRSCORE	1.029
ROE	1.329
LEV	1.180
LNASSETS	1.298
INDSENS	1.029
LOSS	1.065
VIFs of independent variable (*MVE*) and independent variables, in terms of Equation 1(a).	

5.3.2.2 Regression results: United Kingdom

The panel EGLS regression results for Equation 1(a) and $H_{1(b)}$ are shown in Table 5.10. According to $H_{1(b)}$, integrated reporting is predicted to be positively associated with in the United Kingdom. The coefficient of accounting variable *BVE* was positive and significant at the 1% level (the coefficient was 1.1855; the p-value was 0.0000). The coefficient of the accounting variable *EARN* was also positive and significant at the 1% level (the coefficient was 2.2617; the p-value was 0.0000).

The coefficient of the main variable of interest, *IRSCORE*, was negative but not significant (the coefficient was -51.6254; the p-value was 0.2452), indicating no association between integrated reporting and the market value of equity. Therefore, $H_{1(b)}$ was also not supported when firm value was proxied by the market value of equity. The F-statistic of the model was highly significant at the 1% level.

The coefficients of control variables *ROE* and *INDSENS* were positive and significant at the 1% level (the coefficients were 78.4227 and 74.8227 respectively; the p-values were 0.0009 and 0.0050 respectively). The coefficient of *LEV* was positive and significant at the 5% level (the coefficient was 3.4892; the p-value was 0.0406). The coefficient of *LOSS* was negative and not significant (the coefficient was -13.6168; the p-value was 0.1427), while the coefficient of *LNASSETS* was negative and significant at the 1% level (the coefficient was -48.0563; the p-value was 0.0002).

Table 5.10: Panel EGLS regression results: market value of equity and integrated reporting – United Kingdom ($H_{1(b)}$)

Equation 1(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 ROE_{it} + \beta_5 LEV_{it} + \beta_6 LNASSETS_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
BVE		1.1855***	0.1409	8.4114	0.0000
EARN		2.2617***	0.5032	4.4945	0.0000
IRSCORE		-51.6254	44.3747	-1.1633	0.2452
LEV		3.4892**	1.6998	2.0527	0.0406
ROE		78.4227***	23.4112	3.3497	0.0009
INDSENS		74.8227***	26.5209	2.8212	0.0050
LOSS		-13.6168	9.2760	-1.4679	0.1427
LNASSETS		-48.0563***	12.7458	-3.7703	0.0002
N	525				
Durbin-Watson statistic	1.294337				
R-squared	0.3711				
Adjusted R-squared	0.3513				
F-statistic	18.7411***				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

Figure 5.2 below indicates that the residuals were normally distributed (the thresholds for the regression were 2 for skewness and 7 for kurtosis; a value of 3 was subtracted from the value, as recommended in the literature (8.8467 - 3 = 5.8467), which was thus smaller than 7 (DeCarlo 1997:292).

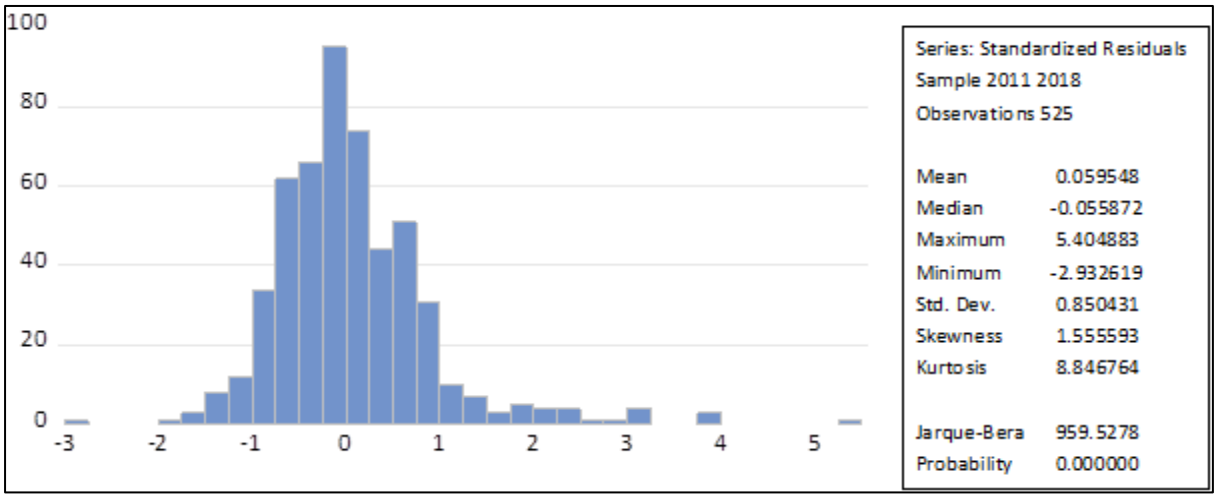

Figure 5.2: Normal distribution of residuals for Equation 1(a): United Kingdom

Source: Own compilation

5.4 RESULTS: ASSOCIATION BETWEEN INTEGRATED REPORTING AND TOBIN'S Q (HYPOTHESIS 1)

This section presents the results for H_1, which predicted a positive association between integrated reporting and firm value when firm value was proxied by Tobin's Q in South Africa ($H_{1(a)}$), and the United Kingdom ($H_{1(b)}$).

5.4.1 Results: South Africa – $H_{1(a)}$

This section presents the descriptive statistics, correlation coefficients and regression results for the South African sample when firm value was proxied by Tobin's Q.

5.4.1.1 Descriptive statistics and correlation coefficients

The descriptive statistics of the variables used in the Tobin's Q model, using Equation 1(b) are presented in Table 5.11. *TOBINQ* had a mean of 1.927 and a median of 1.399 (the minimum value was 0.741 and the maximum value was 5.384). *ROA* had a mean of 0.059 and a median of 0.071 (the minimum value was -0.027 and

the maximum value was 0.228). *CAPEXR* had a mean of -0.058 and a median of -0.048 (the minimum value was 0.209 and the maximum value was 0.398). *SALESG* had a mean of 0.111 and a median of 0.091 (the minimum value was -0.129 and the maximum value was 0.495). *DIV* was an indicator variable with a mean of 0.990 and a median of 1.00 (the minimum value was 0 and the maximum value was 1). The descriptive statistics for the variables *IRSCORE, LEV, LNASSETS, INDSENS* and *LOSS* descriptive statistics are shown in Table 5.11, and have been previously described in Section 5.3.1.1.

The Pearson correlation coefficients of the Tobin's Q model are presented in Table 5.12. A positive and significant correlation was identified between *IRSCORE* and *TOBINQ.* Moreover, *LNASSETS*, which is a control variable for firm size, had a negative and significant correlation with *TOBINQ.* The correlation coefficients between other variables ranged from negative to positive, and from insignificant to significant.

None of the variables had a very high correlation, which could indicate multicollinearity issues, since none of the variables had correlations above 0.90. The variables *TOBINQ, LEV, ROA, CAPEXR and SALESG* were winsorised at the 5% and 95% level to control for outliers in the sample. Additionally, the VIFs between the dependent variable (*TOBINQ)* and the independent variables (*IRSCORE, LEV, ROA, CAPEXR, LNASSETS, SALESG, DIV, INDSENS, LOSS*) were calculated to test for potential multicollinearity problems. As reported in Table 5.13, all values were below 10, which is the acceptable threshold, according to Thompson et al. (2017:82).

Table 5.11: Descriptive statistics: Tobin's Q (South Africa)

Equation 1(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$								
	N	**Minimum**	**Maximum**	**Mean**	**SD**	**Median**	**Skewness**	**Kurtosis**
TOBINQ	521	0.741	5.384	1.927	1.242	1.399	1.506	1.366
IRSCORE	521	0.358	0.982	0.803	0.126	0.830	-1.084	0.945
LEV	521	0.199	12.031	2.653	3.542	1.1123	1.791	1.706
ROA	521	-0.027	0.228	0.059	0.065	0.071	0.849	0.158
CAPEXR	521	0.209	0.398	-0.058	0.058	-0.048	-0.962	0.388
LNASSETS	521	5.880	9.550	7.696	0.678	7.605	0.633	0.048
SALESG	521	-0.129	0.495	0.111	0.149	0.091	0.888	0.745
DIV	521	0	1	0.990	0.115	1	0.635	0.070
INDSENS	521	0	1	0.250	0.435	0	1.140	0.702
LOSS	521	0	1	0.081	0.274	0	0.690	-0.286
The definitions of all variables are available in Appendix 1: Variable definitions.								

Table 5.12: Correlation coefficients: Tobin's Q and integrated reporting (South Africa)

Equation 1(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable	*TOBINQ*	*IRSCORE*	*LEV*	*ROA*	*CAPEXR*	*LNASSETS*	*SALESG*	*DIV*	*INDSENS*	*LOSS*
TOBINQ	1.000									
IRSCORE	0.094*	1.000								
LEV	-0.245**	0.177**	1.000							
ROA	0.601**	-0.057	-0.398**	1.000						
CAPEXR	-0.213**	-0.028	0.307**	-0.250**	1.000					
LNASSETS	-0.494**	0.028	0.542**	-0.420**	0.250**	1.000				
SALESG	-0.001	-0.081	0.021	0.055	-0.108*	-0.040	1.000			
DIV	0.099*	0.175**	0.057	0.042	-0.025	-0.050	0.074	1.000		
INDSENS	-0.161**	0.050	-0.216**	-0.124**	-0.119**	0.022	-0.107*	-0.047	1.000	
LOSS	-0.097*	-0.025	-0.054	-0.429**	0.051	0.037	-0.106*	-0.147**	0.210**	1.000

** Correlation is significant at the 0.01 level (2-tailed); * correlation is significant at the 0.05 level (2-tailed).

Pearson correlation coefficients of variables - refer to Appendix 1: Variable definitions.

Table 5.13: Variance inflation factors (Equation 1b: South Africa)

Variable	Variance inflation factor
IRSCORE	1.043
LEV	1.244
ROA	1.376
CAPEXR	1.003
LNASSETS	1.250
SALESG	1.012
DIV	1.061
INDSENS	1.085
LOSS	1.343
VIFs of independent variable (*TOBINQ)* and independent variables according to Equation 1(b).	

5.4.1.2 Regression results

The panel least squares regression results for $H_{1(a)}$, which predicted a positive association between integrated reporting and firm value as proxied by Tobin's Q, are presented in Table 5.14. The main variable of interest, *IRSCORE,* was positive, but not significant (the coefficient was 0.2108; the p-value was 0.4354). This suggested that integrated reporting does not add value to investors in estimating firm value as proxied by *TOBINQ*. Therefore, $H_{1(a)}$ was rejected.

The coefficients of *LEV, ROA* and *LOSS* were all positive and significant at the 1% level (the coefficients were 0.0632, 7.3095 and 0.4952 respectively; the p-values were 0.0000, 0.0000 and 0.0003 respectively). The coefficient of *CAPEXR* was negative and significant at the 5% level (the coefficient was -1.1684; the p-value was 0.0207). The coefficient of *INDSENS* was negative, but not significant (the coefficient was -0.1362; the p-value was 0.5452). The coefficient of *LNASSETS* was negative and significant at the 1% level (the coefficient was -0.6102; the p-value was 0.0000). The F-statistic of the model was highly significant at the 1% level.

Table 5.14: Panel EGLS regression results: Tobin's Q and integrated reporting – South Africa ($H_{1(a)}$)

Equation 1(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
IRSCORE		0.2108	0.2700	0.7806	0.4354
LEV		0.0632***	0.0115	5.5012	0.0000
ROA		7.3095***	0.8974	8.1450	0.0000
CAPEXR		-1.1684**	0.5034	-2.3210	0.0207
LNASSETS		-0.6102***	0.1244	-4.9035	0.0000
SALESG		-0.2149	0.1368	-1.5707	0.1169
DIV		0.1070	0.2657	0.4029	0.6872
INDSENS		-0.1362	0.2251	-0.6053	0.5452
LOSS		0.4952***	0.1366	3.6248	0.0003
N	521				
Durbin–Watson statistic	1.4319				
R-squared	0.4827				
Adjusted R-squared	0.4662				
F-statistic	29.3955***				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions					

Figure 5.3 indicates that the residuals are normally distributed (the thresholds for regression were 2 for skewness and 7 for kurtosis; a value of 3 was subtracted from the value as recommended by DeCarlo (1997:292), thus 8.3178 - 3 = 5.3178, the value was thus smaller than 7.

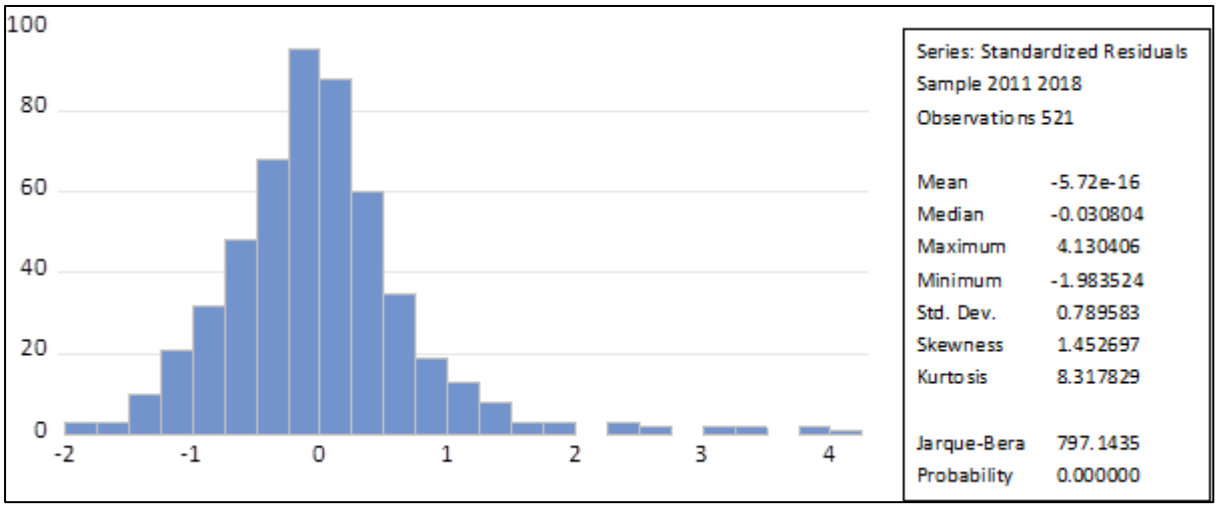

Figure 5.3: Normal distribution of residuals for Equation 1(b): South Africa

Source: Own compilation

5.4.2 Results: United Kingdom – $H_{1(b)}$

This section presents the descriptive statistics, correlation coefficients and regression results for the United Kingdom sample.

5.4.2.1 Descriptive statistics and correlation coefficients

The descriptive statistics results for the United Kingdom sample using the Tobin's Q model are presented in Table 5.15. The results are as follows: *TOBINQ* had a mean of 1.711 and a median of 1.454 (the minimum value was 0.868 and the maximum value was 3.770). *IRSCORE* had a mean of 0.801 and a median of 0.805 (the minimum value was 0.020 and the maximum value was 0.961). *SALESG* had a mean of 0.084 and a median of 0.038 (the minimum value was -0.901 and the maximum value was 10.758). *CAPEXR* had a mean of -0.048 and a median of -0.043 (the minimum value was -0.167 and the maximum value was 0.277). *DIV* was an indicator variable with a mean of 0.990 and a median of 1 (the minimum value was 0 and the

maximum value was 1). *ROA* had a mean of 0.070 and a median of 0.057 (the minimum value was 0.002 and the maximum value was 0.213). The variables *LEV, LNASSETS, INDSENS* and *LOSS* had descriptive statistics as shown in Table 5.14, and as previously described in Section 5.3.2.1.

Table 5.16 provides the correlation coefficients between the variables included in Equation 1(b) for the United Kingdom sample. *TOBINQ* had a negative correlation with *IRSCORE*, but it was not significant. The correlation coefficients between other variables ranged from negative to positive, and from insignificant to significant. None of the variables had high correlations to suggest multicollinearity problems, as none of the variables had correlations above 0.90.

The VIFs between the dependent variable (*TOBINQ*) and the independent variables were calculated to test for potential multicollinearity problems. As reported in Table 5.17, all values were below 10, which is the acceptable threshold reported in the literature (Thompson et al. 2017:82; O'Brien 2007:673).

Table 5.15: Descriptive statistics: Tobin's Q (United Kingdom)

Equation 1(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

	N	Minimum	Maximum	Mean	SD	Median	Skewness	Kurtosis
TOBINQ	525	0.868	3.770	1.711	0.800	1.454	1.232	0.647
IRSCORE	525	0.020	0.961	0.801	0.084	0.805	1.447	0.107
LEV	525	0.289	20.034	3.233	4.933	1.131	2.557	5.599
ROA	525	0.002	0.213	0.070	0.056	0.057	0.833	0.149
CAPEXR	525	-0.167	0.277	-0.048	0.050	-0.043	-0.650	-0.146
LNASSETS	525	6.634	10.407	8.315	0.709	8.160	0.939	0.701
SALESG	525	-0.901	10.758	0.084	0.522	0.038	2.702	1.762
DIV	525	0	1	0.990	0.115	1	-1.510	-1.696
INDSENS	525	0	1	0.190	0.392	0	0.107	0.552
LOSS	525	0	1	0.050	0.221	0	1.074	0.649

The definitions of all variables are available in Appendix 1: Variable definitions.

Table 5.16: Correlation coefficients: Tobin's Q and integrated reporting (United Kingdom)

Equation 1(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable	*TOBINQ*	*IRSCORE*	*LEV*	*ROA*	*CAPEXR*	*LN ASSETS*	*SALESG*	*DIV*	*INDSENS*	*LOSS*
TOBINQ	1									
IRSCORE	-0.030	1								
LEV	-0.132**	-0.038	1							
ROA	0.610**	-0.076	-0.281**	1						
CAPEXR	-0.328**	-0.034	0.242**	-0.190**	1					
LNASSETS	-0.599**	0.0231	0.584**	-0.564**	0.341**	1				
SALESG	0.026	0.006	-0.049	0.016	-0.02	-0.079	1			
DIV	0.084	-0.028	-0.042	0.018	-0.030	-0.027	0.010	1		
INDSENS	-0.149**	0.021	-0.167**	-0.068	-0.213**	0.043	-0.008	0.0135	1	
LOSS	-0.165**	0.031	0.147**	-0.263**	-0.010	0.189**	-0.002	-0.048	0.0200	1

** Correlation is significant at the 0.01 level (2-tailed); * correlation is significant at the 0.05 level (2-tailed).

Pearson correlation coefficients of variables. Refer to Appendix 1: Variable definitions

Table 5.17: Variance Inflation Factors (Equation 1b: United Kingdom)

Variable	Variable Inflation Factor
IRSCORE	1.019
LEV	1.224
ROA	1.370
CAPEXR	1.069
LNASSETS	1.534
SALESG	1.010
DIV	1.004
INDSENS	1.016
LOSS	1.086
VIFs of independent variable (*TOBINQ)* and independent variables according to Equation 1(b).	

