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Intellectual Capital Disclosure and Firm Performance: An Empirical Analysis Through Integrated Reporting

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Abstract

The purpose of this document is to empirically examine the impact of intellectual capital disclosure quality in the integrated reports on firm performance. The empirical research is based on a sample of 45 integrated reports. The results confirm our hypothesis that establish the existence of a significant and positive association between the intellectual disclosure quality and the firm performance. The results of this document are of considerable importance to policy makers and managers. In fact, an understanding of the benefits of intellectual capital disclosure quality, helps policy makers to assess the costs and benefits of disclosure. As far as managers are concerned, this study clearly shows that intellectual capital disclosure is a means to improve firm performance. This study is one of the first to provide evidence of the positive association between intellectual capital disclosure quality and firm performance in the context of integrated reporting.

Keywords: *intellectual capital, integrated reporting, firm performance*

Track: *Management & Leadership*

Word count: 5.437

1. Introduction

The literature on the topic defines intellectual capital (IC) as non-monetary assets or resources without physical substance and identifies examples such as know-how, innovation, customer satisfaction, research and development and employee training (Meritum, 2002; Lev & Zambon, 2003). These variables are fundamental to understand the way companies create value (Zambon & Marzo, 2007; Abhayawansa & Guthrie, 2010) and represent key elements for investors' analysis (Gamerschlag, 2013). The shift from a manufacturing-based economy to a knowledge-based economy has greatly increased the importance of intellectual capital in the firm's value creation process (Barth & Clinch, 1998; Kallapur & Kwan, 2004). In fact, today, IC is a key element for strengthening the competitive advantage of the company and for achieving the objectives (Guthrie & Petty, 2000). Since the general accepted accounting standards do not contain information related to intellectual capital, for a long time stakeholders have asked companies to voluntarily disclose their intellectual resources in order to judge the firm performance and value (Upton, 2001; Eccles et al., 2001). For this reason, over the years, companies have disclosed information relating to intellectual capital in annual reports, corporate social responsibility (CSR) reports, intellectual capital statements and environmental reports. Also in the academic field, these documents are the most analysed by researchers studying the intellectual capital (Merkley, 2013; Adams, 2015; Abhayawansa & Guthrie, 2016a; Hummel et al., 2017; Druz et al., 2017). However, the advent of Integrated Reporting (IR) offers an innovative tool to managers for the disclosure of intellectual capital. In fact, this tool, following the Integrated Thinking approach, is able to reveal the firm's value creation process, underlining the interconnections between the three different types of intellectual capital (intellectual, human, social and relationship) and the other three types of capital (financial, natural, manufactured) (IIRC, 2013). Thus, integrated reporting is a new way to understand how intangible resources and intellectual capital combine with physical resources. This interaction is often lacking in intellectual capital studies because researchers focus only on

intangible resources (Cuozzo et al., 2017). Therefore, in recent years, some researchers are starting to investigate the intellectual capital contained in integrated reporting (Abeysekera, 2013; Veltri & Silvestri, 2015; Melloni, 2015; Dumay, 2016). However, despite the presence of these first studies on the subject, knowledge is scarce about the benefits firms realize by disclosing high-quality intellectual capital information in the integrated reports. Therefore, the objective of this study is to fill this gap by analysing the impact of the quality of intellectual capital disclosure in integrated reports on firm performance. The remainder of this article is organized as follows. The next section analyses the literature and introduces the hypothesis. We then present our research methodology. Subsequently, the results are presented. The last section draws the conclusions.

