

# The financial consequences of human capital disclosure as part of integrated reporting

Financial  
consequences  
of HC  
disclosure

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## Abstract

**Purpose** – The purpose of this paper is to analyse the financial consequences of the level of human capital (HC) information disclosed by firms through integrated reports. Specifically, this work examines the effect of HC information on the cost of capital and firm value.

**Design/methodology/approach** – A manual content analysis is used to measure the level of HC information contained in integrated reports. A fixed-effects regression model is used to analyse 375 observations (a balanced panel of 125 firms for the period 2017–2019) and test the financial consequences of HC disclosure.

**Findings** – The empirical outcomes indicate that HC disclosure has a significant and negative effect on the cost of capital and a positive impact on firm value. Our results show that companies can reduce investors' perceived firm risk by improving HC disclosure, leading to a lower cost of capital. Moreover, our findings support the notion that increased levels of HC disclosure are linked to firms' improved access to external financial resources, consequently enhancing firm value.

**Originality/value** – This study is the first contribution to examine the financial consequences of HC disclosure and is one of the first to examine the level of HC information within integrated reports.

**Keywords** Human capital, Human capital disclosure, Integrated reporting, Firm performance, Firm value, Cost of capital

**Paper type** Research paper

## 1. Introduction

In a knowledge-based economy, intangible assets are critical factors for organizational success (Bollen *et al.*, 2005). In fact, they make it possible to create and strengthen firms' competitive advantage and allow firms to achieve both medium and long-term financial objectives (Guthrie and Petty, 2000; Braune *et al.*, 2020). Human capital (HC) is part of the intangible assets and, specifically, is one of the three components of intellectual capital, which also includes structural and relational capital (Edvinsson, 1997; Bamel *et al.*, 2020). In a definition provided by Sveiby (1997), HC refers to the ability of employees to act in a wide variety of situations. It can therefore be seen as a combination of factors owned by people and by firms' collective workforces (Abeysekera, 2008). More specifically, HC includes knowledge, skills, and technical ability; willingness to share information and data, participate in a team, and focus on the firm's objectives; the ability to learn, including aptitude, imagination and creativity; and personal traits such as intelligence, energy, commitment, and reliability (Fitz-Enz, 2000). In a resource-based view perspective, Wright *et al.* (1994) considers the HC as an element capable of allowing the creation of a lasting competitive advantage and therefore of affecting the success or failure of companies.

Today it is increasingly important for companies to communicate the sources of their competitive advantage to investors, financial analysts and stakeholders in general. In fact, although there is a need for confidentiality connected to the possible exploitation by competitors of sensitive information, the necessity for companies to satisfy the information needs of investors, financial analysts and stakeholders relating to the business model and to



the strategic drivers of value creation emerges in an ever stronger manner (Gamerschlag, 2013). In this perspective, the dissemination of information relating to the characteristics of human resources, which represent increasingly critical elements for the purpose of obtaining a competitive advantage, assumes strategic importance. Firm financial statements cannot adequately provide information about HC due to their inability to capture information about intangibles (Francis and Schipper, 1999; Orens *et al.*, 2009). In fact, generally accepted accounting principles do not require recognition of intangible assets in the financial statements (Bruggen *et al.*, 2009). Because of this, over the last few decades, investors, financial analysts, and other stakeholders have increasingly insisted on companies' voluntary disclosure of intangible asset information so that they may accurately judge a firm's value and performance (Upton, 2001; Eccles *et al.*, 2001; Orens *et al.*, 2009; Salvi *et al.*, 2020b). Companies have responded to these requests by providing information about their intangible assets, HC in particular, in documents such as annual reports, environmental reports, intellectual capital statements, initial public offering prospectuses, and corporate social responsibility reports (Vitolla *et al.*, 2020a). These corporate documents have received a great deal of attention from researchers who have used content analysis to examine the amount of information related to intellectual capital and to HC in particular (Khan and Khan, 2010; Abhayawansa and Guthrie, 2016; Raimo *et al.*, 2020a; Druz *et al.*, 2020).

However, the advent of integrated reporting is leading companies to reconsider their disclosure strategies, as integrated reports offer firms an innovative tool for informing investors, financial analysts, and stakeholders in general about their intangible assets. In fact, integrated reporting, developed by the International Integrated Reporting Council (IIRC), provides an important focus on intangibles. According to IIRC (2013), an integrated report should provide information about six different types of capital: financial, manufactured, natural, intellectual, human, social and relationship. Three of these six types of capital refer to intangible assets, demonstrating the great attention intangible aspects attract. Integrated reporting, following the integrated thinking approach, can reveal companies' value creation processes through a description of the interconnections that exist among these different types of capital. According to the IIRC (2013, p. 12), information about HC, which is the focus of this study, should include information related to

... 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; loyalties and motivations for improving processes, goods and services, including their ability to lead, manage and collaborate.

The advent of integrated reporting has prompted numerous scholars to analyse the information about intangible aspects contained in integrated reports (Vitolla *et al.*, 2019a; Raimo *et al.*, 2020a; Salvi *et al.*, 2020a). However, no studies have examined the benefits of broad disclosure of HC information in integrated reports. This circumstance generates a knowledge gap regarding the economic relevance of HC information. In particular, the analysis of the financial benefits associated with a broad HC disclosure is particularly relevant since the knowledge of these benefits could push companies to disseminate a greater level of information and could guide policy makers and standard setters in defining rules and regulations on the topic of corporate disclosure.

This study aims to fill this gap by analysing the financial consequences of disseminating HC information in integrated reports. Specifically, it aims to bridge this important gap by examining how the level of HC information impacts the cost of capital and firm value. In fact, if HC information is economically relevant, it can be expected that it will contribute to improving firms' access to finance and increase firm value (Orens *et al.*, 2009). Disclosure of HC information would be economically advantageous if it is associated with lowering

investors' and lenders' expected average return levels and increasing firm value. To this end, this study involves the use of a disclosure index for the measurement of HC information and the implementation of two regression models in order to examine the impact of HC disclosure on the firm's cost of capital and firm value.

Our findings highlight the existence of a negative relationship between HC disclosure and a firm's cost of capital and a positive association between HC disclosure and firm value, thus demonstrating the economic relevance of the HC information and supporting the ideas of the resource based view. Our results also provide important implications especially for firms and policy makers. In particular, the financial benefits connected to a broad HC disclosure should push firms to provide more information related to their human resources in integrated reports. Furthermore, these financial benefits should push policy makers to make it mandatory for firms to disseminate a certain level of HC information.