5.4.2.2 Regression results

The panel EGLS regression results for $H_{1(b)}$, which predicted a positive association between integrated reporting and firm value as proxied by Tobin's Q (Equation 1b) are presented in Table 5.18. The main variable of interest*, IRSCORE*, was negative and not significant (the coefficient was -0.0689; the p-value was 0.7810). This suggested that integrated reporting in the United Kingdom did not add any incremental value to investors during the period under study. $H_{1(b)}$ was therefore not supported.

The coefficients of *LEV, ROA* and *INDSENS* were all positive and significant at the 1% and 5% level respectively (the coefficients were 0.0353, 3.5251 and 0.2012 respectively; the p-values were 0.0000, 0.0000, and 0.0105 respectively). The coefficients of *CAPEXR* and *LNASSETS* were negative and significant at the 1% level (the coefficients were -2.1146 and -0.5920; the p-values were 0.0000 and 0.0000). The coefficient of *DIV* was positive and significant at the 5% level (the coefficient was 0.2595; the p-value was 0.0243). The coefficient of *SALESG* was positive and significant at the 10% level (the coefficient was 0.0341; the p-value was 0.0779). The coefficient of *LOSS* was negative and not significant (the coefficient was -0.0772; the p-value was 0.2559). The F-statistic of the model was highly significant at the 1% level.

Figure 5.4 indicates that the residuals were normally distributed.

Table 5.18: Panel EGLS regression results: Tobin's Q and integrated reporting – United Kingdom ($H_{1(b)}$)

Equation 1(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	T-statistic	P-value
IRSCORE		-0.0689	0.2479	-0.2782	0.7810
LEV		0.0353***	0.0073	4.8052	0.0000
ROA		3.5251***	0.5907	5.9668	0.0000
CAPEXR		-2.1146***	0.4820	-4.3866	0.0000
LNASSETS		-0.5920***	0.0686	-8.6239	0.0000
SALESG		0.0341*	0.0193	1.7665	0.0779
DIV		0.2595**	0.1148	2.2593	0.0243
INDSENS		0.2012**	0.0783	2.5672	0.0105
LOSS		-0.0772	0.0679	-1.1375	0.2559
N	525				
Durbin-Watson statistic	1.5438				
R-squared	0.4616				
Adjusted R-squared	0.4424				
F-statistic	24.1057***				
Prob (F-statistic)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.
Refer to Appendix 1: Variable definitions

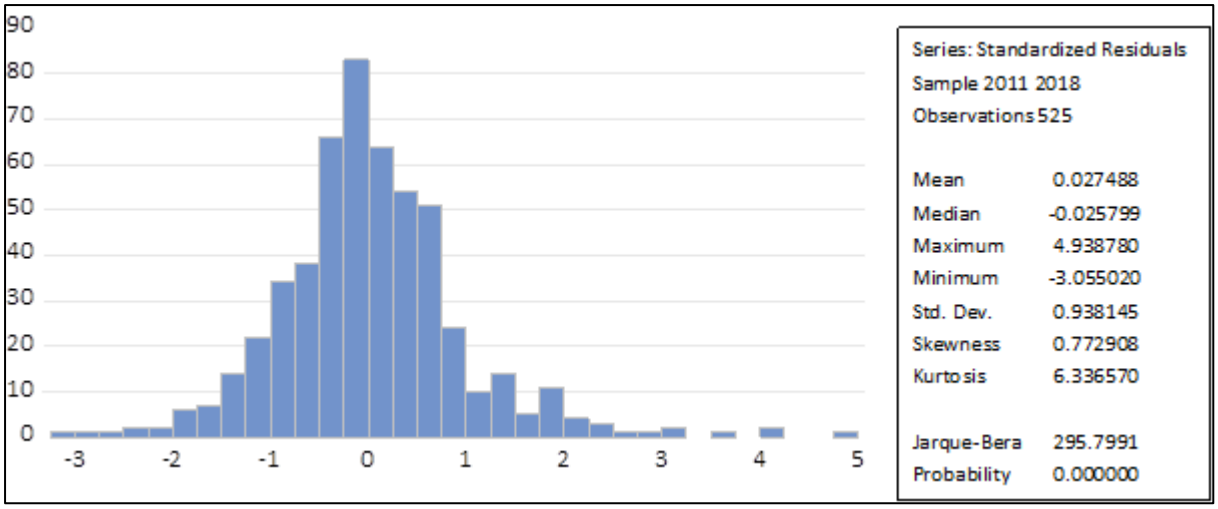

Figure 5.4: Normal distribution of residuals for Equation 1(b): United Kingdom

Source: Own compilation

5.5 RESULTS: ASSOCIATION BETWEEN LEVEL OF INTEGRATED REPORTING IN LINE WITH THE INTERNATIONAL <IR> FRAMEWORK AND FIRM VALUE – HYPOTHESIS 2

H_2 predicted that integrated reports with a high level of integrated reporting in line with the International <IR> Framework (*HighIRSCORE*) are evaluated differently by the capital markets, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework (*LowIRSCORE)* in South Africa ($H_{2(a)}$) and in the United Kingdom ($H_{2(b)}$).

A three-step process was followed to test the above hypothesis for each country. The samples for each country were split into two groups: one sample group with all the integrated reports above the median *IRSCORE*, and second sample group with all the integrated reports below the median *IRSCORE*. Then the regression analyses were performed for each group to test for the associations between the level of integrated reporting in line with the International <IR> Framework and firm value. The third step was to test whether integrated reports with high levels of integrated reporting in line with the International <IR> Framework were evaluated differently by capital markets compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework. The Z-statistic test recommended by Paternoster et al.

(1998:865) was performed to conduct a statistical comparison between the coefficient of *HighIRSCORE* and the coefficient of *LowIRSCORE* for each model.

5.5.1 Regression results: $H_{2(a)}$ – South Africa

$H_{2(a)}$ predicted that, in South Africa, integrated reports with a high level of integrated reporting in line with the International <IR> Framework are evaluated differently by the capital markets compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework.

5.5.1.1 Regression results: market value of equity and the level of integrated reporting in line with the International <IR> Framework

The regression results for Equation 2(a) when the market value of equity was used as the proxy for firm value are presented in Tables 5.19 and 5.20. Firstly, Table 5.19 presents results for the regression estimated for the sample with integrated reports with *IRSCORE* values above the median value. The main coefficient of interest, *HighIRSCORE,* was negative and not significant (the coefficient was -60.9524 and the p-value was 0.3722). This suggests that a high level of integrated reporting in line with the International <IR> Framework is not positively associated with the market value of equity. The F-statistic of the model, as shown in Table 5.19, was highly significant at the 1% level.

Table 5.20 presents the results for the regression estimated for the sample with integrated reports with *IRSCORE* values below the median value. The main coefficient of interest, *LowIRSCORE*, was negative and not significant (the coefficient was -15.0179 and the p-value was 0.6870). This suggests that a low level of integrated reporting in line with the International <IR> Framework is not positively associated with the market value of equity. The coefficients of *EARN* and *LOSS* were positive and significant at the 1% level, while the coefficient of *LNASSETS* was positive and significant at the 5% level. The coefficient of *LEV* was negative and significant at the 5% level. The F-statistic of the model was highly significant at the 1% level.

To test whether integrated reports with high levels of integrated reporting in line with the International <IR> Framework are evaluated as significantly different by the capital markets compared to integrated reports with low levels of integrated reporting with the

International <IR> Framework, the researcher performed the Z-statistic test by Paternoster et al. (1998:865), as discussed in Section 4.6. The results showed that the Z-statistic was -0.5913, suggesting that integrated reports with high levels of integrated reporting in line with the International <IR> Framework are not evaluated significantly different by the capital markets than integrated reports with low levels of integrated reporting in line with the International <IR> Framework, supporting the findings reported in Tables 5.19 and 5.20. Therefore, $H_{2(a)}$ was rejected when firm value was proxied by the market value of equity.

Table 5.19: Panel EGLS regression results: market value of equity and the level of integrated reporting in line with the International <IR> Framework: *HighIRSCORE* (South Africa)

Equation 2(a)(i): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 HighIRSCORE_{it} + \beta_4 LNASSETS_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	T-statistic	P-value
BVE		0.2500	0.1707	1.4647	0.1443
EARN		7.0762***	0.9950	7.1116	0.0000
HighIRSCORE		-60.9524	68.1741	-0.8940	0.3722
LNASSETS		22.7218*	11.9550	1.9006	0.0585
ROE		41.9395	33.5406	1.2504	0.2123
LEV		-3.7050**	1.6754	-2.2113	0.0279
INDSENS		-3.1098	11.7042	-0.2657	0.7907
LOSS		35.6196***	10.4708	3.4017	0.0008
N	262				
Durbin-Watson statistic	1.3910				
R-squared	0.6558				
Adjusted R-squared	0.6348				
F-statistic	31.2565***				
Prob (F-statistic)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.
Refer to Appendix 1: Variable definitions.

Table 5.20: Panel EGLS regression results: market value of equity and level of integrated reporting in line with the International <IR> Framework: *LowIRSCORE* (South Africa)

Equation 2(a)(ii): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 LowIRSCORE_{it} + \beta_4 LNASSETS_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	T-statistic	P-value
BVE		0.4352***	0.1661	2.6199	0.0093
EARN		3.6876***	1.1606	3.1772	0.0017
LowIRSCORE		-15.0179	37.2228	-0.4034	0.6870
LNASSET		24.1801**	12.0582	2.0052	0.0460
ROE		125.5725**	50.7749	2.4731	0.0141
LEV		-0.9834	2.3155	-0.4247	0.6714
INDSENS		2.1848	23.6005	0.0925	0.9263
LOSS		32.3186*	19.0788	1.6939	0.0916
N	259				
Durbin-Watson statistic	1.1888				
R-squared	0.5755				
Adjusted R-squared	0.5493				
F-statistic	21.9651***				
Prob (F-statistic)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.
Refer to Appendix 1: Variable definitions.

5.5.1.2 Regression results: Tobin's Q and the level of integrated reporting in line with the International <IR> Framework

The regression results for Equation 2(b) when Tobin's Q was used as proxy for firm value are presented in Tables 5.21 and 5.22. Firstly, Table 5.21 presents the results for the regression estimated for the sample with integrated reports with *IRSCORE* values above the median value. The main coefficient of interest, *HighIRSCORE,* was positive but not significant (the coefficient was 1.3013 and the p-value was 0.1704). This suggested that integrated reporting with high levels of integrated reporting in line with the International <IR> Framework is not positively associated with firm value, as proxied by Tobin's Q. The F-statistic of the model was highly significant at the 1% level.

Table 5.22 presents the results for the regression estimated for the sample with integrated reports with *IRSCORE* values below the median value. The main coefficient of interest, *LowIRSCORE*, was positive and not significant (the coefficient was 0.2106 and the p-value was 0.7198). The F-statistic of the model was highly significant at the 1% level.

Additionally, to test whether integrated reports with high levels of integrated reporting in line with the International <IR> Framework are evaluated significantly different by the capital markets, compared to integrated reports with low levels of integrated reporting with the International <IR> Framework, the researcher performed the Z-statistic test by Paternoster et al. (1998) (as discussed in Section 4.6). The results showed that the Z-statistic was 0.9795, suggesting that integrated reports with high levels of integrated reporting in line with the International <IR> Framework are not evaluated significantly different by capital markets, compared to integrated reports with low levels of integrated reporting in line with the International <IR> Framework, supporting the findings reported in Tables 5.21 and 5.22. Therefore, $H_{2(a)}$ was rejected when firm value was proxied by Tobin's Q.

Table 5.21: Panel EGLS regression results: Tobin's Q and the level of integrated reporting in line with the International <IR> Framework: *HighIRSCORE* (South Africa)

Equation 2(b)(i): $TOBINQ_{it} = \beta_0 + \beta_1 HighIRSCOREEe_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
HighIRSCORE		1.3013	0.9463	1.3750	0.1704
LEV		0.0930***	0.0213	4.3597	0.0000
ROA		12.7197***	1.2078	10.5305	0.0000
CAPEXR		-0.6027	0.8070	-0.7469	0.4558
LNASSETS		-0.5553***	0.1742	-3.1869	0.0016
SALESG		-0.3026	0.2657	-1.1390	0.2558
DIV		0.4829*	0.2780	1.7371	0.0836
INDSENS		-0.0069	0.1884	-0.0367	0.9707
LOSS		1.0919***	0.1938	5.6325	0.0000
N	262				
Durbin-Watson statistic	1.2830				
R-squared	0.7439				
Adjusted R-squared	0.7272				
F-statistic	44.4849***				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

Table 5.22: Panel EGLS regression results: Tobin's Q and level of integrated reporting in line with the International <IR> Framework: *LowIRSCORE* (South Africa)

Equation 2(b)(ii): $TOBINQ_{it} = \beta_0 + \beta_1 LowIRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
LowIRSCORE		0.2106	0.5504	-0.0447	0.7198
LEV		0.0596***	0.0191	3.1182	0.0020
ROA		7.4504***	1.1132	6.6927	0.0000
CAPEXR		0.6325	1.0583	0.5976	0.5507
LNASSETS		-0.5728***	0.0992	-5.7741	0.0000
SALESG		-0.1270	0.3371	-0.3767	0.7067
DIV		0.6008	0.4620	1.3003	0.1947
INDSENS		-0.2123	0.2828	-0.7509	0.4534
LOSS		0.6228***	0.2171	2.8680	0.0045
N	259				
Durbin-Watson statistic	1.2030				
R-squared	0.5870				
Adjusted R-squared	0.5597				
F-statistic	21.5008***				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

5.5.2 Regression results: $H_{2(b)}$ – United Kingdom

$H2_{(b)}$ predicted that integrated reports with a high level of integrated reporting in line with the International <IR> Framework are evaluated differently by the capital markets, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework in the United Kingdom.

5.5.2.1 Regression results: market value of equity and level of integrated reporting in line with the International <IR> Framework

The regression results for Equation 2(a) when the market value of equity was used as the proxy for firm value are presented in Tables 5.23 and 5.24. Firstly, Table 5.23 presents the results for the regression estimated for the sample with integrated reports with *IRSCORE* values above the median value. The main coefficient of interest, *HighIRSCORE*, was positive but not significant (the coefficient was 19.3290; the p-value was 0.8894). This suggests that integrated reports with high levels of integrated reporting in line with the International <IR> Framework are not positively associated with the market value of equity. Table 5.24 presents the results for the regression estimated for the sample with integrated reports with *IRSCORE* values below the median value. The main coefficient of interest, *LowIRSCORE*, was negative and not significant (the coefficient was -79.3413; the p-value was 0.1352). This suggests that integrated reporting with low levels of integrated reporting in line with the International <IR> Framework are not positively associated with the market value of equity.

To test whether integrated reports with high levels of integrated reporting in line with the International <IR> Framework are evaluated significantly different by capital markets, compared to integrated reports with low levels of integrated reporting with the International <IR> Framework, the researcher performed the Z-statistic test recommended by Paternoster et al. (1998:865), as discussed in Section 4.6. The results showed that the Z-statistic was 1.5071, suggesting that integrated reports with high levels of integrated reporting in line with the International <IR> Framework are not evaluated significantly different by capital markets, compared to integrated reports with low levels of integrated reporting in line with the International <IR> Framework, supporting findings as reported in Tables 5.23 and 5.24. Therefore, $H_{2(a)}$ was rejected when firm value was proxied by the market value of equity.

Table 5.23: Panel EGLS regression results: market value of equity and the level of integrated reporting in line with the International <IR> Framework: *HighIRSCORE* (United Kingdom)

Equation 2(a)(i): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 HighIRSCORE_{it} + \beta_4 LNASSETS_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
BVE		1.2070***	0.1714	7.0406	0.0000
EARN		2.9472***	0.6312	4.6691	0.0000
HighIRSCORE		19.3290	138.8797	0.1391	0.8894
LEV		4.6521**	2.0421	2.2781	0.0236
ROE		12.4245	31.6936	0.3920	0.6954
INDSENS		92.8958***	29.6124	3.1370	0.0019
LOSS		-14.1225	11.5643	-1.2212	0.2232
LNASSETS		-55.7545***	15.1299	-3.6850	0.0003
N	265				
Durbin-Watson statistic	1.2085				
R-squared	0.4859				
Adjusted R-squared	0.4528				
F-statistic	14.6535***				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

Table 5.24: Panel EGLS regression results: market value of equity and the level of integrated reporting in line with the International <IR> Framework: *LowIRSCORE* (United Kingdom)

Equation 2(a)(ii): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 LowIRSCORE_{it} + \beta_4 LNASSETS_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
BVE		1.5848***	0.143041	11.07995	0.0000
EARN		2.5330***	0.742028	3.413663	0.0008
LowIRSCORE		-79.3413	52.92886	-1.499018	0.1352
LNASSETS		-77.2075***	16.85019	-4.581996	0.0000
LEV		11.8488***	2.796181	4.237505	0.0000
ROE		258.5635***	52.02163	4.970307	0.0000
INDSENS		108.9763***	41.76518	2.609262	0.0096
LOSS		-2.0724	29.10986	-0.071194	0.9433
N	260				
Durbin-Watson statistic	1.3395				
R-squared	0.5524				
Adjusted R-squared	0.5230				
F-statistic	18.7496***				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

5.5.2.2 Regression results: Tobin's Q and the level of integrated reporting in line with the International <IR> Framework

The regression results for Equation 2(b), using Tobin's Q as the proxy for firm value, are presented in Tables 5.25 and 5.26. Firstly, Table 5.25 presents the results for the regression estimated for the sample with integrated reports with *IRSCORE* values above the median value. The main coefficient of interest, *HighIRSCORE*, was positive but not significant (the coefficient was 0.1919 and the p-value was 0.7987).

Table 5.26 presents the results for the regression estimated for the sample with integrated reports with *IRSCORE* values below the median value. The main coefficient of interest, *LowIRSCORE*, was negative and significant at the 10% level (the coefficient was -0.6175 and the p-value was 0.0765). This suggests that integrated reporting with low levels of integrated reporting in line with the International <IR> Framework is negatively associated with firm value as proxied by Tobin's Q.

To test whether integrated reports with high levels of integrated reporting in line with the International <IR> Framework are evaluated significantly different by capital markets, compared to integrated reports with low levels of integrated reporting in line with the International <IR> Framework, the researcher performed the Z-statistic test recommended by Paternoster et al. (1998), as discussed in Section 4.6. The results showed that the Z-statistic was -2.4746, suggesting that integrated reports with high levels of integrated reporting in line with the International <IR> Framework are evaluated differently by the capital markets, compared to integrated reports with low levels of integrated reporting in line with the International <IR> Framework, when firm value is proxied by Tobin's Q. Therefore, $H_{2(b)}$ was supported when the firm value was proxied by Tobin's Q.

