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Intellectual capital disclosure in integrated reporting: an impression management analysis

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Abstract

Purpose – Intellectual capital (IC) is fundamental to understanding how firms create value; however, current IC disclosure (ICD) has been described as inadequate due to the lack of an established IC framework and companies' actual commitment to report IC information. The International Integrated Reporting Council aims to foster ICD by means of integrated reporting (IR); such a report should display how IC and other forms of capital (e.g. financial) contribute to value creation over time. Drawing on impression management (IM) studies, the purpose of this paper is to assess the quality of ICD offered in IR.

Design/methodology/approach – A manual content analysis of all the reports available in the International Integrated Reporting Council web site is run considering both the content of ICD and specific linguistic attributes (evidence, time orientation and tone). In addition, the study tests the relationship between the positive ICD tone and specific characteristics that may incentive managers to manipulate their disclosure to determine whether firms use ICD to manage public perceptions of corporate behaviour.

Findings – The results of the content analysis show that majority of ICD is focused on relational capital, with limited quantitative and forward-looking information. Additionally, compared to non-ICD, ICD is significantly more optimistic. Furthermore, the positive tone of ICD is significantly associated with declining performance, bigger size and higher level of intangibles supporting the use of ICD as an IM strategy.

Originality/value – The research contributes to the literature offering evidence of the quality of the ICD offered in the IR and demonstrating that ICD offered in the IR is used by managers opportunistically to advance their image.

Keywords Intangibles, Disclosure quality, Intellectual capital, Impression management, Integrated reporting

Paper type Research paper

1. Introduction

Firms experience strong pressure to communicate how they manage both their financial and non-financial capital: information on intellectual capital (IC) is fundamental to understand how firms create value (Zambon and Marzo, 2007; Abhayawansa and Guthrie, 2010; EY, 2014), and it constitutes a key starting point for investors' analysis (Gamerschlag, 2013). However, previous studies consistently describe a low observed level of IC disclosure (ICD) (Beattie and Thomson, 2007), due to the lack of both an established IC reporting framework and companies' proactive efforts to report externally IC information (Guthrie and Petty, 2000).

Some scholars argue that integrated reporting (IR) could enhance ICD by portraying a holistic view of the firm value creation process that embeds, but is not limited to, IC information (Abhayawansa, 2013; Beattie and Smith, 2013). IR explicitly involves

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the provision of a complete picture of firms' value creation process, by connecting financial and non-financial information, including IC information, in one report (International Integrated Reporting Council (IIRC), 2013). In the IIRC project, IC is a fundamental concept, underpinning IR preparation (IIRC, 2013); however, there is no guarantee that IR adopters provide informative disclosures about their IC.

This study investigates the quality of ICD offered in the IR. Although an emerging literature stream investigates the determinants of IR adoption (Jensen and Berg, 2012; Sierra-García *et al.*, 2013; Frias-Aceituno *et al.*, 2013, 2014; Lai *et al.*, 2014), no studies assess the quality of the ICD provided in IR. Dumay and Cai (2014) call for research analysing the ICD offered in the IR; the current study is an attempt to respond to this call and draws on the impression management (IM) framework (Brennan *et al.*, 2009; Cho *et al.*, 2010) to determine whether firms offer ICD to advance their corporate image, in lieu of providing useful information. Despite previous studies raise the concern that ICD in the context of corporate reporting could be described as "one sided reports of good news, deliberately avoiding any bad news" (Dumay, 2012, pp. 9-10), there is a lack of studies assessing the adoption of IM in ICD.

In order to evaluate the quality of ICD, the study seeks an answer to two related research questions to understand the role of IR in disclosing IC information:

RQ1. How do firms offer ICD in the IR?

In line with Abhayawansa (2011), this study evaluates the qualitative characteristics of ICD by mean of a manual content analysis adopting a multidimensional framework based on both the content and specific linguistic attributes. For the content addressed, a common taxonomy used in IC studies recognizes three main categories of capital: structural, human and relational (Beattie and Smith, 2013). In addition, drawing on the IIRC framework requirements, the coding distinguish information based on "the topic" of capitals disclosure: capitals as "inputs" or capital as "outcomes". The linguistic attributes considered are the type of evidence provided (quantitative vs non-quantitative), the time orientation (forward looking vs non-forward looking) and the tone of the information (positive vs non-positive).

Second, after the reliability assessment and validation of the content analysis, the data obtained are used for answering the second research question:

RQ2. Do mangers adopt IM strategy in the ICD offered in the IR?

This research question is answered by testing a set of hypotheses on the relation between the positive tone of ICD and firms' specific characteristics which may give them incentives to use IM strategies. The choice of these variables is also consistent with previous studies exploring factors that explain differences in the ICD behaviours between companies (e.g. Bozzolan *et al.*, 2003, 2006; Cerbioni and Parbonetti, 2007).

The remainder of the paper is organized as follows: the next section describes the notion of IC in the context of the IR project; the third section presents the theoretical framework and related hypotheses development. Section 4 contains an explanation of the empirical analysis method and Section 5 presents the results of this analysis. Finally, this paper concludes with a discussion of the evidence provided, as well as some research limitations and implications.

2. The relation between IC and IR

In general, IC refers to all intangible resources that create company value (Ashton, 2005), in contrast with financial and physical capital, which refer to the tangible

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resources of firms' value creation process (Beattie and Smith, 2013). It is widely accepted that IC is composed of three elements: structural/internal capital, human capital and relational/external capital (Stewart, 1997; Sveiby, 1997; Guthrie and Petty, 2000; Meritum, 2002). Structural capital comprises organizational routines, procedures, systems, cultures and database. Human capital includes the knowledge, skills and abilities of people. Relational capital consists of the resources linked to external relationships with customers, suppliers and research and development partners.

