The effects of business ethics and corporate social responsibility on intellectual capital voluntary disclosure

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Abstract

Purpose – This study aims to examine the potential effect that business ethics (BE) in general and corporate social responsibility (CSR) more specifically can exert on the voluntary disclosure (VD) of intellectual capital (IC) for the ethically most engaged firms in the world.

Design/methodology/approach – The research design is based on an inductive approach. As part of the global quantitative investigation, the authors have analyzed the impact of BE and CSR on the transparent communication of the IC. The data under analysis have been investigated using multiple linear regression.

Findings – Based on a sample of 83 enterprises emerging as the most ethical companies in the world, the results have revealed that the adoption of ethical and socially responsible approach is positively associated with the extent of VD about IC. This finding may help attenuating the asymmetry of information and the conflict of interest potentially arising with corporate partners. Hence, IC-VD may stand as an evidence of ethical and socially responsible behaviors.

Practical implications – Global and national regulators and policymakers can be involved by these results when setting social reporting standards because they suggest that institutional and/or cultural factors affect top management's social reporting behavior in the publication of the IC information.

Social implications – Direct and indirect stakeholders, if supported by ethical and socially responsible behaviors of the company, could assess more in detail the quality of the disclosed information concerning the IC.

Originality/value – Most of the studies that have been conducted in this field have examined the effect of BE and CSR on the firm's overall transparency, neglecting their potential effect on IC disclosure. This study is designed to fill in this gap through testing the impact of ethical and socially responsible approaches specifically on IC-VD.

Keywords Business ethics, Corporate social responsibility, Voluntary disclosure, Intellectual capital, Transparency, Fair value

Paper type Research paper

1. Introduction

Over the last few decades, firms have been generating value not only from securities and financials but also from other intangible elements, such as skills of employees (human capital), novelty in technology (structural capital), relationships with customers (direct relational capital) and reputation on the market (indirect relational capital or social capital), all forms of potential intellectual capital (IC), whose contribution, however, is probably riskier than industrial assets (Su, 2014; Cruz-González et al., 2014). In fact, the impact of IC on the business results is uncertain, and in addition, it is often more difficult to identify and measure its characteristics (Murray et al., 2016).

The uncertainty about its representation and measurement still poses issues related to accounting, evaluation and governance (Hussi, 2004; Guthrie et al., 2006; Hamed and Omri, 2014). To limit these problems, managers may choose voluntary disclosure (VD) to reduce the asymmetry of the information (Branco and Rodrigues, 2008).

IC is a driving factor and creator of lasting value (Lin et al., 2015; Vaz et al., 2019), and disclosure by applying ethical and social principles improves the trust of information and reduces the conflict of interest (Alves et al., 2012; Chung et al., 2015; Al Maskati and Hamdan, 2017). These behaviors may exert a positive effect on the global quality of the IC-VD (Melloni, 2015), and in this study, more specifically, VD of nonfinancial information about IC are assumed to be positively influenced by ethical and socially responsible behaviors of the company's decision-makers (Corvino et al., 2019).

In this respect, interest in the development of business ethics (BE) and corporate social responsibility (CSR) in accounting, evaluation and management has gained increasing attention in the academic literature (Nahapiet and Ghoshal, 1998), and the last 20 years (or even more) of empirical research on these issues have generated vast literature (Gray et al., 1995; Chen and Gavious, 2015; Singh and Gaur, 2020). Accordingly, the quality of the information published by companies about their IC has received an ever more peculiar interest in managerial research (Ousama and Fatima, 2012; Muttakin et al., 2015; Devalle et al., 2016; Bellucci et al., 2020), with specific concerns about the effect of BE and CSR on the quality of the disclosed information on voluntary or mandatory basis, also considering several financial scandals that have added doubts about relevance and reliability of some company data (Lehnert et al., 2016).

Subsequently, a critical question is the following: is it adequate, opportune and reliable to take into consideration only the accounting information that mandatorily concern IC, especially considering that this entity is so difficult to identify and measure? This issue seems deserving huge attention particularly in the current context, constantly and continuously marked by the rise of BE and CSR, with consequent effect also on the relevance of the quality of the disclosed information.