Table 5.25: Panel EGLS regression results: Tobin's Q and the level of integrated reporting in line with the International <IR> Framework: *HighIRSCORE* (United Kingdom)

Equation 2(b)(i): $TOBINQ_{it} = \beta_0 + \beta_1 HighIRScore_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
HighIRSCORE		0.1919	0.7518	0.2553	0.7987
LEV		0.0309***	0.0086	3.5624	0.0004
ROA		4.6942***	0.6685	7.0215	0.0000
CAPEXR		-2.7507***	0.5910	-4.6537	0.0000
LNASSETS		-0.4490***	0.0837	-5.3632	0.0000
SALESG		0.0312	0.0248	1.2550	0.2107
DIV		0.4149**	0.1668	2.4867	0.0136
INDSENS		0.1709*	0.0959	1.7809	0.0762
LOSS		0.0012	0.0804	0.0156	0.9875
N	265				
Durbin-Watson statistic	1.4359				
R-squared	0.5737				
Adjusted R-squared	0.5425				
F-statistic	18.3972				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

Table 5.26: Panel EGLS regression results: Tobin's Q and the level of integrated reporting in line with the International <IR> Framework: *LowIRSCORE* (United Kingdom)

Equation 2(b)(ii): $TOBINQ_{it} = \beta_0 + \beta_1 LowIRScore_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
LowIRSCORE		-0.6175*	0.3471	-1.7789	0.0765
LEV		0.0543***	0.0089	6.0773	0.0000
ROA		4.3574***	0.9062	4.8082	0.0000
CAPEXR		-2.8897***	0.6712	-4.3047	0.0000
LNASSETS		-0.6173***	0.0842	-7.3272	0.0000
SALESG		-0.2069**	0.0966	-2.1413	0.0332
DIV		0.1284	0.1338	0.9593	0.3383
INDSENS		0.3534**	0.1429	2.4728	0.0141
LOSS		0.0413	0.1000	0.4137	0.6794
N	260				
Durbin-Watson statistic	1.5430				
R-squared	0.5926				
Adjusted R-squared	0.5622				
F-statistic	19.4801***				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

5.6 RESULTS: COMPARISON BETWEEN THE VALUE RELEVANCE OF INTEGRATED REPORTING IN SOUTH AFRICA AND THE UNITED KINGDOM – HYPOTHESIS 3

Hypothesis 3 posited that the value relevance of integrated reporting in South Africa is not statistically different from the value relevance of integrated reporting in the United Kingdom. The hypothesis was stated in its null form.

A two-step approach was followed to test this hypothesis. The first step was to perform the Z-statistic test to assess whether the coefficient of *IRSCORE* in South Africa was significantly different from the coefficient of *IRSCORE* in the United Kingdom in Equation 1(a). The second step was to evaluate whether integrated reporting in South Africa was evaluated as statistically different compared to the overall sample. The results of the analyses are presented below.

5.6.1 Results: market value of equity as the dependent variable

This section presents the Z-statistic test results, descriptive statistics, correlation coefficients and regression results for the pooled sample using the market value of equity as a proxy for firm value.

5.6.1.1 The Z-statistic test results

The results from the Z-statistic test showed that the coefficients of *IRSCORE* for the samples from the South African and United Kingdom did not differ statistically (the Z-statistic was -1.4947). These results suggest that the association between integrated reporting and firm value in South Africa did not differ statistically from the association between integrated reporting and firm value in the United Kingdom, supporting the null hypothesis.

5.6.1.2 Descriptive statistics and correlation coefficients: Pooled sample

The descriptive statistics for Equation 3(a), as discussed in Step 2, are based on the pooled sample, in other words, the samples from both South Africa and the United Kingdom. For the purposes of determining the descriptive statistics, *MVE, BVE and EARN* were unscaled by the number of shares. Table 5.27 shows the descriptive statistics for the total pooled sample. The mean for the market value of equity (*MVE*)

was R168 900 million, with a median of R80 943 million. The book value of equity (*BVE*) had a mean of R105 603 and a median of R32 143 million. Earnings (*EARN*) had a mean of R12 769 million and a median of R4 366 million. *IRSCORE* had a mean of 0.802 and a median of 0.812. The minimum and maximum values of all variables were as previously reported in the relevant sections (see Tables 5.3 and 5.7).

Table 5.27: Descriptive statistics: Pooled sample – market value of equity and integrated reporting

Equation 3(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 SA_{it} + \beta_5 SA*IRSCORE_{it} + \beta_6 LNASSETS_{it} + \beta_7 ROE_{it} + \beta_8 LEV_{it} + \beta_9 INDSENS_{it} + \beta_{10} LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$						
	N	**Minimum**	**Maximum**	**Mean**	**SD**	**Median**
MVE (unscaled)	1 046	6 924	2 466 698	168 900	272 395	80 943
BVE (unscaled)	1 046	-19 248	2 909 137	105 603	267 381	32 143
EARN (Unscaled)	1 046	-131 666	828 767	12 702	44 009	4 366
IRSCORE	1 046	0.020	0.982	0.802	0.107	0.812
SA	1 046	0.000	1.000	0.498	0.500	0.000
*SA*IRSCORE*	1 046	0.000	0.982	0.399	0.411	0.000
ROE	1 046	-0.065	0.796	0.209	0.524	0.157
LEV	1 046	0.199	20.034	4.067	14.680	1.128
LNASSETS	1 046	5.8803	10.407	8.005	0.760	7.893
INDSENS	1 046	0.000	1.000	0.221	0.415	0.000
LOSS	1 046	0.000	1.000	0.666	0.250	0.000
Refer to Appendix 1: Variable definitions. The descriptive statistics of the variables *MVE, BVE* and *EARN* are denoted in ZAR million.						

The results of the Pearson correlations are shown in Table 5.28. The coefficients between the accounting variables using Ohlson's (1995) model, in other words, *BVE* and *EARN*, were all positive and significantly correlated with the market value of equity (*MVE*). *IRSCORE* had a negative correlation with *MVE*, but the correlation was not significant. The interaction variable, *SA*IRSCORE*, had a negative and significant correlation with the market value of equity. The correlation coefficients, between *MVE* and other dependent variables, as shown in Table 5.28, ranged from negative and not significant, negative and significant, to positive but not significant, and positive and significant.

Table 5.28: Correlation coefficients: Pooled sample – market value of equity and integrated reporting

Equation 3(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 SA_{it} + \beta_5 SA*IRSCORE_{it} + \beta_6 LNASSETS_{it} + \beta_7 ROE_{it} + \beta_8 LEV_{it} + \beta_9 INDSENS_{it} + \beta_{10} LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

	MVE	*BVE*	*EARN*	*ROE*	*LEV*	*LN ASSETS*	*IRSCORE*	*SA*	*SA*IR SCORE*	*LOSS*	*INDSENS*
MVE	1										
BVE	0.409**	1									
EARN	0.581**	0.642**	1								
ROE	0.187**	-0.244**	0.222**	1							
LEV	-0.092**	-0.080**	-0.037	0.114**	1						
LNASSETS	0.148**	0.312**	0.180**	-0.205**	0.501**	1					
IRSCORE	-0.041	-0.025	-0.034	-0.001	0.063	0.021	1				
SA	-0.259**	-0.128**	-0.201**	-0.086**	-0.022	-0.410**	0.004	1			
SAIRSCORE	-0.257**	-0.147**	-0.208**	-0.073**	-0.001	-0.396**	0.183**	0.976**	1		
LOSS	-0.142**	0.006	-0.237**	-0.336**	0.043	0.071**	-0.005	0.062**	0.057*	1	
INDSENS	0.078*	0.106**	0.084**	-0.154**	-0.191***	-0.003	0.039	0.078**	0.084**	0.134**	1

** Correlation is significant at the 0.01 level (2-tailed); * correlation is significant at the 0.05 level (2-tailed).

Pearson correlation coefficients of variables. Refer to Appendix 1 for variable definitions.

5.6.1.3 Regression results: market value of equity as the dependent variable for the pooled sample

Equation 3(a) tested whether the value relevance of integrated reporting in South Africa was evaluated as statistically different, compared to the overall sample, when firm value was proxied by the market value of equity.

The regression results, using the market value of equity as the dependent variable, are presented in Table 5.29. The interaction variable, *SA*IRSCORE*, was positive but not significant (the coefficient was 36.4674 and the p-value was 0.5379). This suggested that, at the time of the current study, integrated reporting in South Africa was not evaluated differently by the capital markets compared to the overall sample, supporting findings from the Z-statistic in Section 5.6.1.1. However, the coefficient of *IRSCORE* for the overall sample was negative and marginally significant at the 10% level (the coefficient was -82.8614 and the p-value was 0.0787).

The accounting variables *BVE* and *EARN* were positively associated with the market value of equity (the coefficients were 0.2844 and 2.8254 respectively; the p-values were 0.0000 and 0.0008 respectively). These findings were in line with prior Ohlson's (1995) valuation model studies (for example, Tlili et al. 2019:653). The control variables for firm size (*LNASSETS*), profitability (*ROE*) and industry sensitivity (*INDSENS*) were all positive and significant (the coefficients were 20.0886, 60.9055 and 46.9961 respectively; the p-values were 0.0559, 0.0080 and 0.0103 respectively). Leverage (*LEV*) was negatively associated with firm value (the coefficient was -2.5215; the p-value was 0.0243), and there was no association between loss (*LOSS*) and firm value (the coefficient was 6.0813; the p-value was 0.4492). The F-statistic of the regression model was highly significant at the 1% level.

Table 5.29: Panel EGLS regression results – Pooled sample: market value of equity and integrated reporting

Equation 3(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 SA_{it} + \beta_5 SA*IRSCORE_{it} + \beta_6 LNASSETS_{it} + \beta_7 ROE_{it} + \beta_8 LEV_{it} + \beta_9 INDSENS_{it} + \beta_{10} LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	T-statistic	P-value
BVE		0.2844***	0.0850	3.3465	0.0008
EARN		2.8254***	0.4835	5.8433	0.0000
IRSCORE		-82.8614*	47.0716	-1.7603	0.0787
SA		-78.7904	53.7621	-1.4655	0.1431
*SA*IRSCORE*		36.4674	59.1849	0.6161	0.5379
LNASSETS		20.0886*	10.4968	1.9137	0.0559
ROE		60.9055***	22.9208	2.6572	0.0080
LEV		-2.5215**	1.1179	-2.2555	0.0243
INDSENS		46.9961**	18.2844	2.5702	0.0103
LOSS		6.0813	8.0326	0.7570	0.4492
N	1 046				
Durbin-Watson statistic	1.2114				
R-squared	0.2979				
Adjusted R-squared	0.2849				
F-statistic	22.9123***				
Prob (F-statistic)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.
Refer to Appendix 1: Variable definitions

5.6.2 Results: Tobin's Q as the dependent variable

This section presents the Z-statistic test results, descriptive statistics, correlation coefficients and regression results for the pooled sample when the firm value was proxied by Tobin's Q.

5.6.2.1 The Z-statistic test results

The results from the Z-statistic test showed that the coefficients of *IRSCORE* for the samples from South Africa and the United Kingdom did not differ statistically (the Z-statistic was -0.7631). These results suggest that the association between integrated reporting and firm value in South Africa did not differ statistically from the association between integrated reporting and firm value in the United Kingdom, supporting the null hypothesis. These results were consistent with those obtained when firm value was proxied by the market value of equity, as discussed in Section 5.6.1.1.

5.6.2.2 Descriptive statistics and correlation coefficients: Pooled sample

The descriptive statistics results for the pooled sample using the Tobin's Q model are presented in Table 5.30. *TOBINQ* had a mean of 1.803 and a median of 1.434. *IRSCORE* had a mean of 0.802 and a median of 0.812. *LEV* had a mean of 2.910 and a median of 1.128. *ROA* had a mean of 0.071 and a median of 0.061. *CAPEXR* had a mean of -0.053 and a median of -0.045. *LNASSETS* had a mean of 8.005 and a median of 7.893. *SALESG* had a mean of 0.081 and a median of 0.064. *DIV* was an indicator variable with a mean of 0.986 and a median of 1. *INDSENS* was an indicator variable with a mean of 0.200 and a median of 0. *LOSS* was an indicator variable with a mean of 0.066 and a median of 0. The minimum and maximum values of all variables were as previously reported in the relevant sections (see Tables 5.7 and 5.10).

The correlation coefficients between other variables (as shown in Table 5.31), ranged from negative and not significant, negative and significant, to positive but not significant, and positive and significant.

Table 5.30: Descriptive statistics: Tobin's Q (pooled sample)

Equation 3(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 SA_{it} + \beta_3 SA*IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 CAPEXR_{it} + \beta_7 LNASSETS_{it} + \beta_8 SALESG_{it} + \beta_9 DIV_{it} + \beta_{10} INDSENS_{it} + \beta_{11} LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$						
	N	**Minimum**	**Maximum**	**Mean**	**SD**	**Median**
TOBINQ	1 046	0.741	5.384	1.803	0.990	1.434
IRSCORE	1 046	0.020	0.982	0.802	0.107	0.812
SA	1 046	0.000	1.000	0.500	0.500	0.000
*SA*IRSCORE*	1 046	0.000	0.982	0.399	0.411	0.000
LEV	1 046	0.199	20.034	2.910	4.107	1.128
ROA	1 046	-0.027	0.228	0.071	0.061	0.059
CAPEXR	1 046	-0.167	0.209	-0.053	0.054	-0.045
LNASSETS	1 046	5.880	10.407	8.005	0.759	7.893
SALESG	1 046	-0.901	10.758	0.081	0.131	0.064
DIV	1 046	0.000	1.000	0.986	0.115	1.000
INDNSENS	1 046	0.000	1.000	0.200	0.415	0.000
LOSS	1 046	0.000	1.000	0.066	0.250	0.000
Refer to Appendix 1: Variable definitions						

Table 5.31: Correlation coefficients: Tobin's Q pooled sample

Equation 3(b): $TOBINQ_{it} = \beta 0 + \beta_1 IRSCORE_{it} + \beta_2 SA_{it} + \beta_3 SA*IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 CAPEXR_{it} + \beta_7 LNASSETS_{it} + \beta_8 SALESG_{it} + \beta_9 DIV_{it} + \beta_{10} INDSENS_{it} + \beta_{11} LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

	TOBINQ	*IR SCORE*	*SA*	*SA*IR SCORE*	*LEV*	*ROA*	*CAPEXR*	*LN ASSETS*	*SALESG*	*DIV*	*IND SENS*	*LOSS*
TOBINQ	1											
IRSCORE	0.052	1										
SA	0.068*	0.004	1									
*SA * IRSCORE*	0.085**	0.183**	0.876**	1								
LEV	-0.081**	-0.035	-0.074*	-0.070*	1							
ROA	0.330**	-0.055	-0.004	-0.009	-0.124**							
CAPEXR	-0.099**	-0.027	0.041	0.031	0.000	-0.032	1					
LNASSETS	-0.406**	0.021	-0.410**	-0.396**	0.346**	-0.323**	-0.002	1				
SALESG	0.001	-0.025	0.047	0.039	0.000	0.022	-0.002	-0.085**	1			
DIV	0.058	0.0091**	0.000	0.026	0.004	0.049	0.001	-0.035	0.028	1		
INDSENS	-0.104**	0.039	0.078*	0.084**	-0.096**	-0.062*	-0.013	-0.003	-0.027	-0.018	1	
LOSS	-0.067*	-0.005	0.062*	0.057	-0.011	-0.368**	-0.004	0.071*	-0.030	-0.102**	0.134**	1

** Correlation is significant at the 0.01 level (2-tailed); *correlation is significant at the 0.05 level (2-tailed).

Pearson correlation coefficients of variables. Refer to Appendix 1 for variable definitions.

5.6.2.3 Regression results: Tobin's Q as the dependent variable

Equation 3(b) tested whether the value relevance of integrated reporting in South Africa was significantly different compared to that of the overall sample when firm value was proxied by Tobin's Q. The relevant hypothesis (H_3) was stated in its null form.

The regression results, when firm value as proxied by Tobin's Q was the dependent variable, are presented in Table 5.32. The interaction variable, *SA*IRSCORE*, was positive but not significant (the coefficient was 0.1783 and the p-value was 0.6221). This suggests that the value relevance of integrated reporting in South Africa is not statistically different from that of the overall sample, supporting the above findings from the Z-statistic in Section 5.6.2.1. The results for Equation 3(b) were similar to those for Equation 3(a); the null hypothesis was therefore supported under both proxies of firm value. The coefficient of *IRSCORE* was negative and not significant (the coefficient was -0.0910 and the p-value was 0.7140), consistent with findings from $H_{1(b)}$.

The control variables for leverage (*LEV*), profitability (*ROA*) and loss firms (*LOSS*) were positively associated with Tobin's Q (the coefficients were 0.0449, 4.6786 and 0.1389 respectively; the p-values were 0.0000, 0.0000 and 0.0725 respectively). Firm size (*LNASSETS*), sales growth (*SALESG*) and capital expenditures (*CAPEXR*) were negatively associated with Tobin's Q (the coefficients were -0.6554, -0.1892 and -1.4038 respectively; the p-values were 0.0000, 0.0826 and 0.0001 respectively). The coefficients of *DIV* and *INDSENS* were positive but not significant (the coefficients were 0.1712 and 0.0075; the p-values were 0.1472 and 0.9302 respectively). The F-statistic of the regression model was highly significant at the 1% level.

Table 5.32: Panel EGLS regression results – pooled sample: Tobin's Q and integrated reporting

Equation 3(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 SA_{it} + \beta_3 SA*IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 CAPEXR_{it} + \beta_7 LNASSETS_{it} + \beta_8 SALESG_{it} + \beta_9 DIV_{it} + \beta_{10} INDSENS_{it} + \beta_{11} LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**T-statistic**	**P-value**
IRSCORE		-0.0910	0.2483	-0.3665	0.7140
SA		-0.4675	0.3097	-1.5091	0.1316
*SA*IRSCORE*		0.1783	0.3617	0.4930	0.6221
LEV		0.0449***	0.0071	6.2798	0.0000
ROA		4.6786***	0.5337	8.7649	0.0000
CAPEXR		-1.4038***	0.3563	-3.9394	0.0001
LNASSETS		-0.6554***	0.0770	-8.5099	0.0000
SALESG		-0.1892*	0.1089	-1.7377	0.0826
DIV		0.1712	0.1180	1.4506	0.1472
INDSENS		0.0075	0.0866	0.0876	0.9302
LOSS		0.1389*	0.0772	1.7977	0.0725
N					
Durbin-Watson statistic	1.4672				
R-squared	0.4291				
Adjusted R-squared	0.4179				
F-statistic	38.5259***				
Prob (F-statistic)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

5.7 SUMMARY OF RESULTS

A summary of the main findings for $H_{1(a)}$, $H_{1(b)}$, $H_{2(a)}$, $H_{2(b)}$ and H_3 is presented in Table 5.33, which shows an overview of the findings when firm value was proxied by both the market value of equity and Tobin's Q. A discussion of the results is presented in Section 5.8.

Table 5.33: Summary of findings for the main results

Hypothesis	Hypotheses	Equation	Findings: market value of equity as measure of firm value	Findings: Tobin's Q as a measure of firm value
1(a)	Integrated reporting in South Africa is positively associated with firm value.	1(a) & 1(b)	Not supported.	Not supported.
1(b)	Integrated reporting in the United Kingdom is positively associated with firm value.	1(a) & 1(b)	Not supported.	Not supported.
2(a)	Integrated reports with a high level of integrated reporting in line with the International <IR> Framework in South Africa are evaluated differently by capital markets compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework in South Africa.	2(a) & 2(b)	Not supported.	Not supported.
2(b)	Integrated reports with a high level of integrated reporting in line with the International <IR> Framework in the United Kingdom are evaluated differently by capital markets compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework in the United Kingdom.	2(a) & 2 (b)	Not supported.	Supported.
3	The value relevance of integrated reporting in South Africa is not statistically different compared to the value relevance of integrated reporting in the United Kingdom.	3(a) & (b)	Supported.	Supported.