Information on IC is fundamental to understand firms' value: even if organizations are generally and predominantly assessed according to their financial key figures, also information about intangible assets constitutes a relevant share of corporate value (Alwert *et al.*, 2009). Previous studies demonstrate that capital market actors consider IC information important and useful for making investment, stock recommendation and portfolio selection decisions (e.g. Abhayawansa and Guthrie, 2010). IC reports contribute to higher transparency of organizations by explaining hidden value and long-term development options (Edvinsson and Malone, 1997).

Whilst physical and financial capitals currently appear in financial reporting; few categories of IC are recognized. Less-than-optimal corporate ICD practices have been widely criticized (Guthrie *et al.*, 2012; Abhayawansa, 2013). Previous studies demonstrate that firms typically disclose little about their IC, and conclude that corporate reports contain ICD of poor quality (e.g. Guthrie and Petty, 2000; Brennan, 2001) that are insufficient to satisfy the user's information needs (Beattie and Thomson, 2007). This information asymmetry is a source of possible errors in assessing risks and future developments of an organization (Alwert *et al.*, 2009). The gap between intangible assets available in the organization and the reported ones is "still not closing and many countries have thus suggested frameworks for voluntary disclosure on IC either as part of the annual report or as an independent part" (Alwert *et al.*, 2009, p. 357).

Several initiatives have been launched in the last years to improve current reporting on IC, however, none of them stresses the importance to provide IC in an "integrated" way with financial information. Despite previous studies highlights that the provision of IC and financial information together is fundamental for IC information to be relevant (Alwert *et al.*, 2009). Abhayawansa (2013) reviews the 20 guidelines and more than 30 frameworks and highlights that most of them propose a separate IC report or statement that elaborates the value creation story of a company through IC relationships. Beattie and Thomson (2007) point out that one of the limitations of current reporting on IC is the focus on IC resources, the purpose of which is to break business activity down into recordable units in the traditional accounting manner; in other words, the focus of previous IC reporting frameworks was on managing IC, not managing the business as a whole.

A notable exception is the work carried out by the IIRC in developing and refining its framework (Abhayawansa, 2013). The IIRC aims at overcoming the drawbacks of its predecessors (e.g. annual reporting, sustainability reporting) to enable firms to holistically portray value creation with a core emphasis on IC. In contrast with other forms of corporate IC reporting, the purpose of IR is to supplement information embedded in traditional financial statements with IC information to shed light on the value creation processes. This aspect differentiates IR from annual reports, which are not designed to convey IC information, as Dumay and Cai (2014) emphasize.

The International Integrated Reporting Framework (IIRF) instead recognizes value creation as an interaction among all the various capital components, with an underlying assumption that a firm's value creation story cannot be understood in a

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vacuum: IC reporting should form part of a broader information set that facilitates understanding firm value in the short, medium and long run.

Moreover, as underlined by Abhayawansa (2013), the IC reporting guidelines and frameworks are driven by an assumed demand for IC information from capital market participants. Thus, they are designed to address the information needs of users of corporate information that are not met by traditional financial statements. However, only a few initiatives have consulted stakeholders in the process of developing the guidelines and frameworks or recommend that preparers of IC reports obtain user feedback. On the contrary, the IIRC has consulted stakeholder by mean of several process (e.g. the Pilot Programme).

The IIRC's IIRF defines IR as "a clear and concise representation of how an organization creates value over time" aiming to provide insights about "the resources and relationships used and affected by an organization" (IIRC, 2013). Current and potential resources are expressed in terms of capitals (i.e. stock of value) that an organization's activities can increase, decrease or transform. The IIRF categorizes six types of capital – financial, manufactured, intellectual, human, social and relationship and natural – and defines them as follows:

- financial capital refers to the funds available to an organization;
- manufactured capital refers to manufactured physical objects – distinct from natural physical objects – available to an organization for use in the production of goods or provision of services;
- natural capital is all renewable and non-renewable environmental resources and processes that provide goods or services that support the organization's past, current or future prosperity;
- IC is the organizational, knowledge-based intangibles;
- human capital comprises the competencies, capabilities, experience and motivation to innovate; and
- social and relationship capital refers to the institutions and relationships within and between communities, groups of stakeholders and other networks; in addition, it encompasses the ability to share information to enhance individual and collective well-being (Busco *et al.*, 2013; IIRC, 2013).

Organizations preparing an IR are not required to adopt this categorization or structure their report along these lines. The IIRF underscores that some organizations might combine, for example, IC with what the IIRF identifies as human and social (and relationship) capital. In other words, what some organizations explain as structural or internal capital might be defined as IC in the IIRF. The differences in title notwithstanding, the IIRF covers all three categories (i.e. structural, human and relational) commonly recognized as comprising IC (Busco *et al.*, 2013) and when these types of capital "are material to the organization's ability to create value for itself, they should be included in the IR" (IIRC, 2013, p. 4).

Although IR was designed to foster both IC and non-IC business communication, it appears that IC is at the core of IR. In spite of this, whether firms adopting IR actually use it to provide informative ICD is still an open question. Thus, this study assess how do firms disclose IC in the IR (first research question) and investigate whether ICD is actually informative or, conversely, used strategically to manage corporate image, as described in the next section (second research question).

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3. Theoretical framework and hypotheses development

IM is the process by which people attempt to control the impressions others form of them (Leary and Kowalski, 1990). In the context of corporate reporting, IM is the tendency for the organization to use data selectively and present them in a favourable light to manipulate audience perceptions of corporate achievements (Clatworthy and Jones, 2006).

A variety of methods can be used to distort perception; a common technique investigated in accounting studies is called "thematic manipulation", which refers to the use of positive tone in the disclosure to create a good image of the firm (Brennan *et al.*, 2009). In other words, managers engage in thematic manipulation when they obfuscate their failures and underscore their successes through corporate reporting (Cho *et al.*, 2010).

Clatworthy and Jones (2003) and Schleicher and Walker (2010) verify the use of IM strategies in financial reporting and provide evidence consistent with the use of thematic manipulation. Similarly, in the context of sustainability reporting previous studies demonstrate that managers use social and environmental disclosure opportunistically to manage the impressions of firms' relevant public (e.g. Cho *et al.*, 2010).

With specific reference to IC reporting, Dumay and Cai (2014, 2015) underscore that existence of literature on the quality of ICD grounded on the idea that it would be naïve to think that disclosures are not contaminated by their authors: Olsson (2001) contends that ICD does not necessarily reflect companies' actual policy; Gowthorpe (2009, p. 829) argues that the company's "dark side" would never be reported, regardless of its truthfulness. Indeed, given the voluntary nature of ICD, report preparers can easily manipulate the information (Dumay, 2012).

Despite previous studies raise the concern that ICD in the context of annual reporting could be described as "one sided reports of good news, deliberately avoiding any bad news" (Dumay, 2012, pp. 9-10), few studies have investigated the adoption of IM in ICD. Abhayawansa and Guthrie (2012) demonstrate that sell-side analysts use IC information to create a favourable image of the analysed company and show that analysts' reports are used to manage public impression. However, they do not focus on corporates' issued reports but in the analysts' issued ones.

The present paper investigates the ICD offered in the IR drawing on previous studies on IM in the context of corporate reporting. Previous accounting studies argue that IM occurs when managers have particular incentives to present a positive view of corporate performance (Clatworthy and Jones, 2006). Although these incentives are present in all firms, they may be particularly evident when performance is poor. In line with this proposal, Clatworthy and Jones (2003) and Schleicher and Walker (2010) find that firms with declining performance have a greater propensity to reveal good news.

Drawing on these studies, this research tests the relationship between the positive tone of disclosure and firms' profitability: if ICD is conceived of as an IM strategy, managers should increase the level of optimism to divert readers' attention from the bad results of their value creation process:

H1. Declining profitability is associated with an increased positive tone of ICD provided in the IR.

Industry is another important characteristic that may prompt companies to use IM strategy and, more specifically, thematic manipulation. Previous studies demonstrate that membership in environmental sensitive industries (e.g. Oil and Gas) is a strong incentive to manipulated the disclosure offered (Cho *et al.*, 2010). Indeed, numerous

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studies (e.g. Hackston and Milne, 1996; Patten, 2002; Cho and Patten, 2007) document that companies in industries whose processes place greater stress on the natural environment also systematically provide more extensive environmental disclosures (Cho *et al.*, 2010). In light of this, the following hypothesis is tested:

H2. Membership in environmental sensitive industry groups is associated with an increased positive tone of ICD provided in the IR.

Another important incentive to manipulate disclosure is firms' size. Bigger firms indeed face more public pressure and managers are thus more likely to use thematic manipulation in their corporate reports (Cho *et al.*, 2010). In line with this suggestion, the following hypothesis is developed:

H3. Bigger size is associated with an increased positive tone of ICD provided in the IR.

Finally, the present study adds an additional characteristic that may prompt companies to offered biased disclosure: the level of intangibles. According to An *et al.* (2011) firms with a high level of intangibles are unable to legitimize their status on the basis of "fixed assets" which are traditionally recognized as symbol of corporate success (Guthrie *et al.*, 2006, p. 257); in light of this, the expectation is that these firms are thus more likely to adopt IM in their ICD:

H4. A higher level of intangibles is associated with an increased positive tone of ICD provided in the IR.

4. Method

4.1 Content analysis as a research method to inquiry ICD

Methodologically, researchers investigate ICD mostly by using content analyses (Dumay and Cai, 2014), and most studies quantify ICD, with modest attention dedicated to analyses of its linguistic attributes (Beattie and Thomson, 2007). As highlighted by Cinquini *et al.* (2012) a multitude of studies investigate the frequency of ICD, especially through annual reports, and apply a research construct quality index using the amount of disclosure as a proxy for quality assessing which type of IC capital (structural, human or relational) receives the most attention in corporate annual reports. These studies indicate that the most reported IC category is external/relational capital (Guthrie and Petty, 2000; Bozzolan *et al.*, 2003, 2006; Davey *et al.*, 2009), though with some exceptions (Cinquini *et al.*, 2012; Husin *et al.*, 2012).

However, investigating only the volume is potentially misleading (Toms, 2002; Beattie and Thomson, 2007): a second characteristic used to evaluate the quality of disclosure is often labelled "evidence" (i.e. the type of measure), which evaluates whether information is communicated narratively or quantitatively. In other words, noting that quantitative information is considered more verifiable, previous studies evaluate disclosure quality by building an index that attributes greater value to disclosures offered in quantitative terms. These studies show that firms report few quantitative indicators: Guthrie and Petty (2000, p. 247) note that "nearly every instance of reporting involved the IC attribute being expressed in discursive rather than numerical terms", and subsequent studies document similar results (e.g. Bozzolan *et al.*, 2006; Striukova *et al.*, 2008; Cinquini *et al.*, 2012; Husin *et al.*, 2012).

A third dimension used to assess ICD quality is the time orientation of information, distinguishing forward looking, from non-forward-looking information (i.e. historical

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and non-time specific). In general, forward-looking information may be most useful for shedding light on a firm's strategy and future prospects (Abhayawansa, 2011). Similarly, Kristandl and Bontis (2007) consider time orientation in their assessment of ICD. Results on the time orientation of information show that firms avoid disclosing forward-looking information (Cinquini *et al.*, 2012), despite its relevance for understanding firms' performance.

The tone or news tenor of information is another characteristic to evaluate disclosure quality and it refers to whether information is communicated positively, neutrally or negatively. Dumay and Tull (2007) and Lock Lee and Guthrie (2010) propose that ICD news tenor has an impact on share prices. Findings on the tone of information of ICD in analyst's report' show that the majority of disclosures tend to be positive rather than negative or neutral (Abhayawansa, 2011).

In reviewing prior content analytic studies, Dumay and Cai (2015) point out that with few exceptions few studies simultaneously consider all four characteristics in evaluating ICD quality. Cerbioni and Parbonetti (2007) assess the ICD quality in reference to their topic, time orientation and the economic sign of the information (positive, negative or not disclosed). Cinquini *et al.* (2012) assess the ICD referring to both the topic and type of evidence provided and the time orientation of information. Abhayawansa (2011) describes and applies a methodology using a four dimensional IC coding framework distinguishing ICD topic, evidence, time orientation and news tenor. Drawing on these studies, the present research uses content analysis to provide an answer to the first research adopting a multidimensional framework of analysis based on both the content of ICD (type of capital and topic) and its linguistic attributes (tone, time, evidence).

However, in order to have a complete picture of the quality of ICD it is fundamental to run the second level of analysis that allow to test the research hypotheses on the adoption of IM strategies in the ICD offered in the IR.

4.2 Sample selection and data collection

The study includes the entire population of firms whose reports are available in the Integrated Reporting Emerging Practice Examples Database as of 31 May 2014. This database contains examples of IR from businesses worldwide and is publicly accessible from the IIRC official web site.

The decision to focus the analysis on a specific section of the report is motivated by the existence of a requirement by the IIRC to disclose information on a specific content elements the so called "business model" (IIRC, 2013, p. 26). In particular firms are required to describe their business model in terms of inputs, business activities, output and outcomes (IIRC, 2013, p. 26); whereas "inputs" and "outcomes" should be expressed in the form of "capitals". In spite of this requirement, 25 of the 79 reports available in the database at that date were excluded, because they do not provided a report section to the description of their business model or value creation process by mean of the capitals.

The IIRC framework also specifies that "since not all capitals are equally relevant or applicable to all organizations. While most organizations interact with all capitals to some extent, these interactions might be relatively minor or so indirect that they are not sufficiently important to include in the IR" (IIRC, 2013, p. 12). This means that some organizations may not refer to some of the capitals. Indeed, what was found is that in two cases there were no references to IC.

The remaining 52 reports belong to firms from various industry sectors: Oil and Gas (8 per cent); Basic Materials (17 per cent); Industrial (17 per cent); Consumer Goods (10 per cent); Health Care (6 per cent); Consumer Services (13 per cent); Telecommunication

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(6 per cent); Utilities (6 per cent); Financial (11 per cent) and Technologies (6 per cent). With regard to location, 56 per cent of the reports are from Europe, 19 per cent from Africa, 9 per cent from North America, 6 per cent from South America, 6 per cent from Australia and 4 per cent from Asia. The available reports refer to 2011 (52 per cent), 2012 (35 per cent) and 2013 (13 per cent).

All data used in the analysis were manually collected from the reports and from the Bloomberg databases for 2011, 2012 and 2013.

4.3 Data analysis

The analysis was articulated in two steps. First, a manual content analysis was performed to assess the quality of the disclosure by developing a multidimensional framework of analysis with reference to both the ICD content and specific linguistic attributes. Second, the collected evidence was used to run a multivariate statistical analysis to assess the presence of thematic manipulation in the disclosure provided by testing the research hypotheses. Together, these two levels of analysis enabled to answer the research questions.

4.3.1 Manual content analysis. The research follows the Krippendorff's (2013) methodology to run content analysis. The context unit is the IR section devoted to capital disclosure, and the recording units are "text units", defined as a phrase/sentence containing a single piece of information (Beattie *et al.*, 2004; Beattie and Thomson, 2007). Every sentence in the IR section thus was highlighted and coded. When a sentence encompassed more than a single statement, each statement (i.e. text unit) was considered separately as a single recording unit. In addition, figures and diagrams were analysed if they report capital descriptions; indeed, the IIRF recommends depicting business models (and therefore capital) graphically (IIRC, 2013, p. 25). This choice is also consistent with Beattie and Thomson's (2007, p. 143) recommendation to extend content analysis to visual images, because they "provide and immediate and effective means of disclosure". In all, 3,117 text units were analysed belonging to 54 reports (on average, 57 text units per report).

First, each text unit was classified into one of six categories that refer to the type of capital: IC (human, structural or relational) or non-IC (financial, manufactured, natural), following the IIRF guidelines. Table I defines each type of capital used in the coding. Second, each text unit was coded according to three attributes: the time orientation (forward looking or non-forward looking), type of evidence (quantitative or non-quantitative) and the tone (positive or non-positive). Information was coded as quantitative when the text unit included a number, monetary or non-monetary, and non-quantitative in all other cases. Information was coded as forward looking if it referred to the firm's future prospects, strategy and expectations and non-forward looking if it referred to the past or present. Information was positive when it included good news for the company (or the environment) and non-positive if it was negative or neutral. Additionally, the topic of information is considered, distinguishing between "inputs" and "outcomes". An information is coded as "inputs" when considers the capital as a driver of firms' value creation process; it is categorized as "outcomes" when it is refers to the impact of the value creation process on the capital. This distinction is in line with the IIRF that asks to consider the capitals as "inputs" and "outcomes" of the value creation process. Overall, this coding scheme incorporated five categories: "type of capital", "evidence", "time orientation", "tone" and "topic".

Subsequently, a univariate statistical analysis is run based on the computation of χ^2 probabilities to assess if there are significant differences in the linguistic attributes and in the topic between IC and non-ICD.

Category	Coding rule
Financial capital	The pool of funds available to an organization for use in the production of goods or the provision of services, obtained through financing, such as debt, equity or grants, or generated through operations or investments
Manufactured capital	Manufactured physical objects (as distinct from natural physical objects) available to an organization for use in the production of goods or the provision of services, including buildings and equipment infrastructure (such as roads, ports, bridges and waste and water treatment plants)
Natural capital	All renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organization, including air, water, land, minerals and forests, as well as biodiversity and ecosystem health
Structural capital (termed "IC" in the IIRF)	Organizational, knowledge-based intangibles, including intellectual property, such as patents, copyrights, software, rights and licences; and organizational capital such as tacit knowledge, systems, procedures and protocols
Human capital	People's competencies, capabilities and experience and their motivations to innovate, including their alignment with and support for an organization's governance framework, risk management approach and ethical values; ability to understand, develop and implement an organization's strategy; and loyalties and motivations for improving processes, goods and services, including their ability to lead, manage and collaborate
Relational capital (termed "social and relationship capital" in the IIRF)	The institutions and the relationships within and between communities, groups of stakeholders and other networks, and the ability to share information to enhance individual and collective well-being. Social and relationship capital includes shared norms and common values and behaviours; key stakeholder relationships and the trust and willingness to engage that an organization has developed and strives to build and protect with external stakeholders; intangibles associated with the brand and reputation that an organization has developed; reputation that an organization has developed and an organization's social license to operate

Table I. Definitions of types of capitals in the IIRF used in the coding framework

In content analysis studies is fundamental for inferences to be drawn to assess reliability and validity of the classification procedure (Krippendorff, 2013). The process of assessment of reliability and validity is fundamental to make replicable and valid inferences from the text to the context of its use. Additionally, this process allows using the data collected in the subsequent multivariate analysis, combining them with other type of data (i.e. archival).

First, reliability is assured by "including disclosure categories from well ground relevant literature" (Guthrie *et al.*, 2004, p. 289): the three "topic" of ICD are the ones of the Sveiby (1997) IC framework that is the one most used in the literature (Petty and Guthrie, 2000); similarly, the categories that refer to the "linguistic attributes" are commonly adopted in the literature evaluating the quality of ICD (Dumay and Cay, 2015).

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Finally, the categories referring to "topic" are drawn from the IIRC framework. Second, reliability is also ensured by developing "reliable coding instrument with well specified decision categories and decision rules" and by "training coders and showing that coding decision made on a pilot sample have reached an acceptable level" (Guthrie *et al.*, 2004, p. 289). Two researchers (the author and a research assistant) independently coded a sample of 21 reports to run a pre-test of the coding procedure. When differences were encountered they were discussed and resolved to clarify coding rules. This also allows standardizing the classifying capabilities of the author and research assistant. In addition, the analysis was repeated at a different time period on the entire sample (54 reports) by the two researchers.

According to Krippendorff (2013) three types of reliability should be assessed: reproducibility, stability and accuracy and "all of them are functions of the agreement achieved among observers, coders, judges or measuring instruments" (Krippendorff 2013, p. 267). The agreement coefficient α (known in the literature as the Krippendorff's α) is a tool to assess such agreement. Reproducibility or intercoder reliability refers to the extent to which coding is the same when multiple coders are involved. This type of reliability was assessed using Krippendorff's α coefficient of agreement and computed it for each category. The average value found of this coefficient is equal to 0.85 (for "topic" 0.80; for "tone" 0.83; for "evidence" 0.89; for "time" 0.88) which is above the 0.80 acceptable level of intercoder reliability (Hackston and Milne, 1996). The "stability" of the content analysis consisting on the ability of the researcher to code data in the same way over time is assured by the "test re-test procedure" (Guthrie and Mathews, 1985; Milne and Adler, 1999). In this case a high consistency in the coding at these different time periods was demonstrated (Krippendorff's α coefficient equals to 0.92). Accuracy consists on measuring the extent to which the coding instruction produces data that are accurate according to a given standard; however suitable standard are not easy to find and thus the use of accuracy is limited to other areas where objective standards are readily available (Krippendorff, 2013).

To ensure sampling validity, the entire population of firms whose reports were available in the IIRC web site was chosen. Sematic validity is confirmed, in that the category choices were indigenous to IR (the ones used in the IIRF). Structural and functional validity is assured by the use of a classification scheme that is grounded in empirical research using categories for which consensus exists in IC studies and that previously have been used extensively to investigate IC in other media (Beattie and Thomson, 2007).

4.3.2 Multivariate statistical analysis. This multivariate analysis is developed to test research hypotheses. Model 1 verifies whether the tone of disclosure is affected by firms' declining profitability, membership in environmental sensitive industries, firms' size and level of intangibles. An OLS regression model using data from 2011, 2012 or 2013 (depending on the year of the report) was estimated:

$$\begin{aligned} ICD_TONE = {} & \alpha_0 + \alpha_1 DECL_PERF + \alpha_2 ENV_SENS_IND + \alpha_3 SIZE \\ & + \alpha_4 INTANGIB + + \alpha_5 ICD_TOPIC \\ & + + \alpha_6 LENGTH + \varepsilon \qquad (Model\ 1) \end{aligned}$$

The dependent variable in the regression is *ICD_TONE*. This variable represents the ICD tone score and is measured as the number of positive statements text units deflated

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by the total number of text units. Declining performance (*DECL_PERF*) is a dummy variable equal to 1 if firm return on equity one year ahead is decreasing and 0 otherwise in line with Schleicher and Walker (2010). Drawing on Cho *et al.* (2010) the industry effect is test by including a dummy that is equal to one if firms belong to non-environmental sensitive (Consumer Goods; Consumer Service; Health Care; Technology; Telecommunication; Financials industry) and to 0 if they do (Oil and Gas, Basic Materials, Industrials, Utilities) in line with the ICB industry classification system. Firm size (*SIZE*) is measured as the logarithm of balance sheet total assets. Firm intangibles are measured with reference to the market to book ratio (*MB*) in line with previous studies on IC (e.g. Brennan, 2001).