For example, the legitimacy theory provides some contributions regarding environmental reputation, and the related effect of VD on reputational capital (Alvino et al., 2020). In this respect, the reputation of the company is a social construct stemming from the process of legitimization (Bond et al., 2016).

However, empirical studies investigating the effect of BE and CSR on VD have proved mixed results, mostly because of the different meaning about ethics and responsibility in each

institutional and cultural context (Ting *et al.*, 2020). The current study aims to combat this diversity and its consequences in terms of value creation, analyzing more specifically the potential effect of BE and CSR on the VD of IC (Giacosa *et al.*, 2017).

The perimeter of the research regards the companies that are ranked by the Ethisphere Institute – most probably the global leader in the world for defining and advancing the standards of ethical and social practices that fuel corporate character, market trust and business success – as the most ethical companies in the world. More precisely, the contribution of the study is in checking whether the companies' behavior about IC disclosure is influenced by BE and CSR, aspect that has been often neglected in other studies.

In this respect, a research concerning companies displaying high level of ethical and socially responsible commitment has been conducted, with two main ambitions. First, results should enable to explicitly identify the characteristics that are more likely to influence the diffusion of information about IC in the annual reports through adoption of BE and CSR; second, it should help exploring the contribution of the several company characteristics as assessed in terms of ethics-based scoring.

The empirical evidence emerging from the research has demonstrated that the adoption of approaches that are based on BE and CSR noticeably help in enhancing the disclosure extent of the IC information as figuring in annual reports. Thus, this study should serve to provide further recommendations to the companies intending to adopt codes of ethics, or to put forward CSR practices, encouraging these behaviors also from the point of view of the IC disclosure (and consequent accounting, evaluation and management).

The structure of this paper is organized as follows; Section 2 presents the basic theoretical background and the hypotheses that have been developed: in this section, the relationship between the potential effect of BE and CSR on the VD of IC has been analyzed. Section 3 displays the methodology that has been adopted, while the empirical results are exposed and discussed in Section 4; finally, the discussions of the findings, the concluding remarks and their implications are provided in Section 5.

2. Theoretical background and hypotheses development
As aforementioned, the following investigation is about the effect of BE and CSR on IC-VD, also for clarifying the distinct influences that may arise from concepts that sometimes are considered in ambiguous connection (Fassin *et al.*, 2011). Therefore, the first step of the research is about a general analysis of the studies focusing on the association between ethical as well as socially responsible behaviors and IC-VD as core aspect of a more global knowledge management approach that cutting-edge enterprises should adopt to succeed (Serenko and Bontis, 2013).

2.1 Theoretical background
To present main reasons and usefulness of the VD of information about IC, the theory of planned behavior has been adopted as fundamental approach. In fact, although extensive research has focused on the variables that externally and internally may influence the managers' decision about disclosing information on IC, few studies have examined in this respect the psychological factors and have used a theoretical decision-making framework (Coluccia *et al.*, 2017; McPhail, 2009).

The theory of planned behavior, largely used to explain the process of individual decision-making behavior (Ajzen, 1991), can emerge as a theoretical framework for investigating the psychosocial factors stimulating the managers' decision to disclose IC information in a mandatory and/or voluntary way. In addition, this model has demonstrated its superiority over other theoretical approaches in many contexts of VD, including IC (Zhang *et al.*, 2019).

This theory assumes that when individuals, considering altogether internal attitudes and external considerations, perceive a manageable activity as capable of providing business benefits, such as those that may arise from IC-VD, they receive intention, support and encouragement in adopting that specific behavior, also making assumptions about their ability to perform the task (Passaro *et al.*, 2018; Mura *et al.*, 2012).

For example, Armitage and Conner (2001) examined 185 empirical studies that were conducted prior to 1997, finding that about 39 and 27% of the variance of intention and behavior, respectively, was caused by the theory of planned behavior. In fact, this theory is a rational decision-making model, which is mainly used to predict the potential behavioral intentions of the managers (in this specific case, adopting VD of IC).

Three key independent variