The Influence of Integrated Reporting and Internationalisation on Intellectual Capital Disclosures

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Abstract

Purpose: The purpose of this paper is to examine whether preparing an integrated report and/or whether cross-listing is associated with more IC disclosure.

Design/methodology/approach: The paper compares the content of IC disclosures of matched samples of companies.

Findings: The findings show that companies preparing an integrated report disclose more IC information, and that companies exposed to international capital markets through cross-listing do not disclose more IC information.

Research implications: The findings imply that integrated reporting is likely to increase IC disclosures and also that future IC disclosure research may have to take into account whether companies prepare an integrated report.

Practical implications: The results will be of interest to the proponents of intellectual capital and of integrated reporting, including the developers of the integrated reporting framework, regulators, and companies considering integrated reporting.

Originality/value: This is one of the first studies to assess the influence of preparing an integrated report on the level of IC disclosure.

Keywords: Intellectual capital disclosure, Integrated reporting, Internationalisation, Intellectual capital, Voluntary disclosure

Article classification: Research paper

1. Introduction

In a recent paper, de Villiers and Sharma (2018) critically assess the influence of integrated reporting (IR) on intellectual capital (IC) disclosures, concluding that the renewed interest IR brings to IC, will benefit IC research and disclosure. Integrated reporting is a move to combine disclosures of six capitals, including the three IC capitals, in an integrated manner (de Villiers et al., 2014; Guthrie et al., 2017; de Villiers et al., 2017a; de Villiers et al., 2017b). De Villiers and Sharma (2018) do not provide any empirical evidence to support their argument that IR will increase IC disclosure. This paper aims to provide such evidence by utilising the unique setting of South Africa, where local listed companies have to prepare an integrated report or explain why they do not[1] (in practice, almost all of them prepare an integrated report, instead of an annual report), but where companies listed on the Johannesburg Stock Exchange (JSE) as a secondary listing (i.e. their primary listing is somewhere else), can choose whether they prepare an integrated report or not (in practice, about half of them prepare an integrated report while the other half do not). Companies with secondary listings on the JSE, all have a primary listing in the developed world, e.g. on the London Stock Exchange. Managers of companies listed on more than one stock exchange, with investors from more than one societal setting, may feel the need to disclose the IC information expected in each listing location. Prior studies provide evidence in support of this notion, finding that companies listed on multiple stock exchanges voluntarily disclose more financial information (Ahmed and Courtis, 1999; Broberg et al., 2010; Meek and Gray, 1989). Similar findings have been reported for corporate social responsibility disclosures (Fifka, 2013; Hackston and Milne, 1996) and for IC disclosures (Kang and Gray, 2011; Oliveira et al., 2006). The South African setting allow the authors to test whether companies that prepare an integrated report disclose more IC information, and whether companies with exposure to an international market disclose more IC information. While Melloni (2015) investigates IC disclosures in integrated reports and find the IC disclosures to be optimistic and used for opportunistic purposes, she does not examine whether companies that produce an integrated report disclose more IC information.

Initially, IC research was dominated by normative arguments for the disclosure of IC, as well as normative disclosure frameworks (Guthrie et al., 2012). This was followed by a stage characterised by content analyses, initiated by the seminal Guthrie and Petty (2000). During this stage, the most important question being asked was *what* is being disclosed. IC research is now said to have entered several new stages, namely the third, more critical stage (Dumay and Garanina, 2013; Guthrie et al., 2012), and a fourth stage of systemic IC research has been suggested (Dumay and Garanina, 2013) and further developed by Secundo et al. (2016). Recently, Dumay et al. (2018) suggest a fifth stage of IC research without boundaries as a worthwhile enterprise. Better, more nuanced understandings are now being formed about the causal relationships at work around IC disclosure. This paper aims to contribute to these understandings by focusing on the reasons for companies to disclose more IC information. Therefore, this paper is not just interested in what kind of IC is disclosed, or to lament about how little is disclosed, which Dumay and Cai (2014) warn against. Rather, the paper examines whether internationalisation and/or IR are associated with more IC disclosure.

Therefore, the paper uses content analysis to investigate the following research questions: 1) Do companies disclose more IC information when they are exposed to

[1] In South Africa, companies listed on the JSE are required to apply King III, which specifies an integrated report, on a “apply or explain” basis.

additional international markets, and 2) Do companies disclose more IC information when they produce an integrated report?

This study uses a matched sample (based on industry and size) of companies that are cross-listed with those that are only listed on the JSE. The companies only listed on the JSE all prepared integrated reports, whereas half of the cross-listed companies prepared an integrated report. The paper content analyses the primary corporate annual reports of the sample of companies, being annual reports for some and integrated reports for others, using the disclosure index of Abeysekera and Guthrie (2005), as modified by Wagiciengo and Belal (2012).

The findings show that more IC is disclosed by the preparers of integrated reports, but not by cross-listed companies. This paper is amongst the first to investigate IC disclosure in integrated reports. The findings may inform the further development of integrated reporting guidelines by the IIRC. For example, the integrated reporting guidelines may be expanded to provide more specific guidance on IC disclosures. Regulators may use the results as input when considering whether to mandate IR. For example, regulators may consider mandating IR in order to enhance IC disclosures. The results improve the understanding of the impact of IR and internationalisation on IC disclosure.

2. Literature review

Voluntary disclosure involves disclosure in excess of mandated requirements that managers of a company may deem to be relevant (White et al., 2007; de Villiers and Vorster, 1995; de Villiers, 1998). Prior research has investigated why managers choose to voluntarily disclose non-financial information (Beattie and Smith, 2012; de Villiers, 1999; Marr et al., 2003). Reporting of non-financial information has been found to be value-relevant, reducing the cost of equity capital and improving analyst forecast accuracy (de Villiers and Marques, 2016; Dhaliwal et al., 2011; Dhaliwal et al., 2012). Although IC itself has been found to have a positive impact on market value and financial performance (Abdolmohammadi, 2005; Chen et al., 2005; Swartz et al., 2006), IC disclosures have also been found to be of a low quality, often providing qualitative rather than quantitative information (Guthrie, Petty, Ricceri, 2006). If voluntary disclosure is positively correlated with performance and market value, and negatively correlated with cost of capital, the question may be asked why companies do not disclose more IC information.

Capital market equity investors are seen as important stakeholders when managers make voluntary disclosure decisions. In a meta-analysis of research into the determinants of voluntary disclosure Ahmed and Courtis (1999) found that the listing status of a company, whether it is listed on one exchange or multiple exchanges, was significantly positively associated with voluntary disclosure. Early studies by Gray et al. (1995) and Meek and Gray (1989) found that internationally listed companies disclosed more information, including IC information, in their annual reports than domestic listed companies. Similar results are reported by Broberg, Tagesson and Collin (2010), and (García-Meca et al., 2005). Haniffa and Cooke (2005), focusing on corporate social reporting, found a significant association between foreign listing and increased corporate social disclosures. Kang and Gray (2011) focused specifically on voluntary disclosure of intangible assets and found no effect on their disclosure measure from foreign listing. This paper similarly focuses on voluntary IC disclosure and uses a more robust research design to answer the first research question: Do companies disclose more IC information when they are exposed to additional international markets?

There are several guidelines and frameworks for the external reporting of IC (Abhayawansa, 2014; Guthrie et al., 2012). Early IC research suggested normative disclosure frameworks (An et al., 2011). The literature then moved on to content analyses to report what and how much IC was being disclosed, often using content analysis to collect empirical data (Guthrie et al., 2004; Abeysekera, 2006). The number of papers providing normative frameworks has declined since the early years of IC research (Guthrie et al., 2012). Recently, the IR framework specifically highlighted six capitals, three of which equate to the IC categories (Beattie and Smith, 2013). Early evidence indicates that IR is value relevant, i.e. makes a difference to investors' valuation of firms (Baboukardos and Rimmel, 2016). In terms of IR studies, studies provide empirical evidence into the types of disclosures provided and the factors that may drive such disclosure, but have not specifically focused on IC disclosure (Haji and Anifowose, 2016; Joubert, 2014; Mio and Fasan, 2014; Setia et al., 2015; Veltri and Silvestri, 2015; Wild and van Staden, 2013), with the exception of Melloni (2015) who report that IC disclosures in IR are generally used for opportunistic reasons. In recent studies, Dumay et al. (2017) focus on impediments to IR implementation, while Guthrie et al. (2017) rely on case based evidence and De Villiers et al. (2017a) propose a conceptual model of influences around integrated reporting.

More relevant to the current study, Wild and van Staden (2013) examined the disclosures in 58 integrated reports, including 14 South African companies, finding that 90% of the integrated reports sampled addressed human and social capital (Wild and van Staden, 2013). A number of studies have investigated IC disclosure in sustainability reports which preceded IR (Cinquini et al., 2012; Oliveira et al., 2010). Oliveira, et al. (2010) investigated IC reporting in sustainability reports of Portuguese companies. They found that the items of IC disclosure relating to strategy, processes and human capital, were disclosed the most. The reporting of IC information in the sustainability reports of Italian companies was analysed by Cinquini, et al. (2012). The level of Global Reporting Initiative framework adherence was found to be significantly associated to higher IC disclosures (Cinquini et al., 2012).

April, Bosma and Deglon (2003) and Wagiciengo and Belal (2012) examined IC disclosure by South African companies before the advent of IR. Both studies focused on the top 20 South African companies based on market capitalisation. In the earlier study relational capital had been the most reported category at 40% of IC disclosure (April et al., 2003). In the later study human capital had almost doubled from the earlier levels to more than 60% of IC disclosure; the most reported sub-category was employment equity issues with Black Economic Empowerment being the most reported item (Wagiciengo and Belal, 2012). These studies examined disclosure in annual reports, while the current paper investigates disclosure in annual and integrated reports to answer the second research question: Do companies disclose more IC information when they produce an integrated report?

3. Hypotheses development

Managers voluntarily disclose information to meet investor expectations, which benefits the managers in terms of enhanced career prospects and bonus remuneration (Healy and Palepu, 2001). Voluntary disclosures are influenced by the country in which the company operate, as shown in multi-country accounting studies (e.g. de Villiers and Marques, 2016), because investors have different expectations regarding the information they expect companies to disclose in different countries (Cahan et al., 2016). Therefore, companies that cross-list in another country could be exposed to expanded demands for disclosure. Investors' information needs are important, since their assessment of companies' risks and opportunities will influence share prices and thereby managers'

prospects and bonuses. Where companies do not disclose the information needed to fully assess risks and returns, investors protect themselves by assuming the worst case scenario, which is known as adverse selection (Healy and Palepu, 2001). Therefore, when a company has more than one set of investors in different countries to consider this may lead to the disclosure of more IC information to assist investors to fully assess risks and returns on the basis of the IC information. IC disclosures may also be used as a signalling device (Healy and Palepu, 2001), allowing management to signal the value creation opportunities in IC. Prior studies provide evidence in support of these arguments, finding that companies listed on multiple stock exchanges voluntarily disclose more financial information (Ahmed and Courtis, 1999; Broberg et al., 2010; Meek and Gray, 1989). Similar evidence have been reported for corporate social responsibility information (Fifka, 2013; Hackston and Milne, 1996), and for IC disclosure (Kang and Gray, 2011; Oliveira et al., 2006).