The model controls whether the positive tone of disclosure is associated with a specific type of IC topic (input or outcome). Finally, the last control variable considered is the length of the disclosure (i.e. quantity of ICD statements), which may be associated with an increasing positive tone. Disclosure length (*LENGTH*) is the logarithm of number of text units on ICD of each firm's report.

The robustness of the results is assessed by mean of a set of sensitivity tests (Models 2-4). Model 2 considers an additional variable that may explain ICD tone. The model controls for the effect of continent-specific institutional factors by including the variable *EUROPE* a dummy that is equal to 1 if firms are incorporated in European countries and 0 otherwise. This inclusion is explained by the findings of the emergent literature on IR shedding light on the importance to consider to institutional factors to understand IR (Jensen and Berg, 2012).

Two additional sensitivity tests are run: in Model 3 the variable *ENV_SENS_IND* is substituted with the single ICB industry groups (see Table II *IND*). Similarly, in Model 4 we consider the six different continents (*CONT*) separately instead of the dummy variable (*EUROPE*). All the variables used in both the models are defined in Table II.

Finally, potential collinearity between explanatory variables is assessed by mean of variance inflator factor (VIF) analysis. The results of the VIF analysis highlighted no problem of collinearity between explanatory variables in all the four models. The tests show that the largest value among all independent variables used as an indicator of the severity of multicollinearity is below the ten threshold (Neter *et al.*, 1996) in all the four models, so multicollinearity among the variables is not significant.

5. Results

5.1 Content analysis

The results in Table III highlight that IR includes both IC and non-ICD in a balanced manner: of the 3,117 text units analysed in 54 reports, 52 per cent of the information refers to IC (structural, human and organizational) and 48 per cent to non-IC (financial, manufactured and natural).

With regard to particular types of capital, the disclosure offered in the IR tends to be focused on relational (30 per cent) and financial (24 per cent) capital. Natural capital is 16 per cent of the disclosures, and human capital disclosures make up 14 per cent. In contrast, the data reveal relatively limited information on structural (9 per cent) and manufactured (8 per cent) capital. With specific reference to ICD, the results show that 56 per cent of ICD refers to relational capital, whereas 28 per cent refers to human capital and 16 per cent to structural capital.

Linguistic attribute analyses with regard to ICD show that on average, IC information tend to be more optimistic than non-IC information (49 vs 45 per cent) and this difference is

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Table II. Variables definition and measurement

Definition	Measurement
Dependent	
ICD tone (*ICD_TONE*)	Tone disclosure score (number of positive text units/total number of text units)
Independent variables	
Declining performance (*DECL_PERF*)	Dummy variable equals to 1 if firms' one year ahead return on equity will decrease and to 0 otherwise
Environmental sensitive industry (*ENV_SENS_IND*)	Dummy variable equals to 1 if the firm is member of Oil and Gas, Basic Materials, Industrials or Utilities; and it is equal to 0 if it belongs to the Health Care, Consumer Goods, Consumer Service, Technology, Telecommunication or Financials
Industry (*IND*)	Ten industry dummies representing the ten ICB industries: *IND*_1 (Oil and Gas); *IND*_2 (Basic Material); *IND*_3 (Industrial); *IND*_4 (Consumer Goods); *IND*_5 (Health Care); *IND*_6 (Consumer Services); *IND*_7 (Telecommunication); *IND*_8 (Utilities); *IND*_9 (Financials); *IND*_10 (Technologies)
Size (*SIZE*)	Natural logarithm of balance sheet total assets (in US dollars)
Intangibles (*INTANGIB*)	Market to book value
Controls	
Disclosure length (*LENGTH_IC*)	Natural logarithm of the number of text units on IC in the IR
ICD topic (*ICD_TOPIC*)	Topic disclosure score is equal to (number of ICD on inputs/total number of text units on inputs and outcomes)
Europe (*EUROPE*)	Dummy variable equals to 1 if firm is incorporate in an European country and to 0 otherwise
Continent (*CONT*)	Six continent dummies: Europe (*CONT*_1); Africa (*CONT*_2); North America (*CONT*_3); South America (*CONT*_4); Australia (*CONT*_5); Asia (*CONT*_6)

statistically significant as show by the Pearson χ^2 probabilities (below 0.050). With reference to time orientation, the reports indicate a limited amount of forward-looking information on IR: only 12 per cent for both ICD and non-ICD and no statistically differences are highlighted between ICD and non-ICD. Considering the type of evidence, very different patterns emerged between IC and non-IC in that non-IC information embeds much more numerical evidence than IC information (43 per cent of non-ICD is quantitative vs 19 per cent of ICD) and this difference is statistically significant as shown by the results

Table III. The supply of IC and non-IC disclosure: findings on the "type of capital"

Type of capital	Frequency	%
IC		
Structural capital	274	8.79
Human capital	450	14.44
Relational capital	910	29.19
Total IC	1,634	52.42
Non-IC		
Financial capital	748	24.00
Manufactured capital	252	8.08
Natural capital	483	15.50
Total non-IC	1,483	47.58
Total IC and non-IC	3,117	100

of the χ^2 test. Finally, the topics analysis highlights the existence of different trends between IC and non-IC information. Both IC and non-IC information is more concentrated on capitals as "outcomes" rather than "inputs", However, non-IC is significantly more focused on outcomes than ICD (Table IV).

5.2 Multivariate statistical analysis

5.2.1 Descriptive statistics. Table V presents the means, standard deviations, minimum and maximum of the continuous variables used in the multivariate analysis. As highlighted, there are some firms that report only positive information on their capitals (*TONE* equals to 1) as well as others that report only non-positive one (*TONE* equals to 0). Similarly, some firms concentrate all disclosure on ICD as "inputs" (*ICD_TOPIC* equals 1) or, conversely, as "outcomes" (*ICD_TOPIC* equals 0). Table VI presents pairwise correlations among the same variables. The data reveals statistically significant correlations between *TONE* and *MB* and between *MB* and *SIZE*. With reference to categorical variables, firms that will experience a decline in their performance are 44 per cent of the sample whilst firms that are members of environmental sensitive industry are 48 per cent.

	Tone		Time		Evidence		Topic		
Capital	*p*	*np*	*f*	*nf*	*q*	*nq*	*i*	*o*	Tot.
IC	48.65	51.35	12.06	87.94	19.52	80.48	46.70	53.30	100
Non-IC	45.11	54.89	12.20	87.80	42.55	57.45	36.35	63.35	100
Pearson χ^2(1) coeff.	3. 916		0.016		194.533		34.239		
Pearson χ^2(1) prob	0.048		0.899		0.000		0.000		

Notes: *p*, positive; *np*, non-positive; *f*, forward looking; *nf*, is non-forward looking; *q*, quantitative; *nq*, non-quantitative; *i*, inputs; *o*, outcomes. All the data are expressed in percentage

Table IV. The supply of IC and non-IC disclosure: findings on "attributes"

Variable	Obs.	Mean	SD	Min.	Max.
TONE	52	0.452	0.256	0.000	1.000
SIZE	52	10.692	2.131	7.024	16.218
INTANGIB	52	4.109	4.400	0.314	17.351
ICD_TOPIC	52	0.490	0.216	0.000	1.000
LENGTH_IC	52	2.946	1.012	1.099	5.333

Note: For variable definitions, see Table II

Table V. Descriptive statistics

Variable	*TONE*	*SIZE*	*INTANGIB*	*ICD_TOPIC*	*LENGTH_IC*
TONE	1.000				
SIZE	0.038	1.000			
INTANGIB	0.412*	−0.417*	1.000		
ICD_TOPIC	−0.036	−0.049	−0.180	1.000	
LENGTH_IC	0.048	−0.182	−0.008	−0.055	1.000

Notes: For variable definitions, see Table II. *The estimated coefficients are statistically significant at 5 per cent level

Table VI. Pairwise correlations

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5.2.2 Findings of OLS multivariate analysis and sensitivity tests. Table VII presents the multivariate analysis results by means of the main OLS regression model (Model 1). The positive and significant coefficient of *DECL_PERF* (1 per cent level) indicates that firms with declining performance are more optimistic, thus confirming *H1*. However, the relationship between tone and industry membership (*IND*) does not demonstrate any significant association between optimistic disclosure and membership in environmental sensitive industries, which does not support *H2*. With reference to size effect, the positive and significant coefficient of *SIZE* shows that bigger firms are significantly more optimistic than smaller one, in support of *H3* (10 per cent level). The variable *INTANGIB* is positively and significantly associated with the positive tone of disclosure (significant at 1 per cent level), in support of *H4*. Finally, no statistically significant effect is highlighted with reference to the control variables *LENGTH* and *ICD_TOPIC*.

The results of the sensitivity test (Model 2) where we add the explanatory variable *EUROPE* are also reported in Table VII. Similar to Model 1, the results confirm the positive association between optimistic tone and declining performance, in support of *H1*. *ENV_SENS_IND* is also not associated with an increasing use of optimistic disclosure, not confirming *H2*. Model 2 also shows a positive relationship between positive tone and the size in support of *H3*. Finally, the market to book value is significantly related to the positive tone of IC (significant at 1 per cent level) as expected (*H4*).

The un-tabulated results of Model 3 considering different proxy of firms' industry (*IND*) confirm the positive and significant relation between tone of ICD and both, *DECL_PERF* and *MB* in support of *H1* and *H4*, respectively. Model 4 confirms the same result but shows a limited continent effect: firms belonging to European countries are significantly more likely to use optimistic disclosure compared to Australian ones.

In brief, the results of the sensitivity tests support all the findings of Model 1. Additionally, the robustness of the evidence collected is supported by the results of the VIF analysis where no problem of collinearity between explanatory variables in all the models emerge as underlined in methodological section.

Dependent variable	Model 1		Model 2	
TONE	Coef.	SE	Coef.	SE
DECL_PERF	0.193***	0.067	0.193***	0.069
ENV_SENS_IND	−0.089	0.075	−0.085	0.079
SIZE	0.030*	0.017	0.032*	0.018
INTANGIB	0.028***	0.008	0.028***	0.008
ICD_TOPIC	0.291	0.237	0.270	0.243
LENGTH	0.045	0.037	0.043	0.037
EUROPE			0.028	0.081
_cons	−0.310	0.271	−0.333	0.290
Number of obs.	38		38	
Prob > *F*	0.003		0.006	
R^2	0.364		0.366	

Notes: All robust standard errors are clustered by single report. For variable definitions, see Table II. *,**,***The estimated coefficients are statistically significant at 10, 5 and 1 per cent levels, respectively

Table VII. OLS regression: main multivariate analysis (Model 1) and first sensitivity test (Model 2)

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6. Discussion and conclusions

IR should provide a holistic view of corporate value creation process and it is expected to disclose how IC contributes to this process (Abhayawansa, 2013; Beattie and Smith, 2013; IIRC, 2013). Current reporting on IC has been hampered by the lack of an established framework to guide companies on ICD (Guthrie and Petty, 2000; Cinquini *et al.*, 2012). Dumay and Cai (2014) identify 43 articles calling for policy makers, standards setters and regulatory bodies to establish such a framework. Some authors propose that IR could improve ICD (Abhayawansa, 2013; Beattie and Smith, 2013); thus, the current research focuses on this innovative form of reporting and aims to understand the role of IR in disclosing IC information. The next sections present the discussion of the results and the answers to two related research questions on the characteristics of the ICD offered in the IR and on the adoption of IM in the ICD offered in the IR.