2. Literature review and hypothesis development

Intellectual capital refers to all intangible resources that contribute to the firm's value creation process (Ashton, 2005). It is opposed to financial and physical capital, which refers to the tangible resources of firms' value creation process (Beattie & Smith, 2013). The literature agrees on the components of intellectual capital: structural or internal capital, human capital and social or external capital (Stewart, 1997; Sveiby, 1997; Guthrie & Petty, 2000; Meritum, 2002). Structural or internal capital includes procedures, organizational routines, culture, systems and databases. Human capital instead refers to know-how, knowledge, skills and abilities. Finally, the social or external capital includes resources related to the external relations of the company with partners, suppliers and customers. Business assessments are mainly related to financial performance, but information on intangible assets is also an important element of the firm value (Alwert et al., 2009). Over the years, companies have disclosed information related to intellectual capital in annual reports, corporate social responsibility (CSR) reports, intellectual capital statements and environmental reports. However, previous studies show that companies generally reveal little information about intellectual capital and conclude that corporate reports contain poor-quality intellectual capital disclosure (Guthrie & Petty, 2000; Brennan, 2001) that are not sufficient to meet stakeholder information needs (Beattie & Thomson, 2007). In fact, within the aforementioned reports, the focus is only on the management of the intellectual capital and not on the management of the entire company. This does not allow stakeholders to have a holistic view of the company. In this context, a notable exception is represented by the framework developed by the International Integrated Reporting Council (IIRC) (Abhayawansa, 2013). In fact, an integrated report based on the IIRC framework represents a "concise communication about how an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long-term" (IIRC, 2013, p. 7). Integrated reporting is therefore a solution for companies to provide intellectual capital information and financial information in a single report. This tool aims to overcome the limits of its predecessors, allowing companies to provide information in a holistic way on the value creation process with a particular focus on intellectual capital components. Dumay & Cai (2014) underline how this aspect differentiates integrated reporting from the annual reports. Integrated reporting describes the process of value creation through the representation of the organization's strategy, business plan and six capitals (financial, natural, manufactured, intellectual, human, social and relationship). Intellectual capital is reflected in three of these capitals: intellectual, human, and social and relationship capital. Companies that adopt integrated reporting are not obliged either to adopt this categorization or to structure the report entirely following the IIRC guidelines. For example, organizations might combine intellectual capital with what <IR> identifies as human or social and relationship capital (Melloni, 2015). However, beyond the assigned name, the <IR> framework covers the three categories of Intellectual Capital (Busco et al., 2013) and suggests the need to include them in the report when they are material to the organization's ability to create value (IIRC, 2013). Although integrated reporting was designed to promote both IC disclosure and non-IC disclosure, the key element of IR seems to be intellectual capital. However, the adoption of integrated reporting is slower than the IIRC would like (Dumay et al., 2017). This could be linked to the lack of knowledge of the benefits

firms realize by producing high-quality intellectual capital information in the integrated reports. In fact, although some researchers are starting to investigate the intellectual capital contained in the integrated reports (Abeysekera, 2013; Veltri & Silvestri, 2015; Melloni, 2015; Dumay, 2016; Casonato et al., 2018; Beretta et al., 2018), the benefits are still unexplored.

The objective of our research is to fill this gap, investigating whether intellectual capital disclosure in integrated reports has effects on the firm performance. Although there is no direct evidence in the literature regarding the effects of intellectual capital disclosure in the integrated reports on the firm performance, studies in other contexts provide evidence of a significant effect of disclosure on firm performance. In this perspective, in relation to the field of our study, we refer primarily to studies concerning the effects of intellectual capital disclosure in contexts other than integrated reporting, and secondly to studies on the effects of adoption and quality of integrated reporting.

In relation to the effects of the IC disclosure, Orens et al. (2009) find that greater intellectual capital disclosure on the corporate website is associated with less information asymmetry and therefore entails a lower cost of equity capital and lower rate of interest paid. Boujelbene & Affes (2013), through a study of the annual reports of French listed companies, achieve the same result, highlighting the existence of a significant and negative association between intellectual capital disclosure and the cost of equity. Dumay & Tull (2007) argue that the disclosure of intellectual capital elements in price announcements can have an impact on the cumulative abnormal return of a firm's stock price. Abdolmohammadi (2005), studying the annual reports of a sample of 58 Fortune 500 companies over the five-year period of 1993-1997, find a highly significant effect for the intellectual capital disclosure on market capitalization. The same result was achieved by Taliyang et al. (2014), studying the annual reports of 185 companies listed in Bursa Malaysia.

In relation to the effects of integrated reporting, Barth et al. (2017) highlight how the quality of integrated reporting is positively associated with stock liquidity, firm value and expected cash flows. Lee & Yeo (2016) analyse the relationship between the quality of the integrated report and the firm valuation on a sample of 822 observations for the period 2010 to 2013, finding a positive relationship. Zhou et al. (2017) point out that a greater alignment between the integrated report and the IIRC framework involves a lower analyst forecast error and a subsequent reduction in the cost of equity capital. Also García-Sánchez & Noguera-Gámez (2017), through a sample of 995 companies belonging to 27 countries, find that the adoption of the integrated reporting reduces the cost of capital, confirming the usefulness of this report in making decisions. Arguelles et al. (2015), using a worldwide sample, highlight a positive relationship between the quality of the integrated report and the market value of equity. Churet & Eccles (2014) investigate the effects of integrated reporting on the financial performance, finding a positive relationship. Knauer & Serafeim (2014), through a case study, demonstrate how integrated reporting and the resulting greater transparency attract long-term investors. Serafeim (2015) supports these results by highlighting how companies that adopt integrated reporting have a large number of more long-term investors and a low number of transient investors. The contributions analysed therefore indicate that both intellectual capital disclosure and integrated reporting entail several financial benefits for companies. In light of this, we expect that intellectual capital disclosure in the integrated reports will also have a positive impact on firm performance. Therefore, in the light of this theoretical and empirical literature, it is possible to formulate the following hypothesis:

H1: Higher quality intellectual capital disclosure in the integrated reports is associated with better financial performance

3. Research methodology

3.1 Sample

This study covered 45 reports taken from the "Leading Practices" and "<IR> Reporters" sections of the IIRC website. The selected years are 2016 and 2017.

We have chosen to use the IIRC website to make sure that the reports were compliant with the IIRC framework. The above sections of the website were considered to alternate to alternate reports that

represent "best practices" as included in the "Leading Practices" section to other reports of presumable lower quality as presented in the "<IR> Reporters" section. The reports were chosen in a completely random way. The selected companies belong to different industries and are located in different regions.

3.2 Content analysis as method to investigate ICD quality in the integrated reporting

In order to test the hypothesis, we have firstly developed a framework for quality assessment of intellectual capital disclosure in the integrated reports. To define the areas of interest and build a scoring model, we have referred to the four areas of the quality of integrated reporting proposed by Pistoni et al. (2018): background, content, assurance and reliability, form. Among these, our study considers the two areas more in line with the intellectual capital disclosure: content and form.

The content area evaluates the type of evidence, the level of detail and the topic. The type of evidence evaluates the kind of information disclosed. Previous studies emphasize the presence mainly of narrative information (Bozzolan et al., 2006; Striukova et al., 2008; Cinquini et al., 2012; Mat Husin et al., 2012). In this perspective, Guthrie & Petty (2000, p. 247) argue that "nearly every instance of reporting involved the IC attribute being expressed in discursive rather than numerical terms". The literature identifies quantitative information as more verifiable (Melloni, 2015). Therefore, our framework evaluates the presence of qualitative, quantitative and monetary information (Abhayawansa, 2011). Another critical aspect of disclosure is represented by the degree of detail of information (Garegnani et al., 2015). Therefore, our framework evaluates the degree of detail with every single type of IC is disclosed in the integrated report.

The form area assesses the readability and clarity of the IC disclosure (Pistoni et al., 2018). Focusing only on narrative content is unlikely to provide valid results because it ignores the importance of visual content in communicating organization's value creation process (Abhayawansa, 2011). In this regard, Hooks et al. (2010) underline the fundamental role of images in intellectual capital disclosure and Guthrie et al. (2004) encourage researchers to take images into account in their content analysis on the subject of intellectual capital. Furthermore, one of the cardinal principles of the <IR> framework is represented by conciseness. In this regard, IIRC emphasizes that, in achieving conciseness, an integrated report must favor "plain language over the use of jargon or highly technical terminology" (IIRC 2013, p. 21). For this reason, our framework, in relation to the readability and clarity of the IC disclosure, considers the presence of summary indicators, the presence of graphs and tables and the level of clarity of the language.