On the other hand, managers may regard IC as proprietary information, which they do not want to share in the belief that doing so could compromise the company's competitive advantage (Beattie and Smith, 2012). Therefore, sharing such information involve proprietary costs, which managers will want to avoid. If this view prevailed, listing on another stock exchange should not influence the IC disclosed.

The first hypothesis is stated in the alternative form:

H1: Cross-listed companies are likely to disclose more IC information than companies with a single listing

Investors' information needs are continuously evolving, with more and more investors now taking non-financial information into account to assess companies' risks and prospects (Robecosam, 2017). Managers respond to these evolving information needs by disclosing more and more non-financial information (KPMG, 2017), including a move towards integrated reports (de Villiers et al., 2014). IR specifically prompts managers to consider each of the capitals, including the three IC capitals, and then to make decisions regarding their disclosure (IIRC, 2013; Setia et al., 2015). This specific link between IR and IC has led to speculation that IR will increase attention on and disclosures of IC (de Villiers and Sharma, 2018). On the basis of this arguments, the authors expect that companies that produce an integrated report will disclose more information about all of the capitals, including IC, than companies that do not produce an integrated report. Consistent with this argument, IC disclosures may be used by managers to signal the value creations opportunities for their companies within IC.

On the other hand, the integrated reporting framework suggest that reports should be concise and deal only with material matters (IIRC, 2013). If companies follow this suggestion and keep their integrated reports short, this may require a reduction in IC disclosures. However, in practice South African integrated reports are no shorter than annual reports. Another argument that IC disclosures might not be influenced by IR, is the proprietary cost argument, i.e. managers may be reluctant to disclose IC information on any platform if they believe such disclosure will compromise the company's competitive advantage.

The second hypothesis is stated in the alternative form:

H2: IR-producing companies are likely to disclose more IC information than non-IR producing companies

4. Method

Content analysis has been extensively used in IC reporting research since Guthrie et al.'s (2004) paper on "Using content analysis as a research method to inquire into intellectual capital reporting". Following Guthrie et al's (2004) paper many content analysis IC studies were published, e.g. Dumay and Cai (2014) analysing 110 articles using content analysis. Much criticism has been levelled at IC content analysis researchers, particularly at the lack of rigour with which they apply the basic logic of content analysis design (Dumay and Cai, 2014; 2015). Many papers attempted to determine the most commonly disclosed IC categories or examined the amount and nature of voluntary IC disclosure, replicating these studies in various country and industry settings.

This paper does not just examine the amount and nature of IC information voluntarily disclosed. Instead, this study compares the disclosures of different types of companies to examine which conditions drive managers to make IC disclosure decisions.

4.1.1. Sample selection and data sources

Forty companies were selected from the 271 companies listed on the main board of the JSE at 31 December 2013. In order to select and match cross-listed companies with locally listed companies, cross-listed companies were extracted from this population and 20 companies were selected using sequential random sampling. The selected cross-listed company was then matched with a locally listed companies for industry and company size. If an appropriate match was not found, the next cross-listed company was selected. A sample of 40 companies was considered sufficient to achieve statistically significant results.

For each of the companies in the sample, a PDF copy of the 2013 integrated report was obtained from the company's website. If the company did not prepare an integrated report, the annual report was obtained. Additional data required in the regression model was obtained from company annual or integrated reports and the INET BFA database.

4.1.2. Coding, collecting and summarising the data

The content analysis is based on the index used by Abeysekera and Guthrie (2005), which was also used by De Silva et al. (2014) and Wagiciengo and Belal (2012). The 4 items in the employee welfare sub-category have been excluded from the final analysis as South African companies include a formal remuneration report, disclosing the remuneration of directors and officers, in their audited annual financial statements. The 34 items in the research instrument are classified into 3 categories, i.e. relational capital, human capital and structural capital, and into 9 sub-categories (see Appendix A).

The 2013 reports were imported into Atlas ti for coding purposes. The content analysis was done manually and Atlas ti was used to record the manual coding and to calculate the word count. Atlas ti was used to capture the manual process of highlighting and coding the reports in much the same way as if printed reports had been used. This aided the coder in documenting coding decisions made and in reviewing and amending early coding decisions as more experience was gained. This also facilitated the second review of the coding. Performing the manual coding process in an electronic format made it easier to store, retrieve, manipulate, check and correct the data.

Sentences, graphics, charts and tables were used as the basis of coding. Pictures were not coded. Where a sentence related to more than one IC category, the sentence was coded to the predominant theme taking the context of the paragraph or section into

account. Where a sentence was easily and equitably divisible between two or more IC categories, the words or phrases within the sentence were coded to the applicable IC category. The same applied to graphics, charts and tables (See Appendix B for Coding Instructions).

One of the fundamental premises of content analysis is that the extent of information disclosed about different categories of information is assumed to reflect the importance that management of a company place on that particular information (Krippendorff, 2013). Therefore where multiple disclosures are made of the same or similar information, these disclosure occurrences are coded and included in the word count.

Previous studies have also investigated the form of IC disclosure, being qualitative or quantitative, with quantitative disclosure being more highly regarded as being measurable and verifiably, than purely descriptive disclosure. This study does not focus on the form of disclosure but the use of word count does reflect the impact of form. For example, in an effort to emphasise the importance of certain information, management may disclose such information in a narrative form as well as in graphics, tables or graphs. As graphs and tables often contain the current year plus multiple prior periods, or information is split into various sub-categories within graphs and tables, companies with more quantitative disclosure are more likely to have higher word counts overall, and higher word counts for those IC categories that they consider to be more important.

Although content analysis has been extensively used in IC research, it suffers from a number of limitations.

First, the width and depth of the IC concept requires transparency in the classification scheme used (Beattie and Thomson, 2007). The classification scheme used in this study is clearly defined and disclosed and has been used in a number of previous studies (Abeysekera and Guthrie, 2005; De Silva et al., 2014; Wagiciengo and Belal, 2012).

Second, coding may be regarded as subjective. However, Milne and Adler (1999) reported that even a novice coder can be relied upon when analysing aggregate total disclosures. For analysis of disclosures into sub-categories, less experienced coders can be relied upon after a period of training, involving the coding of about 20 reports (Milne and Adler, 1999). The high level results of total volume of disclosure and the categorisation into relational capital, human capital and structural capital, may therefore be more reliable than the results relating to the lower level subcategories and individual items within subcategories. However, in this study, the coder coded 46 integrated or annual reports, and reviewed the coding of the initial reports in an iterative process after the first 20 reports had been coded. The other author performed a limited review of the coding.

4.1.3. Measurement of IC disclosure metrics

Three metrics, similar to those used by Li et al. (2008), are used in this study: a disclosure index (ICINDX) which indicates the variety of IC disclosure, and word count as a percentage of total word count [2] (ICWC%) to indicate the emphasis placed on IC.

[2] Total word count of the annual or integrated report excludes certain sections: the contents page, the section often labelled “about the report”, company statutory information including annual financial statements, mineral resources and reserves report, and shareholder information sections. Sections that are not considered voluntary (such as statutory information and mineral resources and reserves reports) are excluded.

ICINDX is used in the results section with the results for ICWC% reported in robustness tests.

For the purposes of calculating the disclosure index, each item in the research instrument is scored one if it is disclosed and zero if it is not. The disclosure index (ICINDX) is calculated by dividing the total score for the company by the total available items in the research instrument. The ICINDX measure therefore ranges from zero to one.

4.1.4. Model

The relationship between IC disclosure and listing status is examined by way of a regression, following Li et al. (2008). If β_1 is positive and significant, the hypothesis that cross-listed companies will disclose more IC information is supported.

$$ICD = \beta_0 + \beta_1 CROSS_i + \beta_2 BoardIndep_i + \beta_3 Dual_i + \beta_4 LnTA_i + \beta_5 IndFin_i + \beta_6 IndIndus_i + \beta_7 Loss_i + \beta_8 LnMTB_i + \beta_9 Lev_i + \varepsilon_i$$

Where:

ICD =	IC disclosure index (ICINDX); IC word count percentage (ICWC%);
CROSS =	1 if the company is cross-listed; 0 if otherwise;
BoardIndep =	proportion of independent non-executive directors on the board (proxy for board composition, %)
Dual =	1 if the role of chairman and CEO are held by the same person; 0 if otherwise;
LnTa =	Natural log of total assets (proxy for company size);
IndFin =	1 if the company is in the financial industry grouping; 0 otherwise;
IndIndus =	1 if the company is in the industrials industry grouping; 0 otherwise;
Loss =	1 if the company reported a loss in the previous financial period; 0 otherwise (proxy for company performance);
LnMTB =	Natural log of market-to-book value ratio (share price at end of 2012 financial period divided by ordinary shareholders equity, %)
Lev =	Total liabilities divided by total assets at the end of the 2012 financial period, %.

4.1.5. Independent variable

The data is obtained from company annual or integrated reports and the INET BFA database. The variable of interest, CROSS, is an indicator variable coded 1 for cross-listed companies, otherwise 0.

4.1.6. Control variables

Two aspects of board independence (BoardIndep and Dual) are included as control variables in the model. Size has a positive impact on corporate disclosures including IC disclosure (Ahmed and Courtis, 1999; Striukova et al., 2008). The natural log of total assets is used as a measure of size. The expectation is that the level of IC disclosure will increase with increased company size.

Industries have unique business models, infrastructures, competition landscapes and operating cultures and IC will therefore differ between industries (Burgman and Roos, 2007). For example, certain elements of relational capital such as brands and customers may not be as important for resources companies as for industrial or financial companies. In order to control for industry differences, companies are grouped into three industries (resources, financials and industrials), with dummy variables included in the model.

Profitable companies have the resources to ensure voluntary disclosures cover all aspects including IC. Because profitability, measured as profit after interest and tax divided by total assets, is not normally distributed it is replaced by a dummy variable which is coded 1 if the company made a Loss in the 2012 financial year and 0 otherwise. A negative relationship is expected between this variable and the level of IC disclosure.

Companies with higher levels of debt may disclose more IC information if lenders are expected to be interested in or affected by such information. Leverage is measured as total liabilities to total assets and the expectation is that IC disclosure levels will increase with increased leverage.

The ratio of market to book value has been used as a measure of information asymmetry by some and as a measure of growth potential by others; it is also viewed by some as a better control for industry market structure, especially for companies that operate in multiple industries, than a dummy variable for industry (de Villiers and van Staden, 2011). Market-to-book value is therefore used in this study as a control. Companies with higher market-to-book values will most likely come from industries characterised by high IC. The expectation is therefore that companies with a higher ratio will disclose more IC information.

4.1.7. Grouping of companies for comparison purposes

In order to test the hypothesis that companies preparing an integrated report will disclose more IC information, the sample was divided into two groups which are further divided into two sub-groups. All cross-listed companies in the sample are in group 1, while matched locaaly listed companies are in group 2. Companies in group 1a prepared an integrated report, while companies in group 1b did not. Group 2 is similarly sub-divided into groups 2a and 2b on whether the cross-listed companies they are matched with prepared an integrated report (group 2a) or not (group 2b).

5. Findings

5.1.1. Descriptive statistics

The descriptive statistics indicate that there are no statistically significant differences between the independent variables of the locally listed and cross-listed companies (Table 1). The cross-listed companies appear to be larger than the locally listed companies based on total assets, but this is not statistically significant. The corporate governance measures indicate that approximately half of the directors are independent and non-executive and thirty percent of companies have the same person filling the role of chief executive officer and chairman of the board.

For the full sample (untabulated) the mean IC index is 0.5272 with structural capital scoring highest and relational capital lowest. The mean length of the reports, measured using word count, is approximately 47 000 words (untabulated). Almost 12% of these words are related to IC with the highest proportion relating to human capital. Relational capital, human capital and structural capital make up 23%, 63% and 14% of the IC disclosure respectively. This breakdown is very similar to the findings of Wagiciengo and Belal (2012).

When the IC disclosures of the cross-listed and local groups are compared (Table 1), the variable ICINDX of the cross-listed companies is significantly lower than that of the locally listed companies ($p<0.05$) indicating that cross-listed companies do not disclose more IC items. This difference arises in the human capital and structural capital categories. These results do not support the hypothesis for cross-listed companies.

Table 1 Descriptive statistics comparing locally listed and cross-listed companies

	Locally listed companies					Cross-listed companies					Comparison	
	N	Min	Max	Mean	Std. Dev.	N	Min	Max	Mean	Std. Dev.	t-stat and sig	z-Stat and sig
DEPENDENT VARIABLES												
ICINDX	**20**	**.3235**	**.7941**	**.5838**	**.1252**	**20**	**.0882**	**.8529**	**.4706**	**.2161**	**2.027****	**-1.845***
RelCapINDX	20	.0000	.9000	.5000	.2406	20	.0000	.9000	.4400	.2563	.763	-.779
HumCapINDX	20	.3158	.7895	.5947	.1324	20	.1053	.8421	.4816	.2155	2.001*	-1.893*
StrCapINDX	20	.2000	1.0000	.7100	.1889	20	.0000	1.0000	.4900	.3144	2.683**	-2.32**
INDEPENDENT VARIABLES												
Continuous variables:												
BoardIndep	20	.2727	.6842	.4999	.1252	20	.0000	.8182	.5218	.2043	-.410	-.936
TA	20	1,642,228	1,690,929,000	164,272,376	386,741,403	20	961,171	2,440,921,188	195,140,948	551,640,670	-.205	-.081
LnTA	20	14.3116	21.2485	17.1920	1.8942	20	13.7759	21.6156	17.1875	1.9152	.007	-.081
ROA	20	-.1380	.2318	.0515	.0724	20	-.2854	.2220	.0265	.1330	.565	-.514
MTB	18	.2731	3.4831	1.5333	.8987	17	.0721	27.8001	2.7425	6.5108	.781	-.693
LnMTB	18	-1.3000	1.2500	.2319	.6902	17	-2.6300	3.3300	.0684	1.2265	.489	-.693
Lev	20	.2520	.9197	.5369	.2180	20	.0513	.9317	.4444	.2897	1.141	-1.109
Dummy variables:												
	N	**Cases = 1**	**Proportion**			**N**	**Cases = 1**	**Proportion**				
CROSS	20	0	.0000			20	20	1.0000				
Dual	20	4	.2000			20	8	.4000				
IndRes	20	8	.4000			20	8	.4000				
IndFin	20	7	.3500			20	7	.3500				
IndIndus	20	5	.2500			20	5	.2500				

ICINDX = IC disclosure index.
BoardIndep = Proportion of independent non-executive directors on the board (%).
TA = Total assets.
LnTA = Natural log of total assets.
ROA = Return on assets.
MTB = Market-to-book value ratio.
LnMTB = Natural log of MTB.
Lev = Leverage.
CROSS = cross-listed / locally listed (dummy).
Dual = dual role of chairman and CEO / not (dummy).
IndRes = Resources company.
IndFin = Financial company.
IndIndus = Industrial company.
t-stats is the t-statistic (2-tailed) from comparing the means of the two groups using an Independent Samples T test; z-stat is the z-statistic from comparing the medians of the two groups using a Mann-Whitney U-test.
****, * Significant at the 5%, 10% level**

Table 2 Correlation statistics with Pearson below the diagonal and Spearman above the diagonal

	Expected sign	ICINDX	CROSS	BoardIndep	Dual	LnTA	IndRes	IndFin	IndIndus	Loss	LnMTB	Lev
ICINDX			-.295	.387*	-.327*	.513**	-.350*	-.100	.507**	-.393*	.402*	.437**
CROSS		-.312*		.150	.218	.013	.000	.000	.000	.180	-.108	-.178
BoardIndep	+	.324*	.066		-.308	.338**	-.148	.180	-.030	-.010	.153	.236
Dual	-	-.284	.218	-.369***		.085	-.089	-.023	.126	-.091	.262	-.269
LnTA	+	.476**	-.001	.241	.003		-.584***	.422***	.195	-.490***	.360*	.398*
IndRes		-.296	.000	-.057	-.089	-.605***		-.599***	-.471***	.416***	-.293	-.442**
IndFin		-.127	.000	.123	-.023	.476***	-.599***		-.424***	-.270	.042	.363*
IndIndus		.476**	.000	-.071	.126	.161	-.471***	-.424***		-.173	.357*	.100
Loss		-.431**	.180	.040	-.091	-.468***	.416***	-.270	-.173		-.593**	-.200
LnMTB	+	.473**	-.073	.243	.070	.161	-.098	-.128	.239	-.477***		.088
Lev	+	.443**	-.182	.315**	-.279**	.527***	-.448***	.414***	.051	-.197	.140	

For all variable descriptions see Table 1

***. Correlation is significant at the 0.001 level (2-tailed); (1 tailed for those variables with an expected sign)

**. Correlation is significant at the 0.05 level (2-tailed); (1 tailed for those variables with an expected sign)

5.1.2. Correlations

Table 2 presents the Pearson and Spearman correlation matrices. Correlations between independent variables and variance inflation factors (VIF) were scrutinised and no issues of multicollinearity were identified.

As expected, ICINDX is significantly positively correlated with company size, market-to-book value and leverage, and significantly negatively correlated with loss making. Industrial companies are positively correlated with a greater variety of IC disclosure.

5.1.3. Regression results – does cross-listing affect IC disclosure?

The results of the multivariate analysis based on the full sample of 40 companies are shown in Table 3. The sign of the coefficient of cross-listed (CROSS) is negative, indicating that cross-listed companies disclose less variety of IC items than locally listed companies, after controlling for various other variables. However, it is only weakly significant at the 10% level.

Table 3 Regression analyses with the IC Index as dependent variable

	Expected sign	ICINDX Coefficient	p-Value
Intercept		-.102	.666
CROSS		-.071	.095
BoardIndep	+	.150	.300
Dual	-	-.081	.110
LnTA	+	.033	.039**
IndFin		-.119	.062
IndIndus		.101	.089
Loss		-.078	.241
LnMTB	+	.034	.201
Lev	+	.133	.197
N		40	
F-value		7.392***	
Adj. R^2		.629	

For all variable descriptions see Table 1
IndRes is the baseline against which to compare the IndFin and IndIndus dummy variable co-efficients
***, ** denotes significance at the 1%, 5% levels

These multivariate analyses give no support for the hypothesis that cross-listed companies disclose a greater level of IC information.

5.1.4. Non-parametric tests – does IR affect IC disclosure?

Non-parametric Kruskal-Wallis tests were used to compare the scores of the 4 groups to determine whether there is a difference in disclosure levels between the groups. The results of these tests are presented in Table 4.

The comparison of groups 1a and 2a (Panel A) shows no significant difference in IC disclosure. This further confirms that cross-listed companies do not disclose more IC information. Although Macias and Farfa-Lievano (2017) suggest that companies exposed to international markets are more likely to choose IR, this does not appear to lead to more IC disclosure.

Table 4 Comparison of groups with Kruskal-Wallis chi-square statistic

PANEL A	Group	N	ICINDX Mean	Chi-square
Intellectual Capital	1a - Cross-listed with IR	9	9.00	.159
	2a - Locally listed with IR	9	10.00	
Relational Capital	1a - Cross-listed with IR	9	8.50	.650
	2a - Locally listed with IR	9	10.50	
Human Capital	1a - Cross-listed with IR	9	10.22	.339
	2a - Locally listed with IR	9	8.78	
Structural Capital	1a - Cross-listed with IR	9	8.11	1.328
	2a - Locally listed with IR	9	10.89	
	Total	18		

Group 1a - cross-listed companies that prepare integrated reports; Group 2a - locally listed companies that prepare integrated reports; Groups matched on industry and size.

PANEL B	Group	N	ICINDX Mean	Chi-square
Intellectual Capital	1b - Cross-listed and no IR	11	8.50	4.714**
	2b - Locally listed and IR	11	14.50	
Relational Capital	1b - Cross-listed and no IR	11	11.09	.091
	2b - Locally listed and IR	11	11.91	
Human Capital	1b - Cross-listed and no IR	11	7.55	8.267***
	2b - Locally listed and IR	11	15.45	
Structural Capital	1b - Cross-listed and no IR	11	8.82	3.977**
	2b - Locally listed and IR	11	14.18	
	Total	22		

Group 1b - cross-listed companies that do not prepare integrated reports; Group 2b - locally listed companies that prepare integrated reports; Groups matched on industry and size.

PANEL C	Group	N	ICINDX Mean	Chi-square
Intellectual Capital	1b – cross-listed and no IR	11	13.41	5.618**
	1a,2a,2b - all companies with IR	29	23.19	
Relational Capital	1b – cross-listed and no IR	11	17.95	.734
	1a,2a,2b - all companies with IR	29	21.47	
Human Capital	1b – cross-listed and no IR	11	11.18	9.775***
	1a,2a,2b - all companies with IR	29	24.03	
Structural Capital	1a – cross-listed and no IR	11	15.14	3.410
	1b,2a,2b - all companies with IR	29	22.53	
	Total	40		

ICINDX is a measure of the variety of intellectual capital disclosure
Group 1b - cross-listed companies that do not prepare integrated reports; Group 1a - cross-listed companies that prepare integrated reports, Groups 2a and 2b - locally listed companies that prepare integrated reports; Groups matched on industry and size.
***, ** denotes significance at the 1%, 5% levels

When comparing groups 1b and 2b (Panel B) the ICINDX measure is higher for group 2b (i.e. IR companies), with the human capital index being most significant ($p<0.01$) and structural capital index being slightly less significant ($p<0.05$). These results are

reconfirmed in Panel C, which shows that group 1b companies (non-IR companies) disclose statistically significantly less IC information than all IR companies combined (groups 1a, 2a and 2b).

These comparisons provides evidence in support of the hypothesis that IR companies disclose a greater variety of IC information (due to the prompts to consider and disclose all of the capitals, including IC).

5.1.5. Robustness tests – alternative IC measures

When the IC disclosure metric (ICINDX) is replaced in the regression analysis with the measure of disclosure emphasis (ICWC%), the model has lower explanatory power (adjusted R^2 of 0.297) (untabulated) and the variable of interest, CROSS, is not significantly related to ICWC%.

The results of the non-parametric Kruskal-Wallis tests hold when the IC disclosure metric is replaced by ICWC% (untabulated).

These results lend further evidence in support of the hypothesis that companies that prepare an integrated report, disclose more IC information. Specifically, IR companies disclose a greater variety of IC information and place greater emphasis on IC information in their reports.

6. Discussion

The findings provide evidence that IR producing companies disclose more IC, specifically human capital disclosures, characterised by a greater variety of items and more emphasis on human capital. However, as du Toit (2017) point out, in order to be meaningful, these disclosures need to be provided in a format that is accessible (i.e. readable).

The findings imply that the prompt to consider all of the capitals when preparing an integrated report leads to an increase in IC disclosure. However, the increase is mostly on human capital, not on relational or structural capital. This may be due to proprietary costs having a strong impact on the decision to disclose information that may compromise a company's competitive advantage (Beattie and Smith, 2012). Another view is that IR preparers report the good work they do and their business culture to employees, customer and other stakeholders (Dumay and Dai, 2017), or as a way of signalling good intentions or good management (Healy and Palepu, 2001).

7. Conclusion

This is one of the first studies to assess whether preparing an integrated report affect the level of IC disclosure. Evidence support the hypothesis that IR leads to more IC disclosure, specifically to a greater variety of IC items disclosed and to a greater emphasis on IC in the report. However, the study does not find evidence that companies exposed to different investor groups through cross-listing on another stock exchange disclose more IC information. More specifically the results show that locally listed companies that prepare an integrated report disclose more IC information than a matched sample of cross-listed companies that do not prepare integrated reports, and also that there is no statistically significant difference between the IC disclosures of locally listed and cross-listed companies that all prepare integrated reports. This implies that the consideration of a wider range of capitals under IR leads to more IC disclosure. Regarding specific IC

capitals, this paper finds that companies preparing an integrated report disclose a greater variety of human capital items and place greater emphasis on human capital.

There are several limitations in this study. First, there is subjectivity in the use of content analysis to score IC disclosure. However, this research uses the latest content analysis methods based on articles published in the top journals in the field. Second, the study does not take into account other disclosure channels that may be linked to an integrated report such as website disclosure. Third, the small sample size and limiting the location of the companies to those listed in South Africa, may limit the generalisability of the findings.

The results of this study may inform the further development of integrated reporting guidelines by the IIRC, particularly around whether more detailed guidance should be given regarding IC disclosures in integrated reports. The findings also imply that future IC disclosure research should control for whether companies prepare an integrated report or not. This study contributes to the debate about whether IR should be mandated by providing insights from an environment where IR is required on an “apply or explain” basis. For example, regulators may consider mandating IR in order to enhance IC disclosures..

This is an early study into IC disclosure in integrated reports. Future research could usefully explore the relationships identified in the paper in greater depth using a larger sample size, different locations and other methodologies, such as case studies and interviews with management to understand the process of reporting IC in integrated reports. A longitudinal study comparing IC disclosure before and after integrated reporting could also be a fruitful area for future research. In addition, whereas the current paper does not address whether IC disclosures in integrated reports are value relevant (Baboukardos and Rimmel, 2016), this could be examined in future studies.

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Appendix A

Intellectual Capital Content Analysis Guide

Following definitions used by Wagiciengo and Belal (2012) and Li et al (2008).

EC	**RELATIONAL CAPITAL**	
	Brand building	
1	Brands	Information about, e.g. brand names, brand images, brand awareness, brand loyalty (e.g. word of mouth advocacy), brand-building strategies and activities, and brand-related sales.
2	Customers	Reference to overall satisfaction of customers, customer needs, customer loyalty and customer relations.
3	Quality standards	Includes ISO accreditations, reference to quality initiatives.
	Business partnering	
4	Business collaborations	Collaborations established with other business partners. It covers issues such as strategic alliances, joint venture and partnership for the purpose of working together to improve effectiveness and efficiency by combining each other's advantages. Also includes industry involvement and collaboration with government.
5	Licencing Agreements	Any licencing agreement signed.
6	Franchising Agreements	Any franchise agreement signed.
7	Distribution/Supplier relationships	Reference to distribution channels (appropriate mechanisms of getting products and services into the market, such as distributors, agents, dealers), relationship with suppliers, such as knowledge of suppliers, relationships with them).
8	Market share	A statement about the share of the market or competitive position that is held by the company/product/ brand. NB: this does not include reporting regarding volume.
	Corporate image building	
9	Company name	A statement about the company's name. Also any awards won by the company, including best employer.
10	Favourable contracts	A contract obtained because of the unique market position held by the company. It includes description of the contract and the favourable relationships.
HC	**HUMAN CAPITAL**	
	Employment equity	
11	Race	Any steps mentioned or confirmation of the position on race.
12	Gender	Any steps mentioned or confirmation of the position on gender.
13	Disability	Any steps mentioned or confirmation of the position on disability.
14	Religion	Any steps mentioned or confirmation of the position on religion.
15	BEE [3]	Any disclosures of corporate BEE initiatives.
16	Disadvantaged [8]	Measures aimed at employees from disadvantaged background.
17	HIV/AIDS [8]	Reference to treatment of employees with HIV as well as company initiatives.
	Employee relations	
18	Union Activity	Trade union relations (including discussions of wage negotiations and strikes).
19	Employees Thanked	Thanks given to the employees, including directors.
20	Community Involvement	Company and employee involvement in community based activities.

[3] Excluded from final analysis

21	Employees Featured	Any "named" employees in report or employees that have won awards.
	Employee related measures	
22	Education Levels	Reference to organisational learning different from vocational qualifications
23	Expert Seniority	Technical and management skills in production, operations
24	Employee Numbers	Employee count of a firm, employee breakdown by, e.g. market (business operation or geographical segments), department and job function, and information about its changes and reasons for such changes.
25	Professional Experience	Number of years worked, previous experience - particularly with directors. Average professional experience of employees.
26	Age	Biological age of employees in the company. Includes qualitative description of age-related advantages/strengths of a company's employees, and indicators such as average age of a company's employees and age distribution.
27	Value Added Statements	Clear discussion of employees usually in terms of remuneration (wages and salaries) or information related to the contribution of human resources to increase the value of the corporation. Value added per expert.
	Employee safety	
28	Health and safety	A statement regarding safety of employees, or safety measures that have been implemented.
	Employee welfare	
29	Employee Share and Option Schemes [8]	Share and option schemes
30	Compensation Executive [8]	Reference to remuneration of directors
31	Compensation Employee [8]	Reference to remuneration of employees
32	Employee Benefits [8]	Additional non-financial benefits such as health insurance
	Training and development	
33	Vocational Qualifications	Qualifications held by employees and directors - referring to education, managed and monitored by trade and professional organisations, received by an employee/director for a particular vocation that proves the skill, knowledge and understanding he/she has to do a job well.
34	Career development	Any management initiatives that encourage career development amongst employees, Including employee development policies and programmes (e.g. succession planning), recruitment policies (e.g. internal promotion). Indicators include change of employee seniority and rate of internal promotion).
35	Training programs	Any mention of training programmes including training policies, training time, attendance, investment in training, number of employees trained per period and training results/effectiveness/efficiency.
36	Entrepreneurial Spirit	Entrepreneurial spirit, innovativeness, proactive and reactive abilities, changeability, empowerment/responsibility taking, employee engagement (e.g. employee suggestion systems/consultations), creativity, knowledge sharing.
IC	**Structural capital**	
37	Systems	Information systems and networking systems (the systems available in a company that allow interaction of people via a broad array of communication media and devices, e.g. voicemail, e-mail, voice or video conferencing, the internet, groupware and corporate intranets, personal digital assistants and newsletters). Includes e-commerce.

38	Processes	Management processes or technical processes implemented, including reference to proprietary technology. Including sales tools, company co-operation forms, corporate specialisation, operation or administrative processes); utilisation of organisation resources, processes/procedures/routines, and documentation that enables the company or employees to follow. Indicators include efficiency, effectiveness and productivity.
39	Philosophy and Culture	Reference to working culture (management philosophy and corporate culture). Management philosophy is the way the leaders in the organisation think about the organisation and its employees, while culture is the norms, values and beliefs shared by the employees of the organisation. Corporate culture is the set of key values, beliefs, attitudes and understanding share by people and groups in an organisation, which controls the way members of the organisation interact with each other and with other stakeholders. It includes description of the company's corporate culture and value, stories and myths that build up about people, events and history conveying a message about what is valued within a company.
40	Intellectual Property	Referring to the assets of a company that are protected by law (patents, copyrights, trademarks, trade secrets, licenses, commercial rights and other related items).
41	Financial Relations	Defined as the favourable relationships the company has with investors, banks and other financiers, financial ratings, financial facilities available and listings

Appendix B

Coding instructions for content analysis

Adapted from: De Silva et al. (2014)

1. An intellectual capital disclosure in the integrated or annual report refers to any sentence, graphical representation, or numerical data that can be identified as intellectual capital based on the intellectual capital explanations. Pictures must not be coded, but captions belonging to those pictures must be coded.
2. All intellectual capital disclosures must be specifically stated and cannot be implied.
3. Intellectual capital disclosures that can be coded into one or more items should be coded as belonging to all relevant items.
4. Disclosures that are mandatory under financial accounting reporting standards are disregarded.
5. Several sections of the annual report are omitted from the content analysis. These include:
    - Contents page
    - Statutory Information
    - Auditors report
    - Financial statements and notes to the financial statements
    - Shareholder information e.g. announcements, AGM notice