6.1 The ICD offered in the IR

Previous studies on ICD point out that ICD tends to be mainly focused on external/relational capital (Guthrie and Petty, 2000; Bozzolan *et al.*, 2003, 2006; Davey *et al.*, 2009). The results of the content analysis show that also in the IR, ICD is more extensive with reference to relational capital rather than in the other type of IC (human or structural). The results also show that reports typically contain little quantitative information, in line with previous ICD literature highlighting that ICD has a predominantly narrative nature (e.g. Guthrie and Petty, 2000; Bozzolan *et al.*, 2006; Cinquini *et al.*, 2012; Husin *et al.*, 2012). With reference to time orientation, the findings show that firms disclose little forward-looking information, corroborating previous ICD evidence (Cinquini *et al.*, 2012). This means that the evidence collected confirms the findings of previous studies on the quality of ICD disclosure that considered the same dimensions of analysis (tone, evidence, time and content) in different reports thus questioning whatever IR is apt to make a breakthrough in current ICD.

In addition, the core result of the univariate analysis demonstrates that compared to disclosure on non-IC, the tone of ICD is significantly more optimistic, raising first concerns on the presence of thematic manipulation.

Overall, this first level of analysis fills the research gap into the characteristics of ICD in the IR providing an answer to the first research question.

6.2 The adoption of IM strategy in the ICD offered in the IR

The multivariate analysis demonstrates that ICD appears subject to "thematic manipulation", as supported by the positive and significant relationship between optimistic disclosure and several variables that previous studies considered as incentives to manipulate disclosure. First, a positive and significant association is demonstrated between optimistic tone and firms' declining performance (*H1*). Indeed, the decrease in profitability exerts a pressure that triggers optimistic disclosure strategy (Cho *et al.*, 2010). Nevertheless, membership in environmental sensitive industry groups is not associated with an increased positive tone, which does not support *H2*. With reference to firms' size, the results show that bigger firms tend to use a positive tone to a significantly greater extent, consistent with *H3* expectation and with previous studies on IM in light of higher public visibility (Cho *et al.*, 2010). Also, firms' level of intangibles is strongly associated with the provision of optimistic disclosure, in line with *H4*. In the case of higher level of intangibles, managers take advantage of the information asymmetry and use ICD to legitimize themselves (Guthrie *et al.*, 2006; An *et al.*, 2011).

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To summarize, it appears that IR adopters use ICD to divert attention from their declining profitability and in response to external pressures related to their firm size and high level of intangibles. Thus, the findings of the multivariate analysis are interpreted as largely consistent with IM strategy: firms use ICD opportunistically to advance their corporate image.

Overall, the results of both the levels of analysis demonstrate that the disclosure offered through IR is subject to some shortcomings, thus throwing into question IR's role in fostering ICD. On the one hand, the content analysis shows that IC information has the similar qualitative characteristics found in previous studies that consider reporting formats other than IR (e.g. annual reports, sustainability reports). On the other one, the multivariate analysis shows that managers use ICD offered in the IR to manage public perceptions of corporate behaviour. From the results it can be inferred that being IR largely a form of voluntary disclosure with exceptions (cf. South Africa and Denmark), managers take advantage of their high degree of discretion by not substantially changing their current IC reporting practices and reporting information that emphasizes their own best interests. Therefore, the results support the idea that unless an organization attains some benefits from disclosing IC there is no obligation or reason to do so, rendering the reports open to manipulation on the part of the report prepares (Gowthorpe, 2009).

The study has several limitations, which provide avenues for further research. First, the analysis was focused on the sole value creation/business model section: next studies could assess the ICD offered in the whole IR in order to gain a more complete picture of firms' reporting behaviour. Second, the dimensions of the sample could be extended, by analysing more companies as soon as their reports are available in the IIRC database. Third, next studies could incorporate variables other than those chosen as proxies of firms' incentives to manipulate corporate communication here, such as a weak corporate governance system. Forth, we focus on a sole IM strategy (i.e. thematic manipulation): future research could investigate the presence of different IM techniques such as graph manipulation. Finally, in order to make the process of validation of the content analysis more robust, "*ex post facto* research" (Krippendorff, 2013, p. 44) could be done following up the research questions considering different methodologies.

Nevertheless, the study has several research implications. First, this research contributes to ICD literature supporting the concerns of previous ICD studies (Olsson, 2001; Oliveira *et al.*, 2010; Dumay, 2012) by providing a negative answer to prior calls for research on the role of IR in improving ICD and raising concerns about the quality of the ICD provided in IR (Beattie and Thomson, 2007; Abhayawansa, 2013; Dumay and Cai, 2014). This study also adds to literature studying IM in ICD by demonstrating the ICD is used to implement IM strategy also in corporates' issued reports not only the analysts' issued ones (Abhayawansa, 2011; Abhayawansa and Guthrie, 2012). Methodologically, it also adds to the extant literature by comparing the qualitative characteristics of ICD and non-ICD. Finally, it also contributes to emerging literature on IR, as the first study (to the author knowledge) assessing the quality of the disclosure offered in the IR. Indeed, so far academic researchers have been mainly concerned in understanding the antecedents of the adoption of this form of reporting (Jensen and Berg, 2012; Sierra-García *et al.*, 2013; Frias-Aceituno *et al.*, 2013, 2014; Lai *et al.*, 2014).

This study has also practical implications. For managers, as it highlights that current ICD is not free from bias and it sheds lights on the importance to put more commitment in IC reporting if firms want that the information offered in the IR is perceived as "informative" by their relevant publics. It has also implications for

regulators and for the IIRC in particular: although this study does not criticize the IIRC project and its efforts to promote ICD, it highlights the shortcomings of current disclosure practices of early adopters giving rise to doubts that clearer guidelines are needed.

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