The remainder of this work is structured as follows. [Section 2](#) offers an overview of the relevant literature, while [Section 3](#) presents the theoretical underpinnings and develops the research hypotheses. [Section 4](#) outlines the research methodology. [Section 5](#) summarises the findings, and [Section 6](#) discusses them. Finally, [Section 7](#) draws conclusions.

## 2. Literature review

In line with the objectives of this study, the literature review focuses on the financial effects of corporate disclosure. Specifically, it examines the effects of different types of disclosure on a firm's cost of capital and value.

### 2.1 *Corporate disclosure and the cost of capital*

Existing literature examines the impact of different types of disclosure on the weighted average cost of capital (WACC) and its two components — the cost of equity and cost of debt. Studies related to how disclosure impacts the WACC are relatively scarce; they mainly concern sustainability information and present partially conflicting results. For example, [Lemma \*et al.\* \(2019\)](#) find that voluntary carbon disclosure is associated with a lower WACC, while [Gjergji \*et al.\* \(2021\)](#) show that environmental disclosure in the context of small and medium-sized enterprises (SMEs) increases the WACC, unless the firm is a family SME. [Johnson's \(2020\)](#) results are mixed: the author finds a negative relationship between environmental, social, and corporate governance (ESG) disclosure and WACC in the consumer goods and consumer services sectors and a positive relationship in the industrial sector. [Atan \*et al.\* \(2018\)](#) instead reveal the existence of a positive relationship between composite ESG disclosure and the WACC, while they find a non-significant effect of the three individual pillars. Finally, [Ould Daoud Elilili \(2020\)](#) reports a negative relationship between ESG disclosure and the WACC.

Studies on the two components of the WACC (the cost of equity and cost of debt) are more widespread. However, as pointed out by [Botosan \(2006\)](#), past studies have focused mainly on the cost of equity and have paid less attention to the cost of debt. The results of examining how disclosure impacts the cost of equity are more consistent than those obtained by examining the relationship between disclosure and the WACC. In fact, in relation to voluntary disclosure, there is a general agreement in the academic literature about the ability of information voluntarily disclosed by companies to reduce the cost of equity ([Botosan, 1997](#); [Hail, 2002](#); [Botosan and Plumlee, 2002](#); [Francis \*et al.\*, 2005](#); [Espinosa and Trombetta, 2007](#)). In their examination of financial disclosure, [Richardson and Welker \(2001\)](#) also find it negatively influences the cost of equity. The results for information related to sustainability, on the other hand, are partly conflicting. Some studies highlight the negative influence of corporate social responsibility (CSR) disclosure ([Dhaliwal \*et al.\*, 2011, 2014](#); [Raimo \*et al.\*,](#)

2020b), environmental disclosure [Plumlee et al. \(2015\)](#), and carbon footprint disclosure ([Albarrak et al., 2019](#)) on the cost of equity. However, [Clarkson et al. \(2013\)](#) find a non-significant effect of environmental disclosure, and [Richardson and Welker \(2001\)](#) underline the positive impact of social disclosure, suggesting that a higher level of social information increases the cost of equity. In contrast, information about intellectual capital seems to have the ability to reduce the cost of equity, a circumstance underlined by [Orens et al. \(2009\)](#), [Mangena et al. \(2010\)](#), and [Boujelbene and Affes \(2013\)](#). Integrated information also leads to a lower cost of equity. [García-Sánchez and Noguera-Gámez \(2017\)](#), [Zhou et al. \(2017\)](#), and [Vitolla et al. \(2020\)](#) highlight how the adoption of integrated reporting, alignment of integrated reports with the IIRC framework, and the quality of the information contained therein, respectively, have the ability to reduce the cost of equity.

The results of research on how disclosure impacts the cost of debt are generally consistent. In fact, numerous studies that examine voluntary disclosure find the level of information negatively influences the cost of debt ([Francis et al., 2005](#); [Chen and Jian, 2006](#); [Lopes and de Alencar, 2010](#); [Orens et al., 2009](#); [Guidara et al., 2014](#); [Talbi and Omri, 2014](#)). Only [Wang et al. \(2008\)](#) fail to find a significant relationship between the amount of voluntarily disclosed information and the cost of debt. Financial disclosure ([Sengupta, 1998](#); [Muttakin et al., 2020](#)) and integrated information ([Muttakin et al., 2020](#); [Gerwanski, 2020](#)) also seem to allow firms to benefit from a lower cost of debt ([Sengupta, 1998](#); [Muttakin et al., 2020](#)). Another stream of literature examines the impact of information related to sustainability and highlights the negative impact of environmental disclosure ([Fonseka et al., 2019](#)), social disclosure ([Najah and Jarboui, 2013](#)), carbon emissions disclosure ([Kleimeier and Viehs, 2018](#)), and ESG disclosure. ([Eliwa et al., 2019](#); [Hamrouni et al., 2019](#)). Finally, other studies have examined the relationship between intellectual capital disclosure and the cost of debt, with conflicting results. [Orens et al. \(2009\)](#) highlights a negative relationship between information related to intangibles and the cost of debt, while [Stropanik et al.'s \(2017\)](#) study using a sample of Slovenian firms fails to find any significant effect of intellectual capital disclosure on the cost of debt.

Thus, first, it is evident that limited attention has been paid to how information affects the WACC. In fact, most studies have focused on its two components (the cost of equity and cost of debt), leaving the relationship between disclosure and the WACC much less explored. Second, there is an evident absence of contributions that focus on the relationship between HC information and the cost of capital.

## 2.2 Corporate disclosure and firm value

Past academic contributions have examined how different types of information affect firm value, including voluntary, financial, environmental, integrated, CSR, intellectual capital, and digitalisation information.

Using a sample of 129 Turkish firms, [Uyar and Kilic \(2012\)](#) highlight that voluntary information has a positive influence on market value. [Al-Akra and Ali \(2012\)](#) and [Chung et al. \(2015\)](#) examine the annual reports of privatized Jordanian listed companies and Taiwanese listed firms, respectively, and find similar results. [Garay et al. \(2013\)](#) create an internet-based disclosure index capable of measuring the level of voluntary information available on corporate websites to underline voluntary disclosure's positive impact on firm value. Unlike these studies, [Hassan et al. \(2009\)](#) find a non-significant relationship between the level of voluntary information disclosed and firm value. [Da Silva and de Lira Alves \(2004\)](#) find a positive relationship between the disclosure of financial information on corporate websites and market value.