The following step is to develop a scoring system to assess each variable comprised in each of the two areas identified.

Concerning the content area, the presence or absence of the four variables is evaluated for each type of IC. Therefore, referring to the type of evidence, a score of 0 was given in the case of the absence of each of the three items (qualitative, quantitative and monetary information), while a score of 1 is assigned in the case of presence of each item. A high level of detail is assessed 1 while a low level of detail is evaluated 0. The maximum score for this area is 12.

As for the form area, the presence or absence of the three variables is evaluated for each type of IC. Therefore, referring to the readability and clarity of the IC disclosure a score of 0 was given in the case of the absence of each of the two items (presence of summary indicators, presence of graphs and tables), while a score of 1 is assigned in the case of presence of each item. A clear and direct language is evaluated 1 while a formal language is evaluated 0. The maximum score for this area is 9.

The score of the intellectual capital disclosure quality in the integrated report is represented by the sum of the scores of the three areas of the three capitals. Therefore, the maximum score is 21.

3.3 Methods

This study, first of all, uses a content analysis to measure the ICD quality in the integrated reports. This measurement involves the creation of a scoreboard, useful for measuring the quality score that

represent our independent variable. Secondly, in order to test the research hypothesis and provide a complete picture of the ICD quality in the integrated reports, regression model must be used. In order to respond to our research objective, we propose to empirically test the following regression model:

$$ROE = \beta_0 + \beta_1 ICDQ + \beta_2 EU + \beta_3 SIZE + \beta_4 ENVSEN + \beta_5 AGE + \varepsilon.$$

3.4 Variables

Our proxy for firm performance is return on equity (ROE). The ROE variable is computed by Orbis, Bureau Van Dijk. The ROE variable is calculated at time $t + 1$.

For the measurement of the intellectual capital disclosure quality (ICDQ), this study uses the scoreboard presented above. This Scoreboard focuses on two main elements: content and form. The maximum score obtainable is 21.

Some control variables have been included in our models. The firm's location, a dummy variable expressed as (EU), adopts a value of 1 if the company is located in Europe and 0 if otherwise. Bavagnoli et al. (2018) highlighted how the integrated reports of European companies have a higher quality compared to those of non-European companies.

The firm size expressed as (SIZE) is calculated as the natural logarithm of total assets. Data relating to total assets are always computed by Orbis, Bureau Van Dijk.

Environmental sensitive (ENVSEN) is defined as a dummy variable representing the environmental sensitivity of the industry in which the firm operates. This variable adopted a value of 1 if the activities of the company have an important impact on the environment. Following Tagesson et al. (2009), Gamerschlag et al. (2011), and Branco & Rodrigues (2008), the following sectors were considered as environmentally sensitive industries: agriculture, automotive, aviation, chemical, construction, construction materials, energy, energy utilities, forest and paper products, logistics, metal products, mining, railroad, waste management, and water utilities. For the companies operating in other industries, the variable adopted a value of 0.

The variable age (AGE), defined as the number of years since the establishment of the company up to the end of 2018, was included in the regression model as a control for the perceived stability of the firm.

4. Research findings

The descriptive statistics and empirical results are discussed in this section.

4.1 Descriptive statistics

Table 1 provides information on descriptive statistics of all the variables for the full sample. This table shows that the companies in the sample have a low quality of intellectual capital information in their integrated reports. In fact, the average score is 6.24. Although some previous studies show a high level of intellectual capital information on the company's website and in the annual reports (Orens et al., 2009; Boujelbene & Affes, 2013), our results are consistent with those found by Pistoni et al. (2018) with reference to the quality of integrated reporting and other researchers on the subject of intellectual capital (Guthrie & Petty, 2000; Brennan, 2001). The low quality of intellectual capital disclosure can be due, first of all, to the novelty character of integrated reporting and to the lack of knowledge of the <IR> framework. From this point of view, it may take additional time for companies to align their IC disclosure with the guidelines provided by the IIRC. Secondly, another reason could be related to the lack of knowledge of the benefits deriving from a high IC disclosure quality in the integrated reports.