5.8 DISCUSSION OF RESULTS

This section presents a discussion and interpretation of the findings for the first, second and third hypotheses.

5.8.1 Integrated reporting and firm value (H_1)

Hypothesis 1 predicted a positive association between integrated reporting and firm value in South Africa and in the United Kingdom. As previously discussed, two proxies of firm value were used, namely the market value of equity and Tobin's Q.

5.8.1.1 Integrated reporting in South Africa and firm value

The results showed that the two main accounting variables in Ohlson's (1995) model, namely the book value of equity (*BVE*) and earnings (*EARN*) were both positively and significantly associated with *MVE* at the 1% level. These findings are in line with prior studies on the value relevance of integrated reporting using Ohlson's (1995) valuation model, for example, by Jablowski (2021:194), Landau et al. (2020:1757), and Cortesi and Vena (2019:752).

With regard to the association between integrated reporting and firm value, the results showed no association between integrated reporting and firm value as proxied by the market value of equity – the coefficient of *IRSCORE* was negative, but not significant. The results also showed no association between integrated reporting and firm value as proxied by Tobin's Q – the coefficient of *IRSCORE* was positive, but not significant. This suggests that integrated reporting was not relevant to providers of financial capital in estimating firm value. Hence, the hypothesis was rejected.

These findings from Equation 1(a) and 1(b) contradict agency theory, which suggests that integrated reporting reduces information asymmetry, which may in turn result in a positive association between integrated reporting and firm value (Zhou et al. 2017:94). However, the findings were consistent with Wahl et al.'s (2020:9) study, which found no association between integrated reporting and firm value. The findings could suggest that the providers of financial capital in South Africa may already have access to information contained in the integrated reports, for example, information from interim reports which are published before the integrated and annual reports. These findings

were also consistent with those from Martinez (2016a:3), who reports that the information asymmetry of 64 South African firms did not reduce during the sample period under that study's examination (2013 to 2015).

In terms of the control variables included in Ohlson's (1995) model, none of the control variables (leverage, return on equity, industry sensitivity and firm size) were associated with the market value of equity, except for *LOSS*, a control variable for loss-making firms, where the association was positive and significant at the 5% level. In this regard, a study by Schleicher, Hussainey and Walker (2007:153) found that annual reports serve as an important source of information for predicting share prices for loss-making firms. Furthermore, Muslu, Radhakrishan, Subramanyam and Lim (2015:3) report that loss-making firms tend to disclose more future-oriented information to mitigate for poor financial performance.

With regard to the control variables included in the Tobin's Q regression model, the findings showed that return on assets was positively associated with firm value (positive and significant at the 1% level). This suggested that profitable firms have a positive influence on Tobin's Q, consistent with findings from prior studies (Wahl et al. 2020:9; Barth et al. 2017:54). In addition, leverage (*LEV*) was positively associated with firm value, suggesting that firms with more debt were associated with higher returns to compensate for increased risk, as the literature demonstrates (Jablowski 2021:195). On the other hand, the proxy for firm size, *LNASSETS*, was negatively associated with firm value, as proxied by Tobin's Q, consistent with the findings of Dey (2020:202), who also documented a negative and significant association between firm size and Tobin's Q. These findings are also consistent with those from an earlier study by Lang et al. (2012:764), which found that Tobin's Q tends to be lower for large firms and higher for smaller firms, higher for profitable firms, and higher for highly leveraged firms. Lastly, the findings showed a negative and significant association between Tobin's Q and capital expansion, proxied by *CAPEXR,* suggesting that firms with high capital expenditure have lower firm value than firms with lower capital expenditure, consistent with the findings of Barth et al. (2017:53) and El-Faitouri (2014:89).

5.8.1.2 Integrated reporting in the United Kingdom and firm value

Contrary to the hypothesised association, the results of the current study showed no association between integrated reporting and firm value when proxied by both the market value of equity and Tobin's Q.

These findings do not fit in with signalling theory (as discussed in Section 3.3.2), which posits that firms may voluntarily issue integrated reports to send a signal to the markets and in this way attract investments and enhance the reputation of the firm (Menicucci & Paolucci 2018:557). However, in the case of the United Kingdom and integrated reporting, it could be argued that providers of financial capital are likely to focus on reports that are regulated, for example, the strategic report required by the Financial Reporting Council (FRC) and the non-financial information statement, which is required by the EU Directive. This argument was supported by a recent study conducted by Hurghiş (2020:70), who examined the association between voluntary integrated reporting and firm value using a sample of 63 European firms. The results of that study showed no association between integrated reporting and firm value (proxied by Tobin's Q).

However, similar findings have been found in comparable studies such as those by Wahl et al. (2020:11), which document no association between integrated reporting and firm value for 167 international listed firms that had adopted integrated reporting on a voluntary basis. In addition, Cooray et al. (2020:15) found no association between integrated reporting by 83 Sri Lankan listed firms and firm value. These findings suggest that providers of financial capital in these voluntary settings have not found integrated reporting to be as value relevant as the IIRC expected. This was supported by McNally et al.'s (2017:492) study, which found that the usefulness of integrated reporting was limited: investors do not value voluntary integrated reports because they place more value on financial statements than on integrated reports. Hsiao and Kelly (2018:2) examined the investment considerations of Taiwanese investors with regard to integrated reporting. They found that investors considered integrated reports an additional source of information and not necessarily a primary source to influence their investment decisions (Hsiao & Kelly 2018:19). Another study by Buallay et al. (2020:1632) found a negative association between integrated reporting and firm value for Islamic banks, which engaged in voluntary integrated reporting. The authors argue

that such findings may be due to transparent reporting by Islamic banks, which entails honest reporting consisting of both positive and negative results (Buallay et al. 2020:15).

These findings from the current study (the coefficient of *IRSCORE* was negative, but not significant) can also be explained by voluntary disclosure theory, which states that firms will provide additional disclosures if the benefits of those disclosures exceed the cost of providing such disclosures (Demartini & Trucco 2016:2). In this regard, Wahl et al. (2020:11) argue that firms that produce and publish voluntary integrated reports will do so at a low cost because they are already producing high volumes of other regulatory disclosures. In the United Kingdom setting, firms have to prepare strategic reports as required by the FRC and the non-financial statement as required by the EU Directive. It can therefore be argued that these regulatory reports will get preference in terms of preparation and quality over integrated reports. It is thus possible that the providers of financial capital in the United Kingdom value other forms of mandatory reporting more than integrated reporting, which is voluntary.

In terms of the control variables included in Ohlson's (1995) model, return on equity (*ROE*) was positive and significant at the 1% level, consistent with prior findings, which suggests that profitable firms have an incentive to increase their disclosures, thus lowering information asymmetries (Dhaliwal et al. 2011:68). Leverage (*LEV*) and industry sensitivity (*INDSENS*) were also positively associated with firm value, supporting findings from prior studies (Hoang et al. 2020:367; De Villiers, Venter and Hsiao 2017:950). The proxy for firm size, *LNASSETS*, was negative and significant at the 1% level, in line with findings by Cortesi and Vena (2019:751).

The results for control variables included in Tobin's Q model were similar to the results obtained for the South African sample, as discussed in Section 5.8.1.1. Consistent with the South African results reported above and prior findings, leverage (*LEV*) and return on assets (*ROA*) were positively associated with firm value, while firm size (*LNASSETS*) and capital growth (*CAPEXR*) were negatively associated with firm value, consistent with the findings of Wahl et al. (2020:9) and Lang et al. (2012:764). Additionally, sales growth (*SALESG*) was positively associated with firm value in line with prior findings (Lee & Yeo 2016;1232). Furthermore, dividends (*DIV*) were positively associated with firm value, consistent with the findings of Lee and Yeo

(2016:1242), suggesting that a firm's dividend pay-out or declaration signals a firm's growth opportunities and may influence firm value positively (Michaels & Grüning 2017:262). The indicator variable for industry sensitivity (*INDSENS*) was positively associated with firm value, suggesting that firms from sensitive industries in the United Kingdom may provide more voluntary disclosures in their integrated reports (Dilling & Caykoylu 2019:4).

5.8.2 The association between the level of integrated reporting in line with the International <IR> Framework and firm value (H_2)

Hypothesis 2 predicted that integrated reports with a high level of integrated reporting in line with the International <IR> Framework are evaluated differently by capital markets compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework in South Africa and the United Kingdom.

5.8.2.1 South Africa

The results from the regression analyses did not support the hypothesis. The results showed that integrated reports with a high level of integrated reporting in line with the International <IR> Framework were not evaluated differently by capital markets, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework. Neither high quality integrated reports (*HighIRSCORE*) nor low quality integrated reports (*LowIRSCORE*) were positively associated with firm value when firm value was proxied by the market value of equity or by Tobin's Q, supporting the findings from Hypothesis 1. In addition, the results from the Z-statistic test showed that the coefficient of *HighIRSCORE* was not statistically different from the coefficient of *LowIRSCORE.* Hence, Hypothesis 2(a) was not supported.

These findings contradict prior findings from Zhou et al.'s (2017) study, which found that, as the level of alignment of integrated reports with the International <IR> Framework increased, analyst forecast error and cost of capital reduce. However, it possible that the difference between the results of these studies stem from the fact that Zhou et al.'s (2017:94) study focused on examining the association between integrated reporting and analyst forecast error, while the current study focused on the association between integrated reporting and the market value of equity and Tobin's Q – the two studies thus adopted different proxies of firm value.

Another possible explanation for these results could stem from the notion that most firms that are part of the JSE Top 100 have been issuing and publishing high-quality integrated reports since 2010 (De Villiers et al. 2014:1050). South African firms were a pioneer in integrated reporting, and these integrated reports have been cited in the literature as displaying high quality (Eccles et al. 2019:11). It is thus possible that capital markets may assume that all integrated reports by the JSE Top 100 are of high quality. This argument is supported by Marrone and Oliva's (2020:99) study, which found that all 65 South African firms in their sample produced high-quality integrated reports, which were all closely aligned with the International <IR> Framework. The slight variations in the level of integrated reporting in line with the International <IR> Framework may therefore be too insignificant for the capital markets to evaluate such reports differently.

5.8.2.2 United Kingdom

The results from the regression analyses supported the hypothesis that integrated reports with a high level of integrated reporting in line with the International <IR> Framework in the United Kingdom were evaluated differently by the capital markets from integrated reports with a low level of integrated reporting in line with the International <IR> Framework when firm value was proxied by Tobin's Q. Even though the findings showed that high quality integrated reporting (*HighIRSCORE*) was not positively associated with firm value, the results showed that low quality integrated reporting (*LowIRSCORE*) was negatively associated with firm value as proxied by Tobin's Q. These findings support signalling theory, which suggests that firms with high quality integrated reports may send a positive signal to the capital markets, thereby reducing information asymmetry and increasing firm value (Sun 2021:22). Therefore, these findings for $H_{2(b)}$ could suggest that the opposite effect is true for firms with low quality integrated reports, hence the negative and significant association between low quality integrated reports and firm value. In addition, findings from the Z-statistic test showed that the coefficients of *HighIRSCORE* and *LowIRSCORE* were statistically different, hence $H_{2(b)}$ was supported for the Tobin's Q valuation model.

Similar findings are reported by Moloi and Iredele (2020:10), who found that firms with high quality integrated reporting have a higher Tobin's Q than firms with a low quality integrated reporting. Likewise, Lee and Yeo (2016:1244) found that firms with higher

quality integrated reports had higher share prices than firms with lower quality integrated reports. The findings from the current study suggest that integrated reports with a low level of integrated reporting in line with the International <IR> Framework may negatively influence firm value. This interpretation is consistent with an argument provided by Wahl et al. (2020:11) that firms that engage in voluntary integrated reporting provide low-cost integrated reports which may negatively influence firm value. However, $H_{2(b)}$ was not supported when firm value was proxied by the market value of equity.

5.8.3 Comparing the value relevance of integrated reporting in South Africa and the United Kingdom (H_3)

Hypothesis 3 was stated in a null form and predicted that the value relevance of integrated reporting is South Africa is not statistically different from the value relevance of integrated reporting in the United Kingdom.

Confirming findings from prior studies such as those by Jablowski (2021:189), Mohaimen (2021:88) and Permatasari and Narsa (2021:677), the results from Ohlson's (1995) valuation model showed that accounting information (the book value of equity and earnings) under an integrated reporting approach was value relevant, suggesting that book value of equity and earnings were positively associated with the market value of equity.

The findings from the *Z*-statistic test showed that the coefficient of *IRSCORE* from Equation 1 for the South African sample was not statistically different from the coefficient of *IRSCORE* for the United Kingdom's sample. These results could be explained by the similar country-level institutional factors which exist in both countries, as discussed in Section 2.4.2. The literature shows that institutional factors in countries affect the value relevance of information (Jensen & Berg 2012:299). As previously mentioned, both South Africa and the United Kingdom have market-oriented financial systems; firms in these countries therefore cater for the needs of the providers of financial capital through increased disclosures. Additionally, both countries are common law countries and therefore provide disclosures that cater for the providers of financial capital. Moreover, each of these countries has a sophisticated reporting system which ensures that investors have access to the information they require to

make investment decisions (Amor-Esteban et al. 2018:435). It is thus possible that these common characteristics which exist in the two countries contributed to the finding that the association between integrated reporting and firm value in South Africa was not statistically different from the association between integrated reporting and firm value in the United Kingdom.

5.9 CONCLUSION

This chapter has provided the final sample for the main tests of the three hypotheses for South Africa and the United Kingdom. It also presented and discussed the descriptive statistics for these hypotheses using two proxies of firm value, namely the market value of equity and Tobin's Q.

The results for $H_{1(a)}$ showed that for the South African sample, integrated reporting was not associated with firm value. The results were robust for both measures of firm value (the market value of equity and Tobin's Q). Similarly, the results for $H_{1(b)}$ showed that for the sample from the United Kingdom, integrated reporting was not associated with firm value. The results were robust for both measures of firm value (the market value of equity and Tobin's Q). The results for $H_{2(a)}$ showed that integrated reports with a high integrated reporting in line with the International <IR> Framework were not evaluated differently by the capital markets in South Africa, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework in South Africa. The results were robust for both measures of firm value.

On the other hand, the results for $H_{2(b)}$ showed that integrated reports with a high level of integrated reporting in line with the International <IR> Framework are evaluated differently by the capital markets in the United Kingdom, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework when firm value was proxied by Tobin's Q.

The results for H_3 – which was stated in its null form – were also presented in this chapter. The overall findings for H_3 suggest that the value relevance of reporting in South Africa was not significantly different from the value relevance of integrated reporting in the United Kingdom.

The remainder of the thesis is structured as follows: Chapter 6 discusses results for additional tests relating to the secondary objectives of the study, and Chapter 7 concludes the thesis.

CHAPTER 6
RESULTS – ADDITIONAL ANALYSES

6.1 INTRODUCTION

The previous chapter presented the results for the main tests in the study. The findings, as documented in Chapter 5, showed that integrated reporting is not associated with firm value proxied by either the market value of equity or Tobin's Q in South Africa or in the United Kingdom.

This chapter presents the results for the additional tests (secondary objectives) as discussed in Section 4.6, to evaluate the sensitivity of the results on the value relevance of integrated reporting in South Africa and the United Kingdom. The first secondary objective was to test the association between individual components of integrated reporting, namely guiding principles and content elements, and firm value in South Africa and the United Kingdom. The second secondary objective was to test the association between integrated reporting and firm value in South Africa before *King IV* was introduced, and after it became effective. It is important to note that this test only applied to the South African sample.

The third secondary objective was to test the value relevance of integrated reporting for environmentally non-sensitive industries and environmentally sensitive industries. The last secondary objective was to test whether the presence of loss-making firms in the sample had any effect on the value relevance of integrated reporting in both countries. Multi-collinearity was not an issue that needed to be considered, because the VIF scores ranged from 1.086 to 1.123 for the different model specifications.

Section 6.2 presents the results for the association between individual components of integrated reporting and firm value. Section 6.3 sets out the results for the analysis before *King IV* was introduced in South Africa and after *King IV* was implemented. Section 6.4 follows with the results for environmentally non-sensitive and environmentally sensitive industries, and Section 6.5 with the results for the main analyses but excluding loss-making firms. Section 6.6 provides a summary of the findings. In Section 6.7, the findings are discussed and interpreted. Section 6.8 concludes the chapter.

6.2 ASSOCIATION BETWEEN INDIVIDUAL COMPONENTS OF INTEGRATED REPORTING AND FIRM VALUE

The first additional analysis which was performed in the study was to examine the association between individual components of integrated reporting and firm value in South Africa and in the United Kingdom separately. The proxy for integrated reporting, *IRSCORE,* was made up of two components of the International <IR> Framework, namely the guiding principles (*GP*) and content elements (*CE*). *IRSCORE* was therefore split into two sections, *GP* and *CE.* The regression analyses were run separately to test the associations.

6.2.1 South African results

The results of the association between individual components of integrated reporting and firm value, as proxied by the market value of equity, are set out below. The results for Equation 4, where *GP* was the main variable of interest, are presented in Table 6.1, Panel A, and the results for Equation 5, where *CE* is the main variable of interest, are presented in Panel B. Panel A shows that the main coefficient of interest, *GP*, was negative and not significant (the coefficient was -12.0154; the p-value was 0.5241). Panel B shows that the main coefficient of interest in the regression, *CE*, was positive but not significant (the coefficient was 4.7980; the p-value was 0.8081). The F-statistic of the regression model was highly significant at the 1% level. These findings supported the overall findings reported in Section 5.3.1.2, that integrated reporting in South Africa was not associated with firm value, proxied by the market value of equity.

Table 6.2 presents the results of the association between individual components of integrated reporting and firm value, as proxied by Tobin's Q. Table 6.2, Panel A, shows the results for Equation 6, where *GP* was the main variable of interest. For *GP* the association was positive, but not significant (the coefficient was 0.2635; the p-value was 0.2218). Panel B shows the results for Equation 7, where *CE* was the main variable of interest. The results showed that *CE* was positive, but not significant (the coefficient was 0.0133; the p-value was 0.9571). These findings are consistent with the main results reported in Section 5.4.1.2, suggesting that integrated reporting is not associated with firm value in South Africa. The F-statistic of the regression model was highly significant at the 1% level.

Table 6.1: Panel EGLS regression results: market value of equity and individual components of integrated reporting score (South Africa)

Panel A: Equation 4: $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 GP_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**t-statistic**	**p-value**
BVE		0.4353***	0.1414	3.0788	0.0022
EARN		4.3613***	0.9643	4.5226	0.0000
GP		-12.0154	18.8503	-0.6374	0.5241
LEV		-0.0987	1.5372	-0.0642	0.9488
ROE		43.2309	35.0779	1.2324	0.2184
LNASSETS		7.2808	10.0762	0.7225	0.4703
INDSENS		10.0085	19.9633	0.5013	0.6163
LOSS		23.8373**	9.3583	2.5471	0.0112
N	521				
Durbin-Watson statistic	1.4946				
R-squared	0.4581				
Adjusted R-squared	0.4420				
F-statistic	28.4670***				
Prob (F-stat)	0.0000				

Panel B:

Equation 5: $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 CE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
BVE		0.4382***	0.0900	4.8672	0.0000
EARN		4.3873***	0.5133	8.5460	0.0000
CE		4.7980	19.7404	0.2430	0.8081
LEV		-0.2160	1.3117	-0.1646	0.8693
ROE		42.7034	30.4133	1.4041	0.1609
LNASSETS		6.9904	8.8489	0.7899	0.4299
INDSENS		9.5999	17.5218	0.5478	0.5840
LOSS		24.0350***	8.0669	2.9794	0.0030
N	521				
Durbin-Watson statistic	1.4869				
R-squared	0.4609				
Adjusted R-squared	0.4449				
F-statistic	28.7870***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions.