[Blacconiere and Patten \(1994\)](#) show that environmental disclosure has the potential to mitigate the negative impact on firm value of catastrophic events that affect the sector. Also, [Plumlee et al. \(2015\)](#) report a positive effect of environmental information on firm value,

suggesting that this impact varies according to the nature and type of environmental disclosure. [Clarkson et al. \(2013\)](#) arrive at the same results by examining a sample of US firms operating in five different highly polluting sectors, while [Deswanto and Siregar \(2018\)](#) fail to find any significant relationship between environmental disclosure and firm value.

Regarding integrated information, [Lee and Yeo \(2016\)](#) and [Barth et al. \(2017\)](#) show a positive association between integrated reporting and firm value.

[Bidhari et al. \(2013\)](#) find that the amount of CSR information has a positive effect on firm value. [Cahan et al. \(2016\)](#) verify the existence of this positive relationship, but only for the unexpected portion of CSR disclosure. Both [Bachoo et al. \(2013\)](#) and [Li et al. \(2018\)](#) show that information related to sustainability positively affects firm value.

In relation to the intellectual capital, [Orens et al. \(2009\)](#) report that intangible elements information disclosed through corporate websites positively affects firm value, results that were confirmed by [Salvi et al. \(2020b\)](#).

Finally, information relating to digitalisation also seems to have a positive influence on firm value; [Salvi et al. \(2020c\)](#) reveal a positive relationship between the amount of digitalisation information provided by companies on their websites and firm value.

Therefore, the relationship between corporate disclosure and firm value appears to have been extensively studied in the existing academic literature. However, there is an evident absence of contributions focused on the relationship between HC information and firm value.

### 3. Theory and hypotheses development

Corporate strategy scholars are moving further and further away from the idea that the success of the firms depends on external positioning in the sector ([Porter, 1998](#)). This idea has in fact been replaced by the vision, in line with the resource-based view, according to which the availability of organizational resources represents one of the main sources of competitive advantage ([Penrose, 1959](#); [Barney, 1991](#); [Wright et al., 1994](#); [Singh et al., 2020](#)). More specifically, according to [Barney \(1991\)](#), corporate resources in order to ensure the success of firms must respect the following four circumstances: (a) they must be valuable in the sense that they neutralize threats or take advantage of opportunities; (b) they must be rare and therefore hardly in the possession of competitors; (c) they must not be easily imitable; (d) there must be no equivalent strategic substitute. Previously, in the industrial era, the drivers of success were mainly financial and physical resources ([Gamerschlag, 2013](#)), which then became easily imitable ([Lev, 2001](#); [Gamerschlag, 2013](#)). Today, the organizational resources capable of guaranteeing success are those related to intangible values ([Spender and Grant, 1996](#); [Stewart, 1997](#); [Sveiby, 1997](#); [Edvinsson and Malone, 1997](#); [Lev, 2001](#)), which represent claims to future advantages without a financial or physical incarnation ([Lev, 2001](#)). According to the resource-based view, the fundamental skills for obtaining competitive advantages of a company must be acquired from the internal development of the company itself while the general technology can be acquired through outsourcing operations ([Chen et al., 2004](#)). Among the fundamental skills to gain a competitive advantage, HC assumes particular importance and therefore deserves attention and investments by companies ([Chen et al., 2004](#)). In fact, it represents the fulcrum of the other intangible values, since in the absence of HC it is not possible to create value ([Gamerschlag, 2013](#)).

Therefore, in line with the resource-based view, HC must be considered a key element for the competitiveness of companies and one of the most precious resources for the acquisition of a competitive advantage and creation of value ([Prahalad and Hamel, 1994](#); [Pfeffer, 1994](#); [Wright et al., 1994](#); [Huselid, 1995](#); [Chadwick and Dabu, 2009](#); [Gamerschlag, 2013](#)).

In light of this, capital markets participants pay more and more attention to the HC for the evaluation of corporate performance ([Gamerschlag, 2013](#)). In light of this, capital markets participants pay more and more attention to the HC for the evaluation of corporate

performance (Gamerschlag, 2013). Therefore, the information relating to HC could prove to be value relevant (Barth *et al.*, 2001) and could guarantee benefits to companies not only in terms of increased value but also in terms of a lower cost of capital (Gamerschlag, 2013).

In particular, with regard to the latter, academic research has identified a number of mechanisms through which voluntary information reduces the cost of capital (Healy and Palepu, 2001). The first fundamental mechanism is voluntary disclosure's ability to reduce information asymmetry between companies and capital providers (Diamond and Verrecchia, 1991; Baiman and Verrecchia, 1996; Easley and O'Hara, 2004; Arvidsson, 2011; Caputo *et al.*, 2016; Raimo *et al.*, 2020b; Vitolla *et al.*, 2020b). In addition, firms can increase investor demand for their securities through voluntary disclosure; this in turn increases their securities' market liquidity (Diamond and Verrecchia, 1991; Richardson *et al.*, 1999; Verrecchia, 2001). Furthermore, voluntary information could improve firms' information environments, which promote analysts' understanding of firm prospects (Beyer *et al.*, 2010), leading to a reduction in the estimated information risk (Diamond and Verrecchia, 1991; Lambert *et al.*, 2007; Verrecchia, 2001). Furthermore, voluntary information makes it possible to attract a greater number of long-term investors (Merton, 1987; Lombardo and Pagano, 2002). Finally, voluntary disclosure could reduce the cost of capital thanks to its ability to reduce the monitoring costs borne by capital providers, lowering their expected rate of return on investment (Lombardo and Pagano, 2002).