Table	Variables	Coefficient	Standard error	p-value
	Cons	-6.166	21.551	0.776
	ICDQ	1.473	0.720	0.048**
	SIZE	0.745	1.174	0.530
	ENVSEN	-4.278	6.945	0.541
	EU	2.527	5.982	0.675
	AGE	0.385	0.088	0.666
	N	45		
	R ²	0.120		

1:

Descriptive statistics for selected variables

Panel A: Continuous Variables					
Variable Name	Obs.	Mean	Std. Dev.	Min.	Max.
SIZE	45	16.15	2.78	9.96	21.26
AGE	45	56.64	34.34	2	147
ICDQ	45	6.24	4.05	0	14
ROE	45	16.53	18.42	-16.09	97.72
Panel B: Indicator Variables					
Variable Name	Obs.	N. of samples with 1	%	N. of samples with 0	%
ENVSEN	45	16	35.5	29	64.5
EU	45	15	33.3	30	66.7

4.2 Linear multiple regression results

In order to test the hypotheses underlying this study, we conduct linear multiple regressions. In order to be able to conduct multiple regression analysis, the data must meet certain assumption. First of all, we conduct tests for normality. The statistical analyses (Kolmogorov-Smirnov tests, Skewness and Kurtosis values) were used. The results show that our data are normally distributed. This indicates that the normality assumptions are not violated in the regression models. Secondly, we also conduct test for Multicollinearity. We examine the variance inflation factors (VIFs) for the predictors. Our VIFs ranged from a low value of 1.02 to a high value of 1.48. According to Myers (1990) if any VIFs is less than 10, the effect of multicollinearity is not significant in a regression model. Therefore, the multicollinearity does not pose a problem in the interpretation of results. Therefore, respecting the above assumptions of the regression, it is possible to analyse the results of the regression.

Table 2 shows the results of the regression coefficients for all explanatory variables, using ROE as the dependent variable. This table shows that the intellectual capital disclosure quality has a significantly positive association with ROE. This result supports the H1 and confirms that intellectual capital disclosure quality in the integrated reports represents an important way to improve firm performance.

Table

*** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level

2:

Regression results

5. Conclusions

The aim of this study was to investigate the relationship between intellectual capital disclosure quality and firm performance.

The results of this study, first of all, indicate that the quality of intellectual capital disclosure in the integrated reports is still low. The low quality of intellectual capital disclosure can be due, first of all, to the novelty character of integrated reporting and to the lack of knowledge of the <IR> framework. Secondly, another reason could be related to the lack of knowledge of the benefits deriving from a high IC disclosure quality in the integrated reports. Overall, the results confirm our hypothesis that stipulate the existence of a significant and positive association between intellectual capital disclosure quality and the firm performance. These results show that intellectual capital disclosure quality in the integrated reports is an important way to improve firm performance.

This study provides a main contribution to the literature. In fact, it provides the first evidence of the positive relationship between firm performance and intellectual capital disclosure quality in the integrated reports.

The results of this study are of considerable importance for policy makers. In fact, firstly, the results show that intellectual capital disclosure quality is low and secondly, show that companies that have a higher quality disclosure IC benefit significantly from better performance than companies that have a lesser IC disclosure quality. Therefore, an improvement in the quality of the IC disclosure will benefit market participants in terms of having more relevant information available and will inevitably lead to a reduction in the costs of collecting private information. Understanding this issue helps policy makers evaluate the costs and benefits of intellectual capital disclosure. Furthermore, the results also have important managerial implications. In this context, they provide managers with a better understanding of the effects of the IC disclosure on the firm performance and show that it represents a means to improve the firm performance.

This study, however, is subject to some limitations. Firstly, a limitation is represented by the size of the sample which is relatively small, while a second limitation is represented by the focus on two years. Therefore, further research is needed in order to confirm the results. Future research could employ longitudinal studies to investigate more systematically the causal relationships implicit in this study. Future research can also break down the total quality score into three sub-categories represented by the three components of intellectual capital. Finally, future research, through the analysis of the intellectual capital disclosure in the integrated reports, may extend our results by adding the cost of equity, the cost of equity and the market capitalization.

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