Table 6.2: Panel EGLS regression results: Tobin's Q and individual components of integrated reporting score (South Africa)

Panel A:

Equation 6: $TOBINQ_{it} = \beta_0 + \beta_1 GP_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
GP		0.2635	0.2154	1.2232	0.2218
LEV		0.0622***	0.0113	5.4609	0.0000
ROA		7.3589***	0.8917	8.2521	0.0000
CAPEXR		-1.1591**	0.5041	-2.2990	0.0219
LNASSETS		-0.6091	0.1249	-4.8741	0.0000
SALESG		-0.2091	0.1382	-1.5133	0.1308
DIV		0.1004	0.2564	0.3915	0.6956
INDSENS		-0.1504	0.2237	-0.6724	0.5016
LOSS		0.4980***	0.1355	3.6733	0.0003
N	521				
Durbin-Watson statistic	1.4393				
R-squared	0.4846				
Adjusted R-squared	0.4682				
F-statistic	29.6201***				
Prob (F-stat)	0.0000				

Panel B:

Equation 7: $TOBINQ_{it} = \beta_0 + \beta_1 CE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
CE		0.0133	0.2483	0.0538	0.9571
LEV		0.0643***	0.0116	5.5246	0.0000
ROA		7.2640***	0.9033	8.0414	0.0000
CAPEXR		-1.1674**	0.5011	-2.3296	0.0202
LNASSETS		-0.6120	0.1237	-4.9465	0.0000
SALESG		-0.2256*	0.1360	-1.6588	0.0978
DIV		0.1130	0.2762	0.4090	0.6827
INDSENS		-0.1204	0.2271	-0.5303	0.5961
LOSS		0.4934***	0.1374	3.5907	0.0004
N	521				
Durbin-Watson statistic	1.4223				
R-squared	0.4799				
Adjusted R-squared	0.4634				
F-statistic	29.0692***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions

6.2.2 Results for the United Kingdom

Table 6.3 presents results of the association between individual components of integrated reporting and firm value as proxied by the market value of equity. The results for Equation 6, where *GP* was the main variable of interest, are presented in Table 6.3, Panel A, and the results for Equation 7, where *CE* was the main variable of interest, are presented in Table 6.3, Panel B. Panel A also shows that the main coefficient of interest, *GP*, was negative but not significant (the coefficient was -65.9289; the p-value was 0.1043). Panel B shows that the main coefficient of interest in the regression, *CE*, was positive, but not significant (the coefficient was 7.5988; the p-value was 0.7862). The F-statistic of the regression model was highly significant at the 1% level. These findings suggest that, as reported in Section 5.3.2.2, integrated reporting in the United Kingdom was not positively associated with firm value, as proxied by the market value of equity.

Table 6.4 presents the results of the association between individual components of integrated reporting and firm value as proxied by Tobin's Q. Table 6.4, Panel A, shows the results for Equation 6, where *GP* was the main variable of interest. The results show that *GP* was negative and not significant (the coefficient was -0.1319; the p-value was 0.5046). Panel B shows the results for Equation 7, where *CE* was the main variable of interest. The results show that *CE* was positive, but not significant (the coefficient was 0.0780; the p-value was 0.6874). The F-statistic of the regression model was highly significant at the 1% level. These findings were consistent with the main results, reported in Section 5.4.2.2, that integrated reporting in the United Kingdom is not associated with firm value as proxied by Tobin's Q.

Table 6.3: Panel EGLS regression results: market value of equity and individual components of integrated reporting score (United Kingdom)

Panel A: Equation 4: $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 GP_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**t-statistic**	**p-value**
BVE		1.1643***	0.1402	8.3045	0.0000
EARN		2.3828***	0.5149	4.6273	0.0000
GP		-65.9289	40.5116	-1.6274	0.1043
LEV		3.3548**	1.6896	1.9855	0.0476
ROE		79.6952***	23.4953	3.3919	0.0007
LNASSETS		-45.6086***	12.6052	-3.6182	0.0003
LOSS		-13.44537	9.3180	-1.4429	0.1497
INDSENS		73.8992***	26.2900	2.8109	0.0051
N	525				
Durbin-Watson statistic	1.2973				
R-squared	0.3769				
Adjusted R-squared	0.3560				
F-statistic	18.0447***				
Prob (F-stat)	0.0000				

Panel B:

Equation 5: $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 CE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		**Unstandardised coefficient**	**Robust standard error**	**t-statistic**	**p-value**
BVE		1.1781***	0.1400	8.4122	0.0000
EARN		2.2198***	0.5020	4.4216	0.0000
CE		7.5988	27.9951	0.2714	0.7862
LEV		3.3443**	1.6844	1.9854	0.0476
ROE		82.0607***	23.1669	3.5421	0.0004
LNASSETS		-46.1565***	12.6493	-3.6489	0.0003
INDSENS		72.8002***	25.7816	2.8237	0.0049
LOSS		-13.9674	9.0583	-1.5419	0.1237
N	525				
Durbin-Watson statistic	1.3175				
R-squared	0.3692				
Adjusted R-squared	0.3481				
F-statistic	17.4611***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions

Table 6.4: Panel EGLS regression results: Tobin's Q and individual components of integrated reporting score (United Kingdom)

Panel A:

Equation 5: $TOBINQ_{it} = \beta_0 + \beta_1 GP_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
GP		-0.1319	0.1975	-0.6678	0.5046
LEV		0.0353***	0.0073	4.8137	0.0000
ROA		3.5284***	0.5908	5.9719	0.0000
CAPEXR		-2.1148***	0.4811	-4.3949	0.0000
LNASSETS		-0.5919***	0.0687	-8.6058	0.0000
SALESG		0.0346*	0.0187	1.8423	0.0660
DIV		0.2580**	0.1144	2.2541	0.0246
INDSENS		0.2005**	0.0779	2.5730	0.0104
LOSS		-0.0763	0.0676	-1.1279	0.2599
N	525				
Durbin-Watson statistic	1.5429				
R-squared	0.4620				
Adjusted R-squared	0.4429				
F-statistic	24.1462***				
Prob (F-stat)	0.0000				

Panel B:

Equation 6: $TOBINQ_{it} = \beta_0 + \beta_1 CE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
CE		0.0780	0.1937	0.4026	0.6874
LEV		0.0355***	0.0074	4.7919	0.0000
ROA		3.5259***	0.5913	5.9630	0.0000
CAPEXR		-2.0887***	0.4842	-4.3129	0.0000
LNASSETS		-0.5948*	0.0690	-8.6081	0.0000
SALESG		0.0343*	0.0194	1.7621	0.0786
DIV		0.2603**	0.1150	2.2626	0.0241
INDSENS		0.2004**	0.0786	2.5503	0.0111
LOSS		-0.0768	0.0680	-1.1288	0.2595
N	525				
Durbin-Watson statistic	1.5422				
R-squared	0.4617				
Adjusted R-squared	0.4426				
F-statistic	24.1190***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions.

6.3 INTEGRATED REPORTING AND FIRM VALUE BEFORE AND AFTER THE IMPLEMENTATION OF *KING IV* IN SOUTH AFRICA

The current study covered a period when *King III* was applicable to JSE-listed firms (2011 to 2016) on an 'apply or explain' basis. However, in November 2016, *King IV* became applicable to JSE-listed firms on an 'apply *and* explain' basis. This section reports results on the value relevance of integrated reporting before and after the introduction of *King IV* in South Africa.

6.3.1 Regression analysis results

The panel EGLS regression results, when firm value is proxied by the market value of equity, are presented below. Table 6.5, Panel A, shows the results for the period under *King III* (2011 to 2016) and Panel B shows the results for the period when *King IV* came into effect (2017 to 2018). Panel A shows that the coefficient of *PreKingIvIRSCORE* was negative and not significant (the coefficient was -37.0691; the p-value was 0.5938). Similarly, Panel B shows that the coefficient of *PostKingIvIRSCORE* was positive, but not significant (the coefficient was 8.1495 and the p-value was 0.7625). The F-statistic of both regression models was highly significant at the 1% level. These results were consistent with those reported in Section 5.3.1.2, that integrated reporting in South Africa was not value relevant when firm value was proxied by the market value of equity.

Table 6.6 presents the regression results for firm value proxied by Tobin's Q. Table 6.6, Panel A, shows that the coefficient which represents the integrated reporting score for all the years before the introduction of *King IV*, namely *PreKingIvIRSCORE*, was positive and significant at the 10% level (the coefficient was 0.4457; the p-value was 0.0990). These findings suggest that integrated reporting in South Africa was value relevant during the *King III* period (before the introduction of *King IV*), when firm value was proxied by Tobin's Q. However, the coefficient which represents data for all the years when *King IV* was effective, *PostKingIvIRSCORE,* was negative and not significant (the coefficient was 0.0606; the p-value was 0.9416). The results for the main analyses, as reported in Section 5.4.1.2, showed that integrated reporting for the combined sample was positive, but not significant. The variable, *DIV*, was excluded from the regression model in Panel B, since it was a constant variable.

Table 6.5: Panel EGLS regression results: market value of equity and integrated reporting for the period before and after the implementation of *King IV*

Panel A:

Equation 8a: $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 PreKingIvIRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
BVE		0.1485	0.2716	0.5470	0.5853
EARN		5.8634***	2.2132	2.6492	0.0091
PreKingIvIRSCORE		-37.0691	69.3352	-0.5346	0.5938
LEV		0.9632	3.7848	0.2545	0.7995
ROE		67.0478	64.6004	1.0378	0.3012
INDSENS		-4.8700	38.0525	-0.1279	0.8984
LOSS		49.5274*	26.6338	1.8595	0.0652
LNASSETS		2.1850	16.4410	0.1329	0.8945
N	375				
Durbin-Watson statistic	1.6864				
R-squared	0.5026				
Adjusted R-squared	0.4452				
F-statistic	8.7596***				
Prob (F-stat)	0.0000				

Panel B:

Equation 8b: $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 PostKingIvIRSCORE + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
BVE		0.5650***	0.1906	2.9634	0.0032
EARN		4.5981***	1.2037	3.8196	0.0002
PostKingIvIRSCORE		8.1495	26.9469	0.3024	0.7625
LEV		-1.5192	1.6005	-0.9491	0.3432
ROE		65.9025	42.9219	1.5354	0.1256
LNASSETS		10.9446	12.4131	0.8816	0.3785
INDSENS		8.5969	18.4335	0.4663	0.6412
LOSS		24.9373***	9.4807	2.6303	0.0089
N	146				
Durbin-Watson statistic	1.4717				
R-squared	0.5128				
Adjusted R-squared	0.4924				
F-statistic	25.1957***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions.

Table 6.6: Panel EGLS regression results: Tobin's Q and integrated reporting for the period before and after the implementation of *King IV*

Panel B:
Equation 9(a): $TOBINQ_{it} = \beta_0 + \beta_1 PreKingIvIRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
PreKingIvIRSCORE		0.4457*	0.2694	1.6539	0.0990
LEV		0.0609***	0.0116	5.2572	0.0000
ROA		8.0154***	1.0408	7.7006	0.0000
CAPEXR		-0.8950*	0.5170	-1.7310	0.0843
LNASSETS		-0.4048***	0.1147	-3.5278	0.0005
SALESG		-0.1045	0.1589	-0.6574	0.5113
DIV		0.0015	0.2269	0.0068	0.9945
INDSENS		-0.2665	0.2043	-1.3046	0.1928
LOSS		0.4120***	0.1521	2.7091	0.0071
N	375				
Durbin-Watson statistic	1.4366				
R-squared	0.5476				
Adjusted R-squared	0.5273				
F-statistic	27.0835***				
Prob (F-stat)	0.0000				

Panel B:

Equation 9(b): $TOBINQ_{it} = \beta_0 + \beta_1 PostKingIvIRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + \beta_9 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
PostKingIvIRSCORE		-0.0606	0.8273	-0.0733	0.9416
LEV		0.0858***	0.0275	3.1167	0.0023
ROA		6.7950***	2.3945	2.8376	0.0053
CAPEXR		-0.5280	1.3783	-0.3830	0.7023
LNASSETS		-0.9009***	0.2284	-3.9445	0.0001
SALESG		0.2118	0.5050	0.4195	0.6755
INDSENS		-0.1852	0.4768	-0.3884	0.6983
LOSS		1.0497***	0.3974	2.6410	0.0093
N	146				
Durbin-Watson statistic	1.5777				
R-squared	0.4709				
Adjusted R-squared	0.4099				
F-statistic	7.7149***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions.

6.4 SENSITIVE INDUSTRIES VERSUS NON-SENSITIVE INDUSTRIES

This section presents the results on the value relevance of integrated reporting when the sample for each country was split into environmentally non-sensitive and environmentally sensitive industries. The results for the South African sample as well as the United Kingdom's sample are presented below.

6.4.1 South African results

The panel EGLS regression results for Equation 10(a), where firm value was proxied by the market value of equity, are presented below. Table 6.7, Panel A, shows the results for environmentally non-sensitive industries, and Panel B shows the results for the environmentally sensitive industries. Panel A shows that the coefficient of the main variable of interest for non-sensitive industries, *IRSCORE,* was negative and not significant (the coefficient was -58.3190; the p-value was 0.1205). Panel B shows that the coefficient of the main variable of interest for sensitive industries, *IRSCORE,* was positive, but not significant (the coefficient was 18.6205; the p-value was 0.5225). These results were consistent with the main results reported in Section 5.3.1.2, namely that integrated reporting in South Africa was not value relevant when it was proxied by the market value of equity. The F-statistic for both Panel A's and Panel B's regression models was highly significant at the 1% level.

The panel EGLS regression results for Equation 10(b), where firm value was proxied by Tobin's Q, are presented in Table 6.8. Panel A shows that the coefficient of *IRSCORE* for non-sensitive industries was positive, but not significant (the coefficient was 0.2197; the p-value was 0.6088). Panel B shows that the coefficient of *IRSCORE* for sensitive industries was negative and significant at the 10% level (the coefficient was -0.6333; the p-value was 0.0508), suggesting that integrated reporting in environmentally sensitive industries may influence firm value negatively. The adjusted R^2 for sensitive firms was 44.63%, while the adjusted R^2 for non-sensitive firms was higher, at 58.89%.

Table 6.7: Market value of equity and integrated reporting: main effects for environmentally sensitive and non-sensitive industries (South Africa)

Panel A: Environmentally non-sensitive industries Equation 10(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**t-statistic**	**p-value**
BVE		0.7799***	0.1411	5.5264	0.0000
EARN		3.1069***	0.6715	4.6267	0.0000
IRSCORE		-58.3190	37.3025	-1.5634	0.1205
LEV		15.5911***	1.9891	7.8382	0.0000
ROE		220.2017***	67.0750	3.2829	0.0013
LNASSETS		4.7006	17.2682	0.2722	0.7859
LOSS		26.1373***	9.5166	2.7464	0.0069
N	389				
Durbin-Watson statistic	1.6309				
R-squared	0.7538				
Adjusted R-squared	0.7399				
F-statistic	54.2463***				
Prob (F-stat)	0.0000				

Panel B: Environmentally sensitive industries

Equation 10(a): $MVE_{it} = \beta_0 + \beta_1 BV_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
BVE		0.2804*	0.1684	1.6650	0.0967
EARN		6.0185***	1.2843	4.6862	0.0000
IRSCORE		18.6205	29.0873	0.6401	0.5225
LEV		-2.4578*	1.4017	-1.7533	0.0803
LNASSETS		-2.9368	9.1316	-0.3216	0.7479
ROE		-15.9267	26.5807	-0.5991	0.5494
LOSS		38.3052***	13.0876	2.9268	0.0036
N	132				
Durbin-Watson statistic	1.4565				
R-squared	0.4224				
Adjusted R-squared	0.4118				
F-statistic	39.8130***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions.

Table 6.8: Tobin's Q and integrated reporting: main effects for sensitive and non-sensitive industries (South Africa)

Panel A: Environmentally non-sensitive industries

Equation 10(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
IRSCORE		0.2197	0.4291	0.5121	0.6088
LEV		0.0497***	0.0151	3.2736	0.0012
ROA		8.2395***	1.1859	6.9474	0.0000
CAPEXR		-1.3987	0.6779	-2.0630	0.0398
LNASSETS		-0.7023***	0.1687	-4.1611	0.0000
SALESG		-0.1189	0.1603	-0.7415	0.4588
DIV		0.5499	0.7482	0.7349	0.4628
LOSS		0.7145***	0.1855	3.8498	0.0001
N	389				
Durbin-Watson statistic	1.4358				
R-squared	0.4577				
Adjusted R-squared	0.4463				
F-statistic	40.1041***				
Prob (F-stat)	0.0000				

Panel B: Environmentally sensitive industries

Equation 10(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
IRSCORE		-0.6333*	0.321160	-1.972118	0.0508
LEV		0.0894***	0.021366	4.187235	0.0001
ROA		7.0880***	1.101708	6.433721	0.0000
CAPEXR		-0.9230**	0.440399	-2.095952	0.0381
LNASSETS		-0.5374***	0.120593	-4.456418	0.0000
SALESG		-0.8133***	0.210839	-3.857874	0.0002
DIV		0.1491	0.109013	1.368178	0.1738
LOSS		0.3554***	0.100618	3.532203	0.0006
N	132				
Durbin-Watson statistic	1.5764				
R-squared	0.6140				
Adjusted R-squared	0.5889				
F-statistic	24.4607***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions.

6.4.2 United Kingdom results

The panel EGLS regression results for Equation 10(a) when firm value was proxied by the market value of equity are presented below. Table 6.9, Panel A, shows the results for environmentally non-sensitive industries. Panel B shows the results for the environmentally sensitive industries. Panel A also shows that the coefficient of the main variable of interest for non-sensitive industries, *IRSCORE*, was positive, but not significant (the coefficient was 26.1299; the p-value was 0.4773). These results suggest that integrated reporting in environmentally non-sensitive firms was not associated with firm value. Likewise, Panel B shows that the coefficient of the main variable of interest for sensitive industries, *IRSCORE*, was negative and not significant (the coefficient was -371.3765; the p-value was 0.2434). These results suggest that integrated reporting in environmentally sensitive firms was not positively associated with firm value. The adjusted R^2 for environmentally non-sensitive firms was 36.18%, compared to a high adjusted R^2 of 84.31% for environmentally sensitive firms. The F-statistic of the models was highly significant at the 1% level.

The panel least EGLS regression results for Equation 10(b), when the firm value was proxied by Tobin's Q, are presented in Table 6.10. Panel A shows that the coefficient of *IRSCORE* for non-sensitive industries was positive, but not significant (the coefficient was 0.1089; the p-value was 0.6518). Panel B shows that the coefficient of *IRSCORE* for sensitive industries was negative and not significant (the coefficient was -0.5540; the p-value was 0.4248). The lack of significance was consistent with the results reported in Section 5.3.2.2. The adjusted R^2 for non-sensitive firms was 46.28%, while the adjusted R^2 was 36.59% for sensitive firms. The F-statistic of the models was highly significant at the 1% level.

Table 6.9: Market value of equity and integrated reporting: main effects for sensitive and non-sensitive industries (United Kingdom)

Panel A: Environmentally non-sensitive industries Equation 10(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**t-statistic**	**p-value**
BVE		1.3628***	0.1449	9.4051	0.0000
EARN		2.0209***	0.5634	3.5866	0.0004
IRSCORE		26.1299	36.7336	0.7113	0.4773
LEV		-1.2426	0.9881	-1.2574	0.2093
ROE		133.9619***	27.8723	4.8062	0.0000
LOSS		-20.9367*	12.3759	-1.6917	0.0914
LNASSETS		0.6463	3.8216	0.1691	0.8658
N	426				
Durbin-Watson statistic	1.2807				
R-squared	0.3708				
Adjusted R-squared	0.3618				
F-statistic	20.2376***				
Prob (F-stat)	0.0000				

Panel B: Environmentally sensitive industries

Equation 10(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
BVE		0.0591	0.2820	-0.2096	0.8345
EARN		1.9871*	0.9132	2.1759	0.0329
IRSCORE		-373.3765	317.3834	-1.1764	0.2434
LEV		-3.7925	8.5319	-0.4445	0.6580
ROE		-21.1389	85.3800	-0.2475	0.8052
LOSS		-49.8209	45.4550	-1.0960	0.2768
LNASSETS		371.3685***	92.6072	4.0101	0.0001
N	99				
Durbin-Watson statistic	1.1595				
R-squared	0.8879				
Adjusted R-squared	0.8431				
F-statistic	19.8212***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions.

Table 6.10: Tobin's Q and integrated reporting: main effects for sensitive and non-sensitive industries (United Kingdom)

Panel A: Environmentally non-sensitive industries

Equation 10(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
IRSCORE		0.1089	0.2413	0.4515	0.6518
LEV		0.0374***	0.0078	4.7473	0.0000
ROA		4.0108***	0.6693	5.9922	0.0000
CAPEXR		-1.7969***	0.5025	-3.5754	0.0004
LNASSETS		-0.6241***	0.0782	-7.9743	0.0000
SALESG		0.0332*	0.0196	1.6988	0.0901
DIV		0.3253***	0.1229	2.6456	0.0085
LOSS		-0.0894	0.0793	-1.1272	0.2603
N	426				
Durbin-Watson statistic	1.4332				
R-squared	0.4729				
Adjusted R-squared	0.4628				
F-statistic	46.7781***				
Prob (F-stat)	0.00000				

Panel B: Environmentally sensitive industries

Equation 10(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 LOSS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
IRSCORE		-0.5540	0.6910	-0.8017	0.4248
LEV		0.0476*	0.0246	1.9321	0.0565
ROA		2.3814**	1.0777	2.2097	0.0297
CAPEXR		-0.0497	1.1558	-0.0430	0.9658
LNASSETS		-0.5426***	0.0995	-5.4530	0.0000
SALESG		-0.2647	0.1582	-1.6732	0.0978
DIV		0.1869	0.4715	0.3964	0.6927
LOSS		0.0818	0.2165	0.3778	0.7064
N	99				
Durbin-Watson statistic	1.2100				
R-squared	0.4177				
Adjusted R-squared	0.3659				
F-statistic	8.0703***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions.

6.5 ELIMINATING LOSS-MAKING FIRMS FROM THE SAMPLE

This section presents the results for both countries when loss-making firms were excluded from the sample. A separate analysis of the value relevance of integrated reporting for loss-making firms was not conducted, because of the small number of observations for loss-making firms (South Africa only had 43 observations, while the United Kingdom had only 23 loss-making firm observations).

6.5.1 South African results

Table 6.11 presents the regression results for Equation 11(a) after eliminating loss-making firms when firm value was proxied by the market value of equity. The results for all the variables were qualitatively similar to the main results presented in Section 5.3.1.2. The coefficient of *IRSCORE* was negative and not significant (the coefficient was -22.3799; the p-value was 0.3639). This finding suggested that eliminating loss-making firms did not affect the association between integrated reporting and firm value in South Africa. The adjusted R^2 of 51.13% was slightly higher than the adjusted R^2 of 44.27% of the model which included both positive and negative earnings, as reported in Section 5.3.1.2. The F-statistic of the regression model was highly significant at the 1% level.

Table 6.12 presents the results for Equation 11(b) after eliminating loss-making firms when firm value was proxied by Tobin's Q. The coefficient of *IRSCORE* was positive, but not significant (the coefficient was 0.2768; the p-value was 0.3260), consistent with earlier overall findings as reported in Section 5.4.1.2. The results of other control variables were qualitatively similar to the main results. The adjusted R^2 of 51.70% was slightly higher than the adjusted R^2 of the model, which included both positive and negative earnings of 46.62%, as reported in Section 5.4.1.2. The F-statistic of the models was highly significant at the 1% level.

Table 6.11: Panel EGLS regression results: market value of equity and integrated reporting (South Africa sample excluding loss-making firms)

Equation 11a: $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETSs_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**t-statistic**	**p-value**
BVE		0.2004	0.1276	1.5701	0.1171
EARN		6.2226***	1.0535	5.9062	0.0000
IRSCORE		-22.3799	24.622	-0.9089	0.3639
LEV		1.4860	1.7652	0.8418	0.4003
ROE		-11.1640	36.0624	-0.3095	0.7570
INDSENS		13.2825	18.7427	0.7086	0.4789
LNASSETS		6.8353	10.1032	0.6765	0.4990
N	478				
Durbin-Watson statistic	1.3432				
R-squared	0.5256				
Adjusted R-squared	0.5113				
F-statistic	36.6532***				
Prob (F-stat)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions.					

Table 6.12: Panel EGLS regression results: Tobin's Q and integrated reporting (South African sample excluding loss-making firms)

Equation 11(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
IRSCORE		0.2768	0.2816	0.9832	0.3260
LEV		0.0756***	0.0112	6.7355	0.0000
ROA		7.9890***	0.9092	8.7860	0.0000
CAPEXR		-1.1163**	0.5438	-2.0525	0.0407
LNASSETS		-0.5713***	0.1083	-5.2739	0.0000
SALESG		-0.2078	0.1463	-1.4207	0.1561
DIV		-0.1155	0.4822	-0.2396	0.8107
INDSENS		-0.1817	0.2110	-0.8608	0.3897
N	478				
Durbin-Watson statistic	1.2281				
R-squared	0.5322				
Adjusted R-squared	0.5170				
F-statistic	35.0457***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions.

6.5.2 United Kingdom results

Table 6.13 presents the regression results for Equation 11(a) after eliminating loss-making firms when the firm value was proxied by the market value of equity. The coefficient of *IRSCORE* was negative and not significant (the coefficient was -52.9867; the p-value was 0.2420). These findings were consistent with those previously reported, which showed that integrated reporting in the United Kingdom was not positively associated with the market value of equity. The results of other variables were qualitatively similar to those reported in Section 5.3.2.2. The adjusted R^2 was 36.80%, slightly higher than the adjusted R^2 of 35.13% of the model which included both positive and negative earnings, as reported in Section 5.3.2.2.

Table 6.14 presents the results for Equation 11(b) after eliminating loss-making firms when the firm value was proxied by Tobin's Q. The coefficient of *IRSCORE* was negative and not significant (the coefficient was -0.0856; the p-value was 0.7416). The results of other variables were qualitatively similar to the main results reported in Section 5.4.2.2. The adjusted R^2 was 45.51% and slightly higher than the adjusted R^2 of 44.24% of the model which included both positive and negative earnings, as reported in Section 5.4.2.2.

Table 6.13: Panel EGLS regression results: market value of equity and integrated reporting (United Kingdom sample, excluding loss-making firms)

Equation 11(a): $MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 EARN_{it} + \beta_3 IRSCORE_{it} + \beta_4 LEV_{it} + \beta_5 LNASSETS_{it} + \beta_6 ROE_{it} + \beta_7 INDSENS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$					
Variable		**Unstandardised coefficient**	**Robust standard error**	**t-statistic**	**p-value**
BVE		1.2223***	0.1364	8.9596	0.0000
EARN		2.2782***	0.5040	4.5202	0.0000
IRSCORE		-52.9867	45.2314	-1.1714	0.2420
LEV		3.5446*	1.7321	2.0463	0.0413
ROE		88.6065	24.7890	3.5744	0.0004
INDSENS		73.4851***	25.6863	2.8608	0.0044
LNASSETS		-48.9500***	12.6053	-3.8832	0.0001
N	498				
Durbin-Watson statistic	1.3239				
R-squared	0.3871				
Adjusted R-squared	0.3680				
F-statistic	20.2999***				
Prob (F-stat)	0.0000				
***, ** and * denote significance at the 1%, 5% and 10% levels respectively. Refer to Appendix 1: Variable definitions					

Table 6.14: Panel EGLS regression results: Tobin's Q and integrated reporting (United Kingdom sample, excluding loss-making firms)

Equation 11(b): $TOBINQ_{it} = \beta_0 + \beta_1 IRSCORE_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 CAPEXR_{it} + \beta_5 LNASSETS_{it} + \beta_6 SALESG_{it} + \beta_7 DIV_{it} + \beta_8 INDSENS_{it} + YR_{it} + IND_{it} + \varepsilon_{it}$

Variable		Unstandardised coefficient	Robust standard error	t-statistic	p-value
IRSCORE		-0.0856	0.2594	-0.329903	0.7416
LEV		0.0356***	0.0067	5.257065	0.0000
ROA		3.4296***	0.6028	5.688751	0.0000
CAPEXR		-2.1177***	0.4798	-4.413089	0.0000
LNASSETS		-0.5614***	0.0658	-8.527722	0.0000
SALESG		0.0352*	0.0193	1.823466	0.0689
DIV		0.3115***	0.1173	2.655216	0.0082
INDSENS		0.1128	0.0812	1.390181	0.1651
N	498				
Durbin-Watson statistic	1.5559				
R-squared	0.4619				
Adjusted R-squared	0.4551				
F-statistic	27.5877***				
Prob (F-stat)	0.0000				

***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Refer to Appendix 1: Variable definitions

6.6 SUMMARY OF FINDINGS

A summary of findings from the additional analyses is presented in Table 6.15. These additional tests were performed to evaluate the sensitivity of the main findings discussed in Chapter 5. A discussion of the results is presented in Section 6.7.

Table 6.15: Summary of findings: additional tests

Additional test	South Africa		United Kingdom	
	Ohlson's (1995) model	**Tobin's Q model**	**Ohlson's (1995) model**	**Tobin's Q model**
Association between individual components of integrated reporting (*GP* and *CE*) and firm value	*GP* was negative and not significant *CE* was positive, but not significant (see Table 6.1)	*GP* was positive, but not significant *CE* was positive, but not significant (see Table 6.2)	*GP* was negative and not significant *CE* was positive, but not significant (see Table 6.3)	*GP* was negative and not significant *CE* was positive, but not significant (see Table 6.4)
Association between integrated reporting and firm value in South Africa before *King IV* (2011 to 2016) and since *King IV* (2017 to 2018)	*PreKingIvIRSCORE* was negative and not significant *PostKingIvIRSCORE* was positive, but not significant (see Table 6.5)	*PreKingIvIRSCORE* was positive and significant at the 10% level *PostKingIvIRSCORE* was negative and not significant (see Table 6.6)	N/A	N/A
Environmentally non-sensitive firms	*IRSCORE* was negative and not significant (see Table 6.7)	*IRSCORE* was positive, but not significant (see Table 6.8)	*IRSCORE* was positive, but not significant (see Table 6.9)	*IRCSORE* was positive, but not significant (see Table 6.10)
Environmentally sensitive firms	*IRSCORE* was positive, but not significant (see Table 6.7)	*IRSCORE* was negative and significant at the 10% level (see Table 6.8)	*IRSCORE* was negative and not significant (see Table 6.9)	*IRSCORE* was negative and not significant (see Table 6.10)
Eliminating loss-making firms from the sample	*IRSCORE* was negative and not significant (see Table 6.11)	*IRSCORE* was positive, but not significant (see Table 6.12)	*IRSCORE* was negative and not significant (see Table 6.13)	*IRSCORE* was negative and not significant (see Table 6.14)

6.7 DISCUSSION OF FINDINGS

The purpose of this chapter was to evaluate the sensitivity of the findings from Chapter 5, which suggested that integrated reporting was not associated with firm value in South Africa and in the United Kingdom (H_1), when firm value was proxied by the market value of equity and Tobin's Q.

6.7.1 Association between individual components of integrated reporting and firm value

This section presents the discussion of the findings from the investigation of whether individual components of integrated reporting required by the International <IR> Framework, split into guiding principles, *GP*, and content elements, *CE*, were associated with firm value.

For the South African sample, the results showed that neither guiding principles nor content elements were associated with firm value when proxied by either the market value of equity or Tobin's Q, supporting the overall findings as previously reported for $H_{1(a)}$. Similarly, for the sample from the United Kingdom, the results showed that neither guiding principles nor content elements were associated with firm value when proxied by either the market value of equity or Tobin's Q, supporting the overall findings as previously reported for $H_{1(b)}$.

With regard to this particular test, only one prior study could be found in the literature which split the overall *IRSCORE* into guiding principles and content elements and that tested the value relevance of each. A study by Barth et al. (2017:52) examined the association between separate components of integrated reporting and Tobin's Q in South Africa. The difference between the current study and the study by Barth et al. (2017:52) is that the latter tested the association between each guiding principle (materiality, connectivity, stakeholder relationships, conciseness, governance and strategic focus, and future orientation) and Tobin's Q, as well as between each content element (governance, risks and opportunities performance, basis of preparation and presentation, organisation overview, and external environment and business model) and Tobin's Q. By contrast, the current study examined the association between the total score for guiding principles and firm value, and the association between the total score for content elements and firm value. The results from Barth et al.'s (2017:52)

study showed that the guiding principles (materiality connectivity, stakeholder relationships, conciseness and governance) all had a positive and significant association with Tobin's Q. The only one exception was strategic focus and future orientation, where the association was positive, but not significant. Only one content element (governance) had a positive and significant association with Tobin's Q, while the remainder of the content elements (risks and opportunities, performance, basis of preparation and presentation, organisation overview and external environment, and business model) had no significant association with Tobin's Q.

6.7.2 The value relevance of integrated reporting in South Africa during the *King III* and *King IV* periods

This section presents the discussion of the findings from the investigation of the value relevance of integrated reporting before *King IV* was introduced in South Africa in 2016, as well as the value relevance of integrated reporting after the introduction of *King IV*. Using Ohlson's (1995) model, the results showed that integrated reporting was not associated with firm value either before the introduction of *King IV* (2011 to 2016) or after the introduction of *King IV* (2017 to 2018). These results were consistent with the overall main results for H_1 reported in Section 5.3.1.2.

For Tobin's Q model, the results showed that integrated reporting was value relevant during the *King III* period (2011 to 2016). However, the results showed no association between integrated reporting and firm value after the introduction of *King IV* (2017 to 2018). As previously discussed in Section 2.3.1, integrated reporting in South Africa during *King III* was quasi-mandatory but became fully mandatory with the introduction of *King IV*. In this regard, the literature argues that a change in the regulatory environment of a country, for example, the introduction of the IFRS in Europe and the Sarbanes-Oxley regulation in the United States, affects firm value (see Caglio et al. 2020:6). In South Africa, the change from *King III* to *King IV* was such a regulatory change. One plausible explanation for the reported findings (the positive association between integrated reporting and firm value before the introduction of *King IV*) is that it is possible that firms which issued integrated reports during the *King III* period, when integrated reporting was quasi-mandatory, distinguished themselves from other firms and were therefore viewed differently by the capital markets, which may have influenced firm value positively, in line with the agency and signalling theories.

These results from this study were consistent with findings in similar studies which examined the association between integrated reporting and Tobin's Q during the *King III* reporting periods. For example, Lee and Yeo (2016:1236) found a positive association between integrated reporting in JSE-listed firms and Tobin's Q during the years 2010 to 2013. Additionally, Barth et al. (2017:57) reported a positive association between integrated reporting and Tobin's Q during their sample period, which was 2011 to 2014. Another study, by Caglio et al. (2020:69), noted a positive association between integrated reporting and Tobin's Q in the Top 160 JSE-listed firms between 2011 and 2016.

6.7.3 Sensitive versus non-sensitive industries

This section presents the findings from the investigation of the association between integrated reporting and firm value for environmentally non-sensitive firms and environmentally sensitive firms.

For the South African sample, the results showed that integrated reporting was not associated with firm value, as proxied by the market value of equity for either environmentally non-sensitive or sensitive firms, using Ohlson's (1995) model, supporting the main findings as reported in Section 5.3.1.2. These findings were consistent with those of Soumillion (2018:36), who investigated the value relevance of integrated reporting of firms in South Africa, using Ohlson's (1995) model, and found no evidence to suggest that capital markets differentiate between integrated reports based on whether a firm belongs to an environmentally sensitive industry or not. By contrast, in the current study, for the Tobin's Q model, the results showed that integrated reporting for environmentally sensitive firms was negatively and significantly associated with Tobin's Q, while integrated reporting for environmentally non-sensitive firms was not associated with Tobin's Q. Thus integrated reporting from environmentally sensitive firms was not positively associated with firm value as proxied by Tobin's Q. These findings contradict those of prior studies which show that firms from environmentally sensitive industries disclose more non-financial information in their integrated reports to reduce information asymmetry, compared to firms in environmentally non-sensitive industries (Grassmann et al. 2019:894).

Similarly, for the United Kingdom's sample, the results showed that integrated reporting was not associated with firm value, as proxied by either the market value of equity or Tobin's Q for both environmentally non-sensitive and sensitive firms, supporting the main findings as reported in Sections 5.3.2.2 and 5.4.2.2. These findings suggest that capital markets in the United Kingdom do not differentiate between integrated reports based on whether a firm belongs to an environmentally sensitive industry or not. These findings were similar to those previously reported by Jablowski (2021:143), who found that there was no statistical difference between the mean of the integrated reporting index for environmentally sensitive firms and that for environmentally non-sensitive firms in Germany and the United Kingdom. A possible explanation for these findings could be that LSE-listed firms are required to issue a non-financial statement as part of their strategic report. This non-financial statement has to describe the impact of the activities of the firm on the environment (see earlier discussion in Section 2.3.2). Therefore, it is possible that firms in the United Kingdom may provide more disclosures in their strategic reports (which are mandatory) to reduce information asymmetry and provide fewer disclosures in the integrated reports, which are voluntary. These findings therefore did not support agency theory or voluntary disclosure theory, which suggest that environmentally sensitive firms may provide more disclosures in their integrated reports to reduce information asymmetry.

6.7.4 Eliminating loss-making firms from the sample

This section presents the discussion of the findings from the investigation of the association between integrated reporting and firm value after eliminating loss-making firms from the sample.