The mechanisms identified in the literature through which disclosure reduces the cost of capital can also be extended to HC information. In fact, this information is capable of reducing the information asymmetries existing between companies and capital providers (Fontana and Macagnan, 2013; Motokawa, 2015). HC information cannot be inferred from a firm's financial statements due to a difficult measurability and objectivity (Gunther *et al.*, 2003), and therefore, in the absence of voluntary disclosure, adds to the information asymmetry between companies and capital providers (Leuz and Verrecchia, 2000). In this regard, an increase in the levels of HC disclosure can reduce the possibility of information asymmetries (Diamond and Verrecchia, 1991; Leuz and Verrecchia, 2000; Lev, 2001), allowing investors to better evaluate the financial conditions and the potential for creating value of firms (Healy and Palepu, 2001; Lev, 2001; Bukh, 2003) and favouring a better allocation of resources (Botosan, 1997; Healy and Palepu, 2001; Botosan and Plumlee, 2002). Furthermore, HC information could increase demand for corporate securities and attract more long-term investors. Long-term investors are attracted to strategic assets because of their interest in continuous and steady investment growth (Schäfferling and Wagner, 2013). From this perspective, human resources are certainly strategic assets for companies (Abeysekera, 2008), and therefore, information relating to them could increase the interest of long-term investors. Furthermore, HC information demonstrates a firm's abilities and growth opportunities (Wyatt and Frick, 2010; Gamerschlag, 2013), which could directly affect analyst valuations. In this regard, Motokawa (2015) underlined how HC information makes it possible to report the excellence of human resources. It is thus clear that wide disclosure of HC information can affect analysts' assessments. In light of this it is possible to formulate the following hypothesis:

*H1.* There is a negative relationship between HC disclosure and the cost of capital.

In addition, previous research has also identified several ways through which voluntary information can increase firm value (Plumlee *et al.*, 2015; Salvi *et al.*, 2020a). These mechanisms can essentially be attributed to the ability of voluntary information to reduce the cost of capital while improving profitability and expected future cash flows (Al-Tuwaijri *et al.*, 2004; Clarkson *et al.*, 2013; Plumlee *et al.*, 2015; Salvi *et al.*, 2020a). Although the mechanisms through which information influences the cost of capital have been previously introduced, it is necessary to examine how disclosure can increase profitability and expected future cash flows. Voluntary information can reduce the market's perception that a firm will be forced to bear future costs



and, consequently, can lead to an increase in expected future net cash flows, which is impounded in the company's stock price (Bachoo *et al.*, 2013). Furthermore, disclosing voluntary information reduces the probability of government regulation and the resulting compliance costs and potential litigation (Plumlee *et al.*, 2015). Finally, voluntary information also has a direct effect on the decisions of stakeholders, who can choose to collaborate with, work with, or patronize firms that are more oriented towards transparency, thus favouring an increase in revenues and improvement in financial performance in general (Lev *et al.*, 2010).

The mechanisms identified in the literature through which disclosure reduces the cost of capital can also be extended to disclosure of HC information. The ability of HC disclosure to reduce the cost of capital has already been widely debated. However, it also has the ability to increase profitability and expected future cash flows. Information relating to human resources that shows a clear picture of a company's ability to create value over time (Healy and Palepu, 2001; Lev, 2001; Bukh, 2003) could reduce the market's perception that the company may be forced to incur future costs. Additionally, a clear overview of HC could reduce the likelihood of government intervention and the accompanying compliance and potential litigation costs. Finally, an accurate representation of HC could attract new customers, as well as better workers who are interested in working in contexts characterized by greater attention to staff, consequently improving revenues and financial performance. In light of this it is possible to formulate the following hypothesis:

*H2.* There is a positive relationship between HC disclosure and firm value.

## 4. Research methodology

### 4.1 Sample and data sources

This work focuses on international companies that have adopted integrated reporting in 2017, 2018 and 2019. The construction and subsequent verification of the goodness of the sample consisted of five specific steps.

The first step involved consulting the IIRC website which is the most complete source of integrated reports. In particular, within the scope of the IIRC website, the "Leading Practices" and "<IR> Reporters" sections were examined. These sections contain a continuously updated list of companies that prepare an integrated report in compliance with the guidelines and principles provided by the IIRC. As a result of this step, an initial list of 536 companies was identified.

The second step involved the identification and subsequent elimination of all companies for which an integrated report was not available for the years 2017, 2018 and 2019.

The third step involved the identification and subsequent elimination of all non-profit organizations and all firms that operate in the financial industry. The choice to eliminate non-profit organizations is connected to their particular corporate structure, business models, governance mechanisms and accounting regulations, while the decision to exclude financial companies is connected to their specific disclosure requirements and accounting regulations which cause issues in the empirical evidence obtained in terms of comparability (Nicolò *et al.*, 2020; Raimo *et al.*, 2021).

The fourth step consisted in the collection of financial data relating to the dependent and control variables. Such data were retrieved from the Bloomberg database. This step led to the elimination of companies for which such data were not available.

The first four steps of the process led to the composition of the final sample which comprises 125 international listed companies. These companies are located in five different regions: Africa, America, Asia, Europe, and Oceania, as reported in Table 1.

In addition, firms which comprise the sample belong to seven different sectors: basic materials, communications, consumer goods, energy, industrials, technologies, and utilities. Table 2 shows the sample distribution by sector.

The last step concerned the verification of the goodness of the sample. In this regard, to test the normality of the selected sample, the Kolmogorov-Smirnov test was conducted. The results of this last step demonstrated a normal distribution of the sample.

4.2 Dependent variables

To test the research hypotheses of this study, we use two dependent variables: the cost of capital (WACC) and Tobin's Q (TQ). A firm's cost of capital is a particularly relevant determinant in corporate finance for two reasons. First, it represents the rate investors use to discount firms' expected cash flows to compute firm value. The higher the firm cost of capital, the lower the firm value. Second, the cost of capital is the expected rate of return investors demand to invest in or maintain their investment in the firm. The magnitude of the cost of capital required by investors depends on the risk level associated with a firm's cash flows compared to that of alternative investments available in the market. As a consequence, the higher the rate of return demanded by investors, the more costly the firm's access to finance (Sharfman and Fernando, 2008).

According to the finance literature (Modigliani and Miller, 1958), it is possible to compute the after-tax weighted average cost of capital for firms financed with both debt and equity, as follows:

$$WACC = \left(\frac{E}{D + E}\right)r_E + \left(\frac{D}{D + E}\right)r_D(1 - T) \tag{1}$$

where,

$E$  is the market value of the firm's equity;

$D$  is the market value of the firm's debt;

$r_E$  is the firm's cost of equity capital;

**Table 1.**  
Sample distribution by region

Region	Absolute	Frequencies	
			Relative (%)
Africa	30		24.00
America	8		6.40
Asia	36		28.80
Europe	49		39.20
Oceania	2		1.60
Total	125		100.00

**Table 2.**  
Sample distribution by sector

Sector	Absolute	Frequencies	
			Relative (%)
Basic materials	20		16.00
Communications	11		8.80
Consumer goods	33		26.40
Energy	14		11.20
Industrials	21		16.80
Technologies	12		9.60
Utilities	14		11.20
Total	125		100.00



$r_D$  is the firm's cost of debt capital; and

$T$  represents the firm's corporate tax rate.

As shown in Eq. (1), the WACC represents the firm's overall cost of capital and is computed as the weighted average of a firm's cost of debt and its cost of equity capital. Consistent with previous studies (Sharfman and Fernando, 2008; Gjergji *et al.*, 2021), we use the WACC measure provided in the Bloomberg database.

Tobin's Q is a measure of firm value that has been widely applied in research. This measure was introduced by Tobin (1969) as a predictor of a firm's future investments. According to Bharadwaj *et al.* (1999), since its introduction, researchers have used Tobin's Q in different contexts: for example, as a measure of business performance; predictor of profitable investment opportunities; measure of the capitalized value of monopoly rents; measure of returns from diversification; indicator of a firm's intangible assets value; measure of brand equity, and measure of the value of technological assets. One of the main benefits of Tobin's Q is that it takes into account both a company's past performance and its expected future performance (Hejazi, 2016).

Tobin's Q is calculated as the following ratio: the book value of total assets minus the book value of equity plus the market value of equity in the numerator and the book value of total assets in the denominator (Orens *et al.*, 2009). According to Harrigan *et al.* (2018) the numerator of Tobin's Q may increase due to the perception of better firm growth opportunities, which are usually not fully reflected in the ratio's denominator. This is the reason Tobin's Q has been widely used to capture market and investor expectations concerning firms' intangible assets, which implies that the market and investors perceive firms with higher levels of Tobin's Q as firms with better growth opportunities.

#### 4.3 Independent variable

The independent variable of this study is the HC disclosure level (HCDL), which is measured through a manual content analysis. Krippendorff (1980, p. 21) offers an exhaustive definition of content analysis, defining it as a "*research technique for making replicable and valid inferences from data according to their context*". Studies related to the disclosure of intellectual capital primarily use content analysis because it is recognized as an objective and reliable technique (Krippendorff, 1980; Guthrie *et al.*, 2004; Cuozzo *et al.*, 2017; Nicolò *et al.*, 2020). Content analysis allows to reduce the weaknesses of interviews and questionnaires since the information is publicly available (Larran *et al.*, 2016). Besides, the implementation of content analysis represents a cheaper and faster method to collect data (Branco and Rodrigues, 2008).

A correct content analysis process involves four different steps: definition of a coding framework, selection of a recording unit, application of the coding process, evaluation of the reliability level obtained (Bozzolan *et al.*, 2003; Krippendorff, 2004; Guthrie *et al.*, 2004; Nicolò *et al.*, 2020). Table 3 summarizes the four stages developed in order to run the content analysis.

The first step concerned the definition of a coding framework. In order to ensure the reliability and comparability of this study, the coding instrument was based on a consolidated framework in the literature (Guthrie *et al.*, 2004; Beattie and Thomson, 2007).

$N$	Stage
1	Definition of a coding framework
2	Selection of a recording unit
3	Application of the coding process
4	Evaluation of the reliability level obtained

**Table 3.**  
Content analysis  
stages

Therefore, to measure the level of HC information disclosed by companies within the integrated reports, the model proposed by [Raimo et al. \(2020a\)](#) was used as a coding framework. This framework is based on a broader conceptualization of HC provided by the literature relating to intellectual capital disclosure ([Abeysekera and Guthrie, 2004, 2005](#); [Firer and Williams, 2005](#); [Oliveras and Kasperskaya, 2005](#); [Oliveira et al., 2006](#)). The operationalization and, therefore, the identification of items, which represent more specific and punctual elements, are instead based on a literature closer to the subject of this work, namely that relating to HC disclosure ([Khan and Khan, 2010](#); [Jindal and Kumar, 2012](#); [Fontana and Macagnan, 2013](#)). The different items identified were classified and compared. This process led to the exclusion of some items and the aggregation of others to avoid redundancy and repetition. In this regard, for example, an item such as “whistle blower policy” has been excluded as it represents an element more connected to corporate governance disclosure and not to HC disclosure, while other items such as “employee compensation plan” and “pay policy and system” have been aggregated into a single item called “payment policies”. This process led to the identification of a final list consisting of 30 items, presented in [Table 4](#). The evaluation of these items was based on a binary system, which reduces the subjectivity in the measurement of our independent variable and allows a comparison with similar HC disclosure studies ([Striukova et al., 2008](#)). For each item, a score of 1 was assigned in the case of presence and a score of 0 was assigned in the case of absence ([Gallego-Alvarez et al., 2011](#); [Raimo et al., 2020a](#)). Thus, HCDL scores can range from 0 to 30.

HC items	
<b>Table 4.</b> HC disclosure index	1. Number of employees
	2. Number of terminations
	3. New recruitments
	4. Absence or shortage of employees
	5. Internal rotation of employees
	6. External rotation of employees
	7. Employees scaled by age
	8. Employees scaled by seniority
	9. Employees scaled by gender
	10. Employees scaled by education
	11. Employees scaled by job description
	12. Employees scaled by region
	13. Training activities
	14. Training expenses
	15. Recruitment policies
	16. Payment policies
	17. Incentives policies
	18. Health and safety policies
	19. Employee culture and values
	20. Employee leadership
	21. Employee benefits
	22. Employee satisfaction
	23. Employee involvement in the community activities
	24. Employee productivity
	25. HC statistics (i.e. in terms of sales per employee, profitability per employee)
	26. Career development and opportunities
	27. Collective agreements
	28. Top management education
	29. Top management professional experience
	30. Entrepreneurial spirit

The second step involved identifying the unit of analysis. Examples of unit of analysis can be represented by words, sentences, paragraphs, pages, themes (Husin *et al.*, 2012). In this work, a comprehensive unit of analysis was chosen. This unit of analysis included sentences, tables, graphs and charts. Instead, images without a surrounding text were excluded as their inclusion would create problems related to subjective interpretation (Guthrie *et al.*, 2004; Husin *et al.*, 2012; Nicolò *et al.*, 2020).