The results for the South African sample showed that integrated reporting was not associated with firm value, as proxied by either the market value of equity or Tobin's Q, after eliminating loss-making firms, consistent with previously reported findings. An interesting finding observed from Ohlson's (1995) model was that the coefficient of *BVE* was positive, but not significant when loss-making firms were excluded from the sample, as shown in Table 6.11 (the coefficient was 0.2004; the p-value was 0.1171). However, the coefficient of *BVE* when loss-making firms were included in the sample in Section 5.3.1.2 was significant at the 1% level (the coefficient was 0.4378; the p-value was 0.0023). This was consistent with the prior literature, which suggests that

the book value of equity tends to be more value relevant when firms report negative earnings (Kwon 2009:24; Ho, Liu & Sohn 2001:84). The argument offered in the literature to explain this phenomenon is that book value of equity serves as a better measure for expected future earnings for loss-making firms because negative earnings are transitory (Collins, Pincus & Xie 1999:16). Simplified, this means that, when a firm has negative earnings, the markets prefer to rely on the book value of equity, since negative earnings are temporary. Furthermore, negative earnings imply that a firm should either become profitable again in future, or that it should liquidate (Collins et al. 1999:4). In considering the possibility of liquidation, the book value of equity becomes a proxy for the abandonment value (Jiang & Stark 2013:117). It was therefore not surprising that, in the current study, the book values of equity were more significant (at the 1% level) in the presence of loss-making firms, compared to not significant when loss-making firms were eliminated from the sample.

For the United Kingdom's sample, the results showed no association between integrated reporting and firm value for either Ohlson's (1995) model or the Tobin's Q model. These findings were similar to the findings previously reported for $H_{1(b)}$ in Section 5.3.2.2, which suggested that integrated reporting was not positively associated with the market value of equity. It was also evident from the findings that the explanatory power of each model in both measures of firm value (adjusted R^2) for both the South African and United Kingdom samples increased when loss-making firms were excluded from the sample. These findings were consistent with those of Filip and Raffournier (2010:95), who reported that the explanatory power of their models increased significantly after the elimination of loss-making firms. Furthermore, the current results showed that the presence of loss-making firms in the sample increased the value relevance of book values of equity for the South African sample, consistent with the prior literature (Kwon 2009:24).

6.8 CONCLUSION

This chapter has provided the regression results of additional tests to evaluate the sensitivity of the results provided in Chapter 5. The first test evaluated whether individual components of integrated reporting were positively associated with firm value. The second test assessed the value relevance of integrated reporting before the introduction of *King IV* in South Africa and after it became effective. The third test

evaluated the value relevance of integrated reporting for environmentally non-sensitive and environmentally sensitive firms. The last test assessed whether the elimination of loss-making firms affected the value relevance of integrated reporting. These additional tests provided insight into the value relevance of integrated reporting, using two proxies of firm value, namely the market value of equity and Tobin's Q.

Chapter 7 is the last and final chapter of the thesis and provides a summary of the main findings of the study, as well as the limitations of the study. The contribution of the study and implications for future research are also discussed.

CHAPTER 7
CONCLUSION

7.1 INTRODUCTION

This final chapter provides a summary and the conclusion of the thesis. The remainder of the chapter is divided into six more sections. Section 7.2 provides an overview of the study. Section 7.3 summarises the main findings of the thesis; this is followed by a discussion of the implications of the findings in Section 7.4, as well as by a reflection on the contributions made by this thesis to the literature in Section 7.5. The chapter concludes with an acknowledgement of the limitations of the study and suggestions for future research in Section 7.6 and the concluding remarks in Section 7.7.

7.2 OVERVIEW OF THE STUDY

This study set out to investigate the value relevance of integrated reporting in South Africa and in the United Kingdom by investigating the association between integrated reporting and firm value. Prior empirical studies on the value relevance of integrated reporting have mainly focused on using South African data, because it is deemed a good example of a mandatory integrated reporting setting, for example, in the studies by Caglio et al. (2020:69), Moloi and Iredele (2020:11), and Barth et al. (2017:43). Alternatively, prior studies have looked at data in different countries from firms which voluntarily publish integrated reports, rather than data of firms from a single country (for example, Gerwanski 2020:2299; Cortesi & Vena 2019:745; Pavlopoulos et al. 2019:12). Only a limited number of studies use data across countries on the value relevance of integrated reporting (Jablowski 2021:6).

The first main objective of this study was to investigate the value relevance of integrated reporting separately in South Africa and in the United Kingdom. The second main objective of the study was to investigate whether integrated reports with a high level of integrated reporting in line with the International <IR> Framework are evaluated differently by the capital markets from integrated reports with a low level of integrated reporting in line with the International <IR> Framework in each country. The third main objective of this study was to investigate whether the value relevance of

integrated reporting in South Africa is statistically different from the value relevance of integrated reporting in the United Kingdom.

Moreover, this study had secondary objectives which sought to shed more light on the value relevance of integrated reporting. The first secondary objective was to investigate the value relevance of integrated reporting in South Africa before and after the introduction of *King IV*. The second secondary objective was to investigate whether integrated reporting in line with guiding principles and content elements of the International <IR> Framework was associated with firm value when these were considered separately. The third secondary objective was to investigate the value relevance of integrated reporting for environmentally sensitive firms and environmentally non-sensitive firms in each country. The last secondary objective was to investigate whether the exclusion of loss-making firms would affect the value relevance of integrated reporting in each country.

In order to investigate the above-mentioned research objectives, this study began by providing a discussion of the types of corporate reporting which preceded integrated reporting in **Chapter 2**. It was deemed important to understand these types of reporting (the balanced scorecard, triple bottom line reporting, and sustainability reporting), because they paved a way for integrated reporting. Chapter 2 indicated the state of integrated reporting in South Africa and the United Kingdom. This discussion was crucial in order to draw parallels between the integrated reporting settings in each country. Lastly, the chapter provided a discussion of the reasons for selecting South Africa and the United Kingdom as the countries from which to draw samples for the study. South Africa was chosen because the country was a pioneer in the development of integrated reporting and was the first country to require listed firms (on the JSE) to prepare integrated reports on an 'apply or explain' basis in 2010 in line with *King III* (IoDSA 2009:5) and then on an 'apply and explain' basis under *King IV*. Furthermore, the United Kingdom was selected since it is the home base of the IIRC and it had a sufficient number of firms which issue integrated reports on a voluntary basis (Landau et al. 2020:1750; Lopes & Coelho 2018:400).

The next step, in **Chapter 3**, was to review the literature on the value relevance of integrated reporting, to formulate a theoretical framework which guided the study, and to develop hypotheses to be empirically tested. Chapter 3 began by providing an

overview of the value relevance literature. Then a review of the literature on the value relevance of integrated reporting in South Africa and globally was conducted with the aim of positioning the study and identifying gaps in the literature. Next came a review and evaluation of socio-political theories which have been widely used in the literature to explain integrated reporting practices, namely stakeholder theory, legitimacy theory and institutional theory. The most relevant theories for this study were identified and evaluated, and subsequently formed the theoretical framework for this study. Those theories were agency theory, voluntary disclosure theory and signalling theory. This theoretical framework sought to explain the role of integrated reporting in reducing information asymmetry between firms and providers of financial capital, thereby resulting in a positive association between integrated reporting and firm value. Additionally, this theoretical framework was used to shape the study and guide the research methodology adopted in the study. In the last part of the chapter, the theoretical framework was used to develop three testable hypotheses which were stated as follows:

$H_{1(a)}$: Integrated reporting in South Africa is positively associated with firm value.

$H_{1(b)}$: Integrated reporting in the United Kingdom is positively associated with firm value.

$H_{2(a)}$: Integrated reports with a high level of integrated reporting in line with the International <IR> Framework in South Africa are evaluated differently by capital markets, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework.

$H_{2(b)}$: Integrated reports with a high level of integrated reporting in line with the International <IR> Framework in the United Kingdom are evaluated differently by capital markets, compared to integrated reports with a low level of integrated reporting in line with the International <IR> Framework.

H_3: The value relevance of integrated reporting in South Africa is not statistically different compared to the value relevance of integrated reporting in the United Kingdom.

The selection of an appropriate research methodology to conduct the analyses is discussed in detail in **Chapter 4**. The chapter began with a consideration of research paradigms which have been widely used in the literature, namely the positivist, constructivist and pragmatism paradigms. The positivist research paradigm was deemed to be best suited to this study. Different types of research methods were also reviewed (qualitative, quantitative and mixed research methods) – a quantitative research method was chosen for this study. Thereafter, the research design used to test the hypotheses was discussed, namely a correlational research design. It is important to note that the correlational research design chosen for this study does not imply causality. The sample selection process for each country (the Top 100 JSE - listed firms and the Top 100 LSE-listed firms from 2011 to 2018) was explained in this chapter. After choosing a sample, the next step was to develop the integrated reporting scoring index (IRSCORE) used to evaluate an integrated report's level of disclosure in line with the International <IR> Framework. The IRSCORE was based on the guiding principles and content elements of the International <IR> Framework, which were weighted equally towards the overall IRSCORE. Reliability and validity tests were performed for the IRSCORE. Thereafter, the valuation models adopted in the study were discussed, namely Ohlson's (1995) model and Tobin's Q valuation model. Two proxies of firm value were used in the study, namely the market value of equity and Tobin's Q. A discussion of control variables included in the models was also provided in the chapter. Lastly, the regression equations to test different tests were formulated.

The statistical tests and findings for the main research objectives are presented in **Chapter 5** and those for the secondary research objectives as set out in **Chapter 6**. The findings from these two chapters are summarised in Section 7.3 below.

7.3 SUMMARY OF THE FINDINGS

This section presents a summary of the findings of the study for a sample of South African firms and a sample of firms from the United Kingdom. The main findings were presented and discussed in Chapter 5; the findings from the sensitivity analyses were presented and discussed in Chapter 6.

7.3.1 Findings for South Africa

The overall findings for the first hypothesis ($H_{1(a)}$) showed no evidence of a significant association between integrated reporting and firm value in South Africa. Thus the hypothesis was rejected. These results were consistent for both measures of firm value – the market value of equity and Tobin's Q. As part of additional tests to evaluate the sensitivity of the results of the main findings, the researcher considered the possibility that some firms may not align their integrated reports equally with both aspects of the International <IR> Framework (its guiding principles and its content elements). Therefore the researcher tested the value relevance of the guiding principles and content elements separately. The findings of this analysis supported the overall findings, displaying no significant association between either the guiding principles or the content elements and firm value when firm value was proxied by either the market value of equity or Tobin's Q.

The second hypothesis ($H_{2(a)}$) predicted that in South Africa integrated reports with a high level of integrated reporting in line with International <IR> Framework are evaluated differently by the capital markets from integrated reports with a low level of integrated reporting in line with the International <IR> Framework. This hypothesis was also rejected for both Ohlson's (1995) model and Tobin's Q model, as the findings showed that there was no statistical difference in the association between firm value and integrated reports with a high level of integrated reporting and those with a low level of integrated reporting. These findings suggested that the capital markets did not differentiate between the integrated reports of the sampled firms. These findings were consistent with those for $H_{1(a)}$.

The samples for the current study covered the period 2011 to 2018. During this period, *King III* was applicable to the Top 100 JSE-listed firms from 2011 to 2016, and *King IV* was applicable during the period 2017 to 2018. It was thus possible that the value relevance of integrated reporting in South Africa might have been different under these two reporting regimes. The findings of the analysis provided evidence of a significant association between integrated reporting and firm value (when Tobin's Q was a proxy for firm value) during the years 2011 to 2016, when *King III* applied. However, the results provided no evidence of a significant association between integrated reporting and firm value after the implementation of *King IV* (2017 to 2018). These findings

suggested that the providers of financial capital in South Africa considered integrated reports value relevant when firms had to prepare such reports on an apply *or* explain basis (under *King III*). These findings were consistent with comparable studies on the value relevance of integrated reporting in South Africa, particularly those studies which examined the value relevance of integrated reporting during similar reporting periods, for example, the research by Caglio et al. (2020:69) and Barth et al. (2017:57).

It was also considered possible that the main results for H_1 could be influenced by the type of industry to which each firm belonged, particularly if the firm was in an environmentally sensitive industry. It was found that integrated reporting by environmentally sensitive firms was marginally negatively associated with firm value when Tobin's Q was a proxy for firm value (significant at the 10% level), but no significant association was found between integrated reporting and firm value when the market value of equity was used as a proxy for firm value. The findings also showed that integrated reporting from environmentally non-sensitive firms was not associated with firm value, when firm value was proxied by either the market value of equity or Tobin's Q. Furthermore, the current study presented evidence to suggest that eliminating loss-making firms from the sample did not affect the value relevance of integrated reporting in South Africa.

7.3.2 Findings for the United Kingdom

The overall findings for the first hypothesis ($H_{1(b)}$) revealed that integrated reporting in the United Kingdom was not associated with firm value when firm value was proxied by either the market value of equity or Tobin's Q. Thus the hypothesis was rejected. It is possible that other forms of mandatory reporting in the United Kingdom, for example, the mandatory strategic report and the non-financial statement required by the EU Directive would be used as a source of information by providers of financial capital, rather than the voluntary integrated report. Notably, these results were similar to those of Landau et al. (2020:1759), who found that, in Europe, where integrated reporting is voluntary, integrated reporting only adds value when information contained in the reports has been verified by auditors.

The second hypothesis ($H_{2(b)}$) stated that in the United Kingdom integrated reports with a high level of integrated reporting in line with the International <IR> Framework

were evaluated significantly different from integrated reports with a low level of integrated reporting in line with the International <IR> Framework. The findings showed that there was no statistical difference in the association between firm value and integrated reports with a high level of integrated reporting and those with a low level of integrated reporting when firm value was proxied by market value of equity. However, the Z-statistic test results showed that the coefficient of *IRSCORE* for firms with a high level of integrated reporting was significantly different from the coefficient of *IRSCORE* for integrated reports with a low level of integrated reporting when firm value was proxied by Tobin's Q. Additionally, the regression results showed that integrated reports with a high level of integrated reporting were not associated with firm value as proxied by Tobin's Q (the coefficient of *IRSCORE* was positive but not significant). However, the findings showed that integrated reports with a low level of integrated reporting were negatively and significantly associated with firm value as proxied by Tobin's Q, supporting findings from the Z-statistic test. Therefore, the second hypothesis was rejected for the Ohlson's (1995) model but supported for the Tobin's Q model.

The first finding from the sensitivity analysis supported the overall findings and showed no significant association between either the guiding principles or content elements and firm value, when firm value was proxied by either the market value of equity or Tobin's Q. Additionally, the findings showed no positive association between integrated reporting and firm value for environmentally non-sensitive and sensitive industries. These findings were robust for both measures of firm value. Furthermore, the findings from the current study suggested that eliminating loss-making firms from the sample did not affect the association between integrated reporting and firm value in the United Kingdom. The coefficients of *IRSCORE* were negative under both valuation models, and were not significant.

7.3.3 Comparing the value relevance of integrated reporting in South Africa and the United Kingdom

The last hypothesis was stated in its null form. It predicted that the value relevance of integrated reporting in South Africa is not statistically different compared to the value relevance of integrated reporting in the United Kingdom. The findings from the study supported the hypothesis, as the findings for H_3 showed that the coefficient of

IRSCORE for the South African sample was not significantly different from the coefficient of *IRSCORE* for the sample from the United Kingdom. These findings suggested that the association between integrated reporting and firm value in South Africa was indeed not statistically different from the association between integrated reporting and firm value in the United Kingdom. These findings were robust for both measures of firm value adopted in the study.

7.4 IMPLICATIONS OF THE FINDINGS OF THE STUDY

7.4.1 Theoretical implications

The findings from this study have several theoretical implications. The theoretical framework which underpinned this study consisted of agency theory, voluntary disclosure theory and signalling theory. This theoretical framework predicted that integrated reporting in South Africa would reduce information asymmetry between the providers of financial capital and firms, resulting in a positive association between integrated reporting and firm value. This theoretical framework also suggested that the issuing of integrated reports by Top 100 LSE-listed firms which voluntarily produce such reports should result in reduced information asymmetry between providers of financial capital and the issuing firms, resulting in a positive association between integrated reporting and firm value. Additionally, it was expected that high quality integrated reports (ones with a high level of integrated reporting in line with the International <IR> Framework) would be likely to send a positive signal to the capital markets, and that the opposite effect would be observed for low quality integrated reports (ones with a low level of integrated reporting in line with the International <IR> Framework) in both countries. In fact, although some findings from the study supported the theoretical framework, several findings challenged the theoretical framework.

The main findings for the South African sample did not provide support for agency theory. However, when the sample of South African firms was split into the periods before and since the implementation of *King IV*, the data did provide evidence for agency theory for the Pre-*King IV* reporting period. The results indicated that integrated reporting during the *King III* reporting period was likely to reduce information asymmetry between the providers of financial capital and firms, resulting in a positive association between integrated reporting and firm value, but only when firm value was

proxied by Tobin's Q. However, the findings refuted the claims of signalling theory which predicted that integrated reports in South Africa with a high level of integrated reporting in line with the International <IR> Framework were likely to send a positive signal to the markets about the quality of the firm, resulting in a positive association between integrated reporting and firm value. Moreover, the findings showed that integrated reporting from environmentally sensitive firms was negatively associated with firm value, as proxied by Tobin's Q, contrary to the argument provided by voluntary disclosure theory, that sensitive firms are likely to increase their non-financial disclosures to legitimise themselves, thus reducing information asymmetry.

The main findings for the United Kingdom's sample did not provide evidence for agency theory, in terms of which integrated reporting in the United Kingdom should reduce information asymmetry. These findings were robust for both measures of firm value. Likewise, these findings did not provide evidence for voluntary disclosure theory, which posits that firms will only provide additional voluntary disclosures in integrated reports if the benefits of providing those disclosures exceed the costs of providing such disclosures. In the United Kingdom, firms already have other mandatory forms of reporting, and it is likely that such mandatory reporting is preferred by both the preparers of such reports and the providers of financial capital.

In addition, the findings for the second hypothesis provided evidence for signalling theory as the results for the United Kingdom revealed that integrated reports with a low level of integrated reporting were negatively and significantly associated with firm value, as proxied by Tobin's Q. Furthermore, the association was statistically different from that of firm value and integrated reports with a high level of integrated reporting in line with the International <IR> Framework. This could suggest that providers of financial capital regard integrated reports with a low level of integrated reporting as a cost; hence the negative association with firm value. Contrary to the agency and voluntary disclosure theories, the assertion that firms from environmentally sensitive industries are likely to increase their disclosures in integrated reports to reduce information asymmetry was not supported when firm value was proxied by either measure of firm value.

7.4.2 Practical implications

A number of practical considerations were identified from this study which could be useful to regulators, providers of financial capital and preparers of integrated reports in countries where integrated reporting is either mandatory or voluntary.

Firstly, the findings from the study suggest that integrated reporting in South Africa was marginally positively associated with firm value during the *King III* reporting period, but was not positively associated with firm value during the *King IV* reporting period if firm value was proxied by Tobin's Q. The change from *King III* to *King IV* was a regulatory change, and the literature recommends that a change in regulation be tested and evaluated to inform policy (Conway 2019:628). This finding will therefore provide insight to South African regulators, for example, the JSE, of the implications of the change from *King III* to *King IV*. In addition, this finding will be of interest to other academics who may consider examining this change over a longer sample period, particularly for reporting periods since the implementation of *King IV*.

Secondly, this study has provided evidence that integrated reporting was not positively associated with firm value in the United Kingdom over the sample period, when firm value was proxied by either the market value of equity or Tobin's Q. However, the study did provide evidence that integrated reports with a high level of integrated reporting in line with the International <IR> Framework were evaluated significantly different from integrated reports with a low level of integrated reporting in the United Kingdom when firm value was proxied by Tobin's Q. This finding will be of interest to the IIRC, stock exchanges, academics, providers of financial capital and preparers of integrated reports in voluntary settings. This finding suggests that, in countries where integrated reporting is not yet mandatory, the quality of integrated reports does matter to providers of financial capital. This finding also suggests that academics interested in testing the value relevance of integrated reporting in other countries where it is voluntary need to control for the quality of the integrated reports in their studies.

7.5 CONTRIBUTIONS OF THE STUDY

The current study contributes to the body of knowledge in several ways. The study contributes to literature on the value relevance of integrated reporting by using data from a mandatory setting and from a voluntary setting in a single study. A number of

studies have so far examined the value relevance of integrated reporting, and such studies often use South African data. This is because South Africa is the first country to have incorporated integrated reporting under *King III* into listing requirements on an 'apply or explain' basis from 2010. This situation has made South Africa the perfect setting to examine the benefits associated with integrated reporting.

Two previous studies examined the value relevance of integrated reporting in South Africa, namely those of Barth et al. (2017:43) and Lee and Yeo (2016:1221). Both studies used Tobin's Q as one of the proxies for firm value. However, these studies had short sample periods. Barth et al.'s (2017:51) sample years were 2011 to 2014, while Lee and Yeo's (2016:1224) sample years were 2010 to 2013. Additionally, these studies were conducted when JSE-listed firms had to apply the requirements of *King III* only on an 'apply or explain' basis. These studies provided evidence of a positive association between integrated reporting in South Africa and firm value as proxied by Tobin's Q, which the current study confirmed. The current study was similar to these two studies in that it used Tobin's Q as one of the measures of firm value. Hence, the current study extended these studies by testing the value relevance of integrated reporting using an additional different measure of firm value: the market value of equity. Moreover, the sample period in the current study was longer, from 2011 to 2018, and it covered both *King III* and *King IV* reporting periods, making it one of the few studies in the literature (as shown by the literature review in Section 3.2) to cover both periods in a single study. It thus responds to the call by Zúñiga et al. (2020:647), who encouraged researchers to extend the literature by testing the value relevance of integrated reporting in South Africa after the introduction of *King IV*, adding to the body of knowledge.

Additionally, most studies in the literature that examine the value relevance of integrated reporting in voluntary settings use samples from various countries instead of a single country, for example, Landau et al. (2020:5), Loprevite et al. (2018:3) and other studies as reviewed in Section 3.2.3. Such a sample is often collected from the IIRC Examples Database. Barth et al. (2017:44) warn that using a list of these voluntary adopters could cause self-selection bias. There are a few studies which have focused on a single country to investigate the value relevance of integrated reporting in voluntary settings, for example, the study by Cooray et al. (2020:1), who used a

sample of firms from Sri Lanka, and the study by Dey (2020:199), who used a sample of firms from Bangladesh. Therefore, the findings presented in this study added to the limited number of studies on the value relevance of integrated reporting in countries where integrated reporting is voluntary, particularly in the United Kingdom. The findings from this study are therefore important because United Kingdom firms are the second largest set of issuers of integrated reports in Europe (see Bochenek 2020:112; Landau et al. 2020:5; Beretta et al. 2019:104). Understanding the value relevance of integrated reporting in the United Kingdom, which is the home base of the IIRC, was regarded as an important contribution, as it will assist other countries that are still engaged in the implementation of integrated reporting.

The study has investigated the association between the level of integrated reporting in line with the International <IR> Framework and firm value in a country where integrated reporting is voluntary, the United Kingdom. Zhou et al. (2017:94) investigated the association between analyst forecast error and the level of alignment with the International <IR> Framework in South Africa. The findings from Zhou et al.'s (2017:123) study showed that, as the level of alignment increases, analyst forecast error reduced. Therefore, this study adds to the literature as it investigated the association between the level of integrated reporting in line the International <IR> Framework and firm value in South Africa and in the United Kingdom. The findings from this analysis contribute to the literature by showing that integrated reports with a low level of integrated reporting in line with the International <IR> Framework may be negatively associated with firm value in a voluntary setting such as the United Kingdom.

Lastly, one of the recommendations from Zhou et al.'s (2017:124) study was that future studies should investigate integrated reporting and its capital market implications across countries. The current study served as a response to that call. The findings presented in this study add to those of the few other studies using data across countries, such as those by Jablowski (2021:189) and Mohaimen (2021:88). While Jablowski (2021:189) and Mohaimen (2021:88) used a single measure of firm value in their studies (the market value of equity), this study used two measures of firm value to conduct the investigations (the market value of equity and Tobin's Q).

7.6 LIMITATIONS AND AREAS FOR FUTURE RESEARCH

As with any research, this study had a number of limitations which should be considered in evaluating the findings from the study.

The first limitation observed in the study was that it is difficult to generalise the findings of this study to smaller firms, since the current study used a sample of the largest firms from the JSE and the LSE. Future studies could extend this analysis to smaller firms listed on the stock exchanges, state-owned enterprises, and other private firms.

The second limitation was that this study suffers from the same limitations as other studies using self-constructed indices to evaluate the level and quality of integrated reporting. One such limitation cited in the literature is the level of researcher subjectivity involved in the development of the index, as well as the scoring process, which makes it difficult for the index to be replicated by other researchers (Jablowski 2021:209; Zhou et al. 2017:124; Lee & Yeo 2016:1231). Because the International <IR> Framework is principle-based, the level of its application is also subjective, and varies from one firm to another, depending on the level of understanding of each firm and the interpretation of the International <IR> Framework. In addition, Healy and Palepu (2001:427) assert that there is a level of information omission which occurs when self-constructed indices are used, since they are usually based on published documents and therefore ignore other sources of information, such as conferences, analysts' meetings and other information platforms. Future studies could attempt to incorporate other information sources into the scoring index, which might affect the ability of firms to produce integrated reports, for example, the *King IV* report.

The third limitation identified in the study was that the empirical tests conducted in the study did not exclude financial firms from the sample. In future, other studies could split the sample and test the value relevance of integrated reporting for financial firms only, and the value relevance of integrated reporting for the rest of the firms in other industries. It is possible that the associations between integrated reporting and firm value may differ, depending on the industry in which a firm operates. Additionally, since the current study did not compare the level of integrated reporting in line with the International <IR> Framework for South Africa against that in the United Kingdom, future studies could compare the differences across different countries statistically.

Furthermore, this study provided evidence that integrated reporting in South Africa was mainly driven by the years 2011–2016, which were the years before King IV was implemented. It is possible that these findings were due to the unequal sample distribution over these two periods, namely six years before King IV (2011–2016) and two years after King IV (2017–2018). Future studies could extend the sample of the post-King IV period and perform an analysis for robustness purposes.

Finally, it would also add value if academics interested in the value relevance of integrated reporting in the United Kingdom were to conduct a qualitative analysis to obtain views from the providers of financial capital about the effect of integrated reporting on firm value. Findings of such a qualitative analysis might shed more light on the current status of integrated reporting adoption in the United Kingdom.

7.7 CONCLUDING REMARKS

In 2013, the IIRC released the International <IR> Framework, which provides guidance for firms engaged in integrated reporting (IIRC 2013:2). At the time of the release of the International <IR> Framework, the IIRC envisioned integrated reporting becoming a “corporate reporting norm” in the long term (IIRC 2013:2). Almost ten years later, it is still not clear whether integrated reporting has fulfilled the IIRC’s vision. This is evidenced by the limited number of countries which have mandated integrated reporting – for example, South Africa (Maama & Marimuthu 2021:384; Caglio et al. 2020:2, Barth et al. 2017:43) – compared to a vast number of countries where integrated reporting is still voluntary – for example, China (Sun, Qiao, An, Fang & Wu 2022:8), the United States (Gregorovious 2021:75), the United Kingdom and Germany (Jablowski 2021:8), Japan (Sun 2021:2), Sri Lanka (Haleem et al. 2020:372), and the Gulf Cooperation Council countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates) (Buallay et al. 2020:1623).

Therefore, in considering whether firms should adopt integrated reporting or not, De Villiers et al. (2014:1061) asked whether “the decision to disclose an integrated report [is] value relevant, in other words do the financial markets react or reflect a value premium in any way?”. Since they asked the question in 2014, there have been several studies that have attempted to answer this question quantitatively. By using South African data, where integrated reporting is advanced and has been applied by JSE-

listed firms for a number of years, and data from the United Kingdom, which is the home base of the IIRC and where the use of integrated reporting has been on the rise but is still voluntary, this study has provided additional evidence on the value relevance (or lack thereof) of integrated reporting in different settings. Future studies will investigate this phenomenon further, using the contributions made by this study towards the body of knowledge as a building block.

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APPENDICES

APPENDIX 1: VARIABLE DEFINITIONS

Variable	Definition
Variables used in the main tests' regression equations	
MVE	represented the market value of equity at reporting date scaled by the number of shares at the end of the year
TOBINQ	TOBINQ was calculated as total assets minus the book value of equity plus the market value of equity, all divided by total assets
BVE	represented the book value of equity at reporting date divided by the number of shares at the end of the year
EARN	represented the net profit for the year divided by the number of shares at the end of the year
IRSCORE	represented the integrated reporting score based on the International <IR> Framework
ROE	return on equity, calculated as the net profit for the year divided by the book value of equity
LEV	leverage, calculated as the total debt divided by the total book value of equity
LNASSETS	represented the natural logarithm of the book value of total assets
INDSENS	indicator variable equal to 1 if the firm was from a sensitive industry; 0 if not
LOSS	indicator variable equal to 1 if the firm made a loss for the year; 0 if not
YR	indicator variable to control for fixed-year effects
IND	indicator variable to control for fixed-industry effects
CAPEXR	represented the total capital expenditures (cash flows from investments) divided by the total book value of assets

Variable	Definition
ROA	represented the net profit for the year divided by the total book value of assets
DIV	indicator variable equal to 1 if the firm declared or paid a dividend in the current year; 0 if not
HighIRSCORE	*HighIRSCORE* denoted all the IRSCORE values above the median
LowIRSCORE	*LowIRSCORE* denoted all the IRSCORE values below the median
SA	indicator variable equal to 1 if the country was South Africa, 0 otherwise
*SA*IRSCORE*	Interaction variable between *SA* and *IRSCORE*
Variables used in the additional tests' regression equations	
GP	represented the total *IRSCORE* for the guiding principles
CE	represented the total *IRSCORE* for the content elements
PreKingIvIRSCORE	*IRSCORE* for all the years 2011 to 2016
PostKingIvIRSCORE	*IRSCORE* for all the years 2017 to 2018

APPENDIX 2:
LIST OF FIRMS

Appendix 2.1 South Africa

Firm	Industry
Anheuser-Busch InBev SA NV	Consumer Goods
ABSA Group	Financials
Acucap Properties Ltd	Financials
Adcock Ingrams Holdings Ltd	Health Care
AECI Limited	Technology
African Rainbow Minerals	Basic Materials
Anglo (kumba) Ltd	Basic Materials
Anglogold Ashanti	Basic Materials
ArcelorMittal SA Limited	Basic Materials
Aspen Pharmacare Holdings Ltd	Health Care
Assore	Basic Materials
Attacq Limited	Consumer Services
Aveng Group Ltd	Industrials
Avi Limited	Consumer Goods
Barloworld Ltd	Industrials
BHP Billiton Plc	Basic Materials
BID Corporation Ltd	Consumer Goods
Blue Label Telecoms Ltd	Telecommunications
Brait se	Financials
British American Tobacco Plc	Consumer Goods
Capital and Counties Prop Plc	Financials
Capitec Bank Holdings Limited	Financials
Caxton CTP Publish Print	Consumer Services
Clicks Group Ltd	Consumer Services
Coronation Fund Managers Ltd	Financials
Curro Holdings Limited	Consumer Services
Datatec Ltd	Technology
Dis-Chem Pharmacies Ltd	Consumer Services
Discovery Ltd	Financials
Distell Group Ltd	Consumer Services
EOH Holdings Limited	Technology

Firm	Industry
EPP N. V	Financials
Exxaro Resources Ltd	Basic Materials
Famous Brands	Consumer Services
FirstRand	Financials
Foschini	Consumer Services
Glencore Plc	Basic Materials
Gold Fields	Basic Materials
Grindrod	Basic Materials
Growthpoint Prop Ltd	Financials
Hammerson Plc	Financials
Harmony GM Co Ltd	Basic Materials
Hosken Cons Inv Ltd	Financials
Hyprop Inv Ltd	Financials
Illovo Sugar Ltd	Consumer Goods
Impala Platinum Holdings Inv	Basic Materials
Imperial Holdings	Industrials
Intu Properties Plc	Financials
Investec Plc	Financials
Italtile Ltd	Consumer Services
JSE Ltd	Financials
KAP Industrial Holdings	Industrials
Lewis Group Ltd	Consumer Services
Liberty Holdings	Financials
Life Health Care Group Holdings	Health Care
MAS Real Estate Inc	Financials
Massmart Holdings	Consumer Services
Mediclinic International Plc	Financials
MMI Holdings	Financials
Mondi Plc	Basic Materials
Mr Price Group	Consumer Services
MTN Group	Telecommunications
Murray & Roberts Holdings	Industrials
Nampak Limited	Industrials
Naspers	Technology
Nedbank Group	Financials
NEPI Rockcastle Plc	Financials
Netcare Limited	Health Care

Firm	Industry
New Europe Prop Inv Plc	Financials
Northam Platinum Ltd	Basic Materials
Oceana Group	Consumer Goods
Omnia Holdings	Basic Materials
Pepkor Holdings	Consumer Services
Pick n Pay Stores Ltd	Consumer Services
Pioneer Foods Groups Ltd	Consumer Goods
PPC Limited	Industrials
PSG Group	Financials
Quilter Plc	Financials
RMB Holdings	Financials
RCL Foods Ltd	Consumer Goods
Redefine Properties Ltd	Financials
Reinet Investments SCA	Financials
Remgro Ltd	Financials
Resilient REIT Limited	Financials
Reunert Limited	Financials
Rockcastle Global Real Estate Co Ltd	Financials
Royal Bafokeng Platinum Ltd	Basic Materials
SA Corp Real Estate Fund	Financials
SA Corp Real Estate Ltd	Financials
Sanlam Limited	Financials
Santam Limited	Financials
SAPPI Limited	Basic Materials
Sasol Limited	Basic Materials
Shoprite Holdings Ltd	Consumer Services
Sibanye Gold Limited	Basic Materials
Sirius Real Estate Ltd	Financials
South32 Limited	Basic Materials
The Spar Group Ltd	Consumer Services
Standard Bank Ltd	Financials
Steinhoff African Rt Ltd	Consumer Goods
Sun International Limited	Consumer Services
Super Group Ltd	Industrials
Telkom SA SOC Ltd	Telecommunications
Tiger Brands	Consumer Goods
Tongaat Hullet Ltd	Consumer Goods

Firm	Industry
Trustco Group Holdings Limited	Financials
Truworths Int Limited	Consumer Services
Tsogo Sun Holdings Int	Consumer Services
Vodacom Group Ltd	Telecommunications
Vukile Property Fund Ltd	Financials
Wilson Bayly Hlm-Ovc Ltd	Industrials
Woolworths Holdings Ltd	Consumer Services
Zeder Inv Ltd	Financials

Appendix 2.2 United Kingdom

Firm	Industry
Admiral Group Plc	Financials
3i group	Financials
Aggreko	Industrials
Antofagasta Plc	Basic Materials
Ashmore Group	Financials
Ashtead	Industrials
Associated British Foods Plc	Consumer Goods
Astra Zeneca Plc	Health Care
Aviva	Financials
Babcock International	Industrials
BAE systems	Industrials
Barclays	Financials
Barrat Developments	Consumer Goods
Berkeley Group	Consumer Goods
British Land Company	Financials
British Sky Broadcasting Group	Consumer Services
BT group	Telecommunications
Bunzl limited	Industrials
Burberry Group	Consumer Goods
Cairn Energy	Oil and Gas
Capita	Industrials
Capita	Industrials
Centrica	Utilities

Firm	Industry
Coca-Cola HBC	Consumer Goods
Compass Group	Consumer Services
CRH	Industrials
Croda Int	Basic Materials
Direct Line Group	Financials
Dixons Carphone	Consumer Services
Easyjet	Consumer Services
Evraz	Industrials
Fresnilo	Basic Materials
G4S	Industrials
Glaxosmithkline	Health Care
Glencore	Basic Materials
GVC Holdings	Consumer Services
Halma	Industrials
Hargreaves Landsdown	Financials
HBSC group	Financials
Hikma Pharmaceuticals	Health Care
Imperial Brands Plc	Consumer Goods
Informa	Consumer Services
Intercontinental Hotel Group	Consumer Services
International Consolidated Airlines Group	Consumer Services
Intertek	Industrials
ITV	Consumer Services
Johnson Matthey	Basic Materials
Kingfisher	Consumer Services
Land Securities Group	Financials
Legal and General Group	Financials
Lloyds Banking Group	Financials
London Stock Exchange	Financials
Marks and Spencer	Consumer Services
Mediclinic International Plc	Healthcare
Meggit	Industrials
Melrose Industries	Industrials
Merlin Entertainment	Consumer Services
Mondi Plc	Basic Materials
Morrison Supermarkets	Consumer Services

Firm	Industry
National Grid	Utilities
Next Llc	Consumer Services
Pearson	Consumer Services
Persimmon Plc	Consumer Goods
Petrofac Ltd	Oil and Gas
Polymetal International	Basic Materials
Provident Financial Plc	Financials
Randgold Resources	Basic Materials
Reed Elsevier	Consumer Services
RELX	Consumer Services
Rentokil Initial	Industrials
Rightmove	Consumer Services
Rio Tinto	Basic Materials
Rolls Royce Holdings	Industrials
Royal Dutch Shell	Oil and Gas
Royal Mail	Industrials
RSA Insurance Group	Financials
Sage Group	Technology
Sainsbury	Consumer Services
Schroders	Financials
Segro	Financials
Serco Group	Industrials
Severn Trent	Utilities
Smith (DS) Plc	Industrials
Smiths Group	Industrials
Smurfit Kappa Group	Industrials
Spirax-Sarco Engineering	Industrials
Sports Direct International	Consumer Services
SSE Plc	Utilities
SSE Plc	Utilities
Standard Chartered	Financials
Standard Chartered Plc	Financials
Taylor Wimpey	Consumer Goods
Tesco	Consumer Services
Travis Perkins	Industrials
TUI Group	Consumer Services

Firm	Industry
Tullow Oil	Oil and Gas
Unilever Plc	Consumer Goods
United Utilities Group	Utilities
Venn Life Sciences Holdings	Health Care
Vodafone Group	Telecommunications
Weir Group	Industrials
Whitbread	Consumer Services