The third step concerned the coding process. A manual content analysis of the integrated reports was conducted by the authors in June 2020. The data collected were recorded in electronic format (in specific Excel sheets) to ensure easy storage, verification and possible correction of the data and to facilitate the implementation of statistical and econometric analyses (Duff, 2018; Nicolò *et al.*, 2020). Manual data collection was preferred to electronic research supported by specific software for two specific reasons. Firstly, manual content analysis allows to avoid inconveniences arising from the use of synonyms and phrases with multiple meanings and, secondly, it simplifies the interpretation and inference of HC information from the surrounding context (Duff, 2018; Nicolò *et al.*, 2020).

The fourth and last step concerned the evaluation of the reliability level obtained. In line with past studies (Guthrie *et al.*, 2004; Raimo *et al.*, 2020a), to increase data reliability, a specific detection procedure was defined and followed (Krippendorff, 1980). In the first phase, a joint pilot test was performed on five integrated reports. Subsequently, the researchers independently examined ten other integrated reports. The comparison of their findings showed good data reliability. To support this, Krippendorff's alpha was also calculated, resulting in a value of 0.893. This value supports the reliability of the data as it exceeds the minimum acceptance threshold of 0.80 (Krippendorff, 1980).

#### 4.4 Control variables

To avoid biased results, following the literature in the field (Orens *et al.*, 2009; Lee and Yeo, 2016; Harrigan *et al.*, 2018; Li *et al.*, 2018; Salvi *et al.*, 2020c; Gjergji *et al.*, 2021) a set of control variables is used to perform the econometric analysis. We use firm size, leverage, the market-to-book ratio, and return on assets as control variables in the econometric model to test our first research hypothesis (H1 where WACC is the dependent variable) and firm size, leverage, the sales growth rate, and return on assets to test our second research hypothesis (H2 where TQ is the dependent variable).

The natural logarithm of firm total assets, a widely applied size proxy, is used to measure firm size (FS). Leverage (DA) is used as a proxy for firm financial risk and is calculated as total debt scaled by total assets (Orens, 2009). The market-to-book ratio (MTB) is a measure that can control for both firm growth opportunities and distress risk (Fama and French, 1992, 1993). We compute this measure as the fiscal year-end market value of equity divided by the fiscal year-end book value of equity. Return on assets (ROA) is a proxy of firm profitability commonly used by researchers and is computed by dividing firm net income by total assets. The sales growth rate (SG) is used to control for firm growth opportunities and is obtained by comparing firm sales with those of the same accounting period in the previous year (in percentage on a yearly basis). Data for all the control variables were collected from the Bloomberg database. Table 5 summarizes all the variables used in the analysis.

#### 4.5 Model specification

To test the impact of HCDL on the WACC (H1) and TQ (H2), we construct a sample of 125 firms covering 2017–2019, for a total of 375 firm-year observations. We employ two different regression models to test our research hypotheses; in particular, H1 predicts that  $B_1$  in Eq. (2) will be negative, and H2 predicts that  $B_1$  in Eq. (3) will be positive.

Variable	Symbol	Description	Source
<i>Dependent variables</i>			
Cost of capital	WACC	Firm weighted average cost of capital	Bloomberg database
Tobin's Q	TQ	Ratio of market value and book value of total assets	Bloomberg database
<i>Independent variable</i>			
HC disclosure level	HCDL	Level of HC information provided in the integrated reports	Measured by the authors
<i>Control variables</i>			
Firm size	LNTA	Natural logarithm of a firm total assets	Bloomberg database
Leverage	DA	Total debt scaled by total assets	Bloomberg database
Market-to-book ratio	MTB	Fiscal year-end market value of equity divided by fiscal year-end book value of equity	Bloomberg database
Return on assets	ROA	Net income to total assets	Bloomberg database
Sales growth rate	SG	Change in sales (%) respect to the previous year	Bloomberg database

**Table 5.**  
Variables description

$$WACC = B_0 + B_1HCDL_{i,t} + B_2LNTA_{i,t} + B_3DA_{i,t} + B_4MTB_{i,t} + B_5ROA_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$TQ = B_0 + B_1HCDL_{i,t} + B_2LNTA_{i,t} + B_3DA_{i,t} + B_4SG_{i,t} + B_5ROA_{i,t} + \varepsilon_{i,t} \quad (3)$$

The Hausman test was developed for choosing between random and fixed effects models; the test results support use of a fixed effects regression model. As consequence, Ordinary least squares (OLS), fixed effects panel regressions were conducted for both Models 1 and 2. Following the literature in the field (Muino and Trombetta, 2009; Reverte, 2012; Kim *et al.*, 2014; Salvi *et al.*, 2018; Johnson, 2020), an analysis with robust standard errors was performed. The fixed effects technique allows to mitigate the endogeneity bias producing reliable and consistent results (Nikolaev and Van Lent, 2005; La Rosa *et al.*, 2018).

5. Results

Table 6 reports the means and standard deviations for the variables used in the econometric analysis. The mean (standard deviation) values of the dependent variables are 8.160 (2.710) percent and 1.469 (1.053) for the WACC and TQ, respectively. These findings are in line with prior studies (Sharfman and Fernando, 2008; Orens *et al.*, 2009; Li *et al.*, 2018; Gjergji *et al.*, 2021). HCDL has a mean value of 11.597 (st. dev. 3.496), ranging from a minimum of 4 to a maximum of 25. For the control variables, the mean (standard deviation) values for LNTA is 11.270 (3.132), DA is 25.332% (14.264), MTB is 1.933 (2.098), the SG rate is 7.698% (30.509), and the firms included in the sample have a mean ROA of 4.813% (st. dev. 8.305).

The correlation coefficients, as shown in Table 6, are on average quite low: the maximum value is 0.755 ( $p < 0.000$ ) between TQ and HCDL. The correlation coefficient between WACC and HCDL is  $-0.533$  ( $p < 0.000$ ); all coefficients are below the threshold of  $\pm 0.8$  or  $\pm 0.9$ , indicating the absence of multicollinearity (Gujarati, 1995; Kennedy, 1999).

Furthermore, we perform the variance inflation factor (VIF) analysis to check for collinearity among the variables. Results, reported in Table 7, show that all the coefficients are below the critical threshold (Myers, 1990): the higher VIF coefficient is equal to 1.27 and the mean VIF is equal to 1.21 in Model 1 and 1.18 in Model 2, confirming the absence of concerns about multicollinearity issues and enforcing the reliability of the regression analysis.

To test our research hypotheses, we run an OLS regression analysis. The relationship between HCDL and the WACC is negative ( $-0.00367$ ) and statistically significant ( $p < 0.000$ ), highlighting that companies' superior HC disclosure levels through integrated reports can

	Mean	ST. DEV	TQ	WACC	HCDL	LNTA	DA	MTB	ROA	SG
TQ	1.470	1.053	1.00							
WACC	0.082	0.027	-0.288***	1.00						
HCDL	11.597	3.496	0.755***	-0.534***	1.00					
LNTA	11.270	3.132	0.006	-0.446***	0.126**	1.00				
DA	0.253	0.143	0.171 ***	-0.407***	0.317***	0.182***	1.00			
MTB	1.934	2.099	0.4691 ***	-0.149*	0.299***	0.047	0.004	1.00		
ROA	0.048	0.083	0.5956***	-0.236***	0.438***	0.018	0.032	0.293***	1.00	
SG	0.076	0.305	-0.026	-0.013	0.0116	-0.018	0.037	-0.018	0.073	1.00
Note(s): ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level										

**Table 6.**  
Descriptive statistics  
and Pearson's  
correlation matrix

reduce the cost of capital (Model 1), confirming our initial expectations. This implies that adequately disclosing HC information in integrated reports allows firms to benefit from better access to finance, confirming our first research hypothesis (H1). In particular, a superior level of HC disclosure is able to reduce the WACC essentially lowering the information asymmetry level, minimizing the transaction costs and reducing the estimation risk perception. To this purpose, information about intangible assets, and HC in particular, represents a pivotal tool for firms to improve their non-financial disclosure in order to provide a wider set of information to its stakeholders, facilitating their decision-making process. Results are coherent with the literature in the field, confirming the hypothesis that disclosure reduces the firm’s cost of capital through its effect estimation risk level, on investor preferences, and information asymmetry (Richardson *et al.*, 1999; Lemma *et al.*, 2019).

Our second research hypothesis (H2) regarding the relationship between HCDL and TQ is also confirmed. The relationship (Model 2) is positive (0.1843) and statistically significant ( $p < 0.000$ ), highlighting that better voluntary corporate HC disclosure is a tool that managers should use to improve firm value. Information about intangible assets, and HC in particular, is able to enhance firm value (as measured by TQ) reducing the non-diversifiable risk estimation and improving investors’ expectations in terms of firm profitability and growth opportunities. HC disclosure allows companies to share information about their competitive advantage, deriving from human resources, with their stakeholders. These results are also in line with our initial expectations, and with the literature in the field (Orens *et al.*, 2009; Hejazi *et al.*, 2016; Plumlee *et al.*, 2015).

Analysing the control variables, in Model 1 LNTA and DA negatively affect the firm’s cost of capital (−0.0031 and −0.0384 respectively) and the relationship is statistically significant in both cases ( $p < 0.000$ ) in line with previous studies in the field (Atan *et al.*, 2018; Lemma *et al.*, 2019). Furthermore, MTBR positively affects the WACC (0.0003) and ROA negatively (−0.0297), but the relationship is in both cases not statistically significant. Results, also in this case, are coherent with the literature in the field (Ould Daoud Ellili, 2020; Vena *et al.*, 2020).

In Model 2, LNTA (−0.0227), DA (−0.1980), and SG (−0.1569) negatively affect the dependent variable, even if the relationship is statistically significant only between TQ and LNTA ( $p < 0.000$ ). ROA, instead, has a positive effect on TQ (3.9537) and the relationship is statistically relevant ( $p < 0.000$ ). Our findings confirm those obtained by researchers in previous studies in the field (Lee and Yeo, 2016; Li *et al.*, 2018; Nirino *et al.*, 2021). Results are summarized in Table 8.

6. Discussion

Our empirical findings support the research hypotheses, highlighting the existence of a negative relationship between HC disclosure and the WACC and a positive relationship between HC disclosure and TQ. These findings can be attributed to the growing importance HC disclosure has gained in recent years. More robust and detailed HC disclosure is

Table 7.  
Variance inflation  
factor (VIF) analysis

	Model 1 (WACC)		Model 2 (TQ)	
	VIF	1/VIF	VIF	1/VIF
HCDL	1.43	0.699095	1.41	0.710735
LNTA	1.04	0.963501	1.04	0.959426
DA	1.20	0.830224	1.16	0.861227
MTB	1.16	0.860548	–	–
ROA	1.21	0.824260	1.27	0.790193
SG	–	–	1.01	0.991469
Mean VIF	1.21		1.18	



	Model 1 (WACC)			Model 2 (TQ)			Financial consequences of HC disclosure
	Coefficient	Robust S.E.	p value	Coefficient	Robust S.E.	p value	
Constant	0.1614579***	0.006171	0.000	0.3999031**	0.1747734	0.023	
HCDL	−0.0366131***	0.0043242	0.000	0.1842598***	0.0107179	0.000	
LNTA	−0.003053***	0.0003546	0.000	−0.0227021**	0.0102976	0.028	
DA	−0.038447***	0.0083385	0.000	−0.1980009	0.2381734	0.406	
MTB	0.0003411	0.0005892	0.563	—	—	—	
ROA	−0.0297267	0.0207888	0.154	3.9537***	0.4371687	0.000	
SG	—	—	—	−0.1568825	0.1043298	0.134	
N. of obs.	375			375			
Adjusted $R^2$	0.0738			0.0928			
Prob > $F$	0.0000			0.0000			

**Note(s):** \*\*\*Significant at the 1% level; \*\*Significant at the 5% level; \*Significant at the 10% level

**Table 8.**  
Regression analysis

essentially able to reduce investors' perceived firm risk and improve investors' expectations of a firm's future in terms of profitability and growth opportunities, leading to an improvement in firm value. We expand existing literature by focusing our attention on integrated reports as a channel through which HC information can be disclosed and by examining whether cost of capital and firm value are associated with the level of HC disclosure. We stress that it is important for companies to prepare integrated reports, essentially because mandatory financial reports are unable to capture this kind of information.

The results of testing our first research hypothesis (H1) show that, by improving voluntary disclosure, firms are able to reduce investors' estimation of risk, lower the level of information asymmetry, and minimize transaction costs. These mechanisms can foster a reduction in the cost of capital, facilitating firms' access to lower-cost external financing. Investors' estimation of risk is linked to a "company disclosure of more information because investors estimate a firm's risk level based on the available information set. Intangible assets disclosure plays a crucial role in improving financiers' decision-making process because mandatory financial disclosure is often unable to fully capture firms' ability to share this kind of information with all stakeholders. The effect is that superior HC disclosure can reduce the perceived risk regarding firms' future expectations and mitigate the information asymmetry among insiders and outsiders. Researchers agree that investors prefer firms with low transaction costs, less information asymmetry, and low estimated risk. Disclosing additional information allows firms to increase demand for their debt and equity issues, lowering the associated cost of capital. Investors are willing to commit new financial resources for firms with superior levels of HC information disclosure.

The results of testing the second research hypothesis (H2) show that disseminating information about intangible assets helps investors better estimate the parameters underlying future stock returns, decreasing non-diversifiable estimated risk and uncertainty about future cash flows and future profitability (Orens *et al.*, 2009). HC disclosure provided through integrated reports can be considered an important tool at managers' disposal to emphasize their firm's ability to create and maintain a competitive advantage, thanks to the skills and knowledge of its human resources. This information can improve investors' expectations in terms of firm profitability and growth opportunities, enhancing firm value as consequence. Corporate disclosure and HC disclosure in particular seem to improve firms' future expected cash flows and reduce investors' perceived level of risk, which represent the key elements in the determination of firm value (Plumlee *et al.*, 2015). HC disclosure positively impacts the markets' and investors' expectations in terms of expected future cash flows and profitability, based on the assumption that a lower level of

uncertainty in terms of the firm's future ability to generate cash flows is linked to firms with superior disclosure levels. Firm value may increase due to the better firm growth opportunities and profitability expected for these firms.

This study contributes to resource based view. Investors consider information relating to qualifications, skills, knowledge, training, remuneration and satisfaction of human resources to be particularly relevant. Therefore, it can be assumed that they represent the main drivers behind corporate success. Information relating to these aspects are associated with the vision of the resource based view of the firm (Spender, 1994; Grant, 1996; Spender and Grant, 1996). In fact, in the light of the results obtained it is evident that investors consider the aspects related to HC as organizational resources capable of guaranteeing a competitive advantage to companies (Barney, 1991; Wright *et al.*, 1994; Delery and Roumpi, 2017). In fact, this information ensures both a reduction in the cost of capital and an increase in the firm value, demonstrating the great importance that investors give to HC, recognizing it as a fundamental asset capable of ensuring the achievement and maintenance of the competitive advantage.

## 7. Conclusions

This study examined the financial consequences of HC disclosure. Specifically, it examined the effect of the level of HC information disclosed by companies through integrated reports on the cost of capital and firm value. The results clearly demonstrate the ability of this information to both reduce the cost of capital and increase firm value.

This work contributes to enriching the existing literature, first, by examining the level of HC disclosure in a new document, an integrated report, which has been subjected to little analysis in the existing literature and second, by enriching the number of different types of disclosure shown to influence a firm's cost of capital and value. In fact, this study is part of the literature on the financial consequences of disclosure, which has shown how different types of information (voluntary, integrated, environmental, social, sustainability, intellectual capital, and relating to digitalisation) lower the cost of capital and increase firm value. This study identifies another type of information (relating to human resources) capable of triggering this virtuous circle, which leads to a reduction in the cost of capital and an increase in firm value. Furthermore, this study extends the field of application of the resource based view, still little used to examine the aspects related to disclosure. In this perspective, this study has demonstrated the value that investors recognize in HC and related information, confirming the theoretical basis of the resource-based view that considers human resources as elements capable of guaranteeing competitive advantage.

This study provides important managerial implications. The financial benefits derived from HC disclosure should push companies to provide more information related to their human resources in integrated reports. This information can improve access to finance by reducing the cost of capital, while increasing firm value. Therefore, companies should provide more information about their employee characteristics and values, rotations, new hires, training activities, incentive policies, benefits, health and safety policies, and entrepreneurial spirit, as well as top management's education and professional experience. Furthermore, companies should pay attention to correctly represent the interconnections existing between HC information and information relating to financial, social and environmental aspects. These interconnections represent a key element of integrated reporting and could facilitate the understanding of the value creation processes and improve the decision-making of investors. However, the firms should be aware that the HC information disseminated is reliable. Indeed, otherwise such information could potentially be harmful to both companies and capital markets participants. In this regard, they could opt for a third-party verification capable of guaranteeing credibility to the information disseminated.

The results also have important implications for policy makers, standard setters and capital providers. The numerous financial benefits derived from wide HC disclosure should push policy makers to make it mandatory for companies to disseminate a certain level of HC information. Furthermore, the results can be used by standard setters to push corporate reporting towards the inclusion of HC information. Indeed, considering that such information is collected and used by investors, companies should undertake to disseminate an adequate level of HC information. In this regard, the standard setters can use the items identified in this work to define the relevant areas of the HC disclosure. Finally, the methodology used in this study to measure individual firms' level of HC disclosure could represent a benchmark for capital providers to identify firms that disclose more HC information.

However, this study has some limitations. One limitation is related to the classic subjectivity of content analysis techniques in measuring the level of HC information in firm's integrated reports. A second limitation is instead connected to the analysis of the level of HC information, which emphasises only the content of the disclosure and not the quality of the communication. A third limitation is connected to the use of Bloomberg data for WACC measurement. Although many authors have used the WACC provided directly by the Bloomberg database, some researchers have suggested that different approaches have been used in the literature to calculate the company's cost of capital (Drobotz *et al.*, 2018). However, these limitations offer an important starting point for future research. In fact, future studies will be able to develop new measures to examine HC disclosure that take into account not only the content of the disclosure but also the quality. In particular, future studies can examine the presence of summary indicators, tables, images, and graphics related to HC information in integrated reports, thus going beyond the simple content of the disclosure. In addition, future studies could also focus on the benefits that companies receive from other stakeholders, such as customers, suppliers, or employees, when they increase the amount of HC disclosure. Besides, future studies could repeat the study using different methods for calculating the WACC in order to compare the results and corroborate the implications. Finally, since this study only examines the advantages of HC disclosure (ignoring the costs associated with it), future research can examine the trade-off between the financial benefits of HC disclosure and the proprietary costs and costs of collecting and disseminating such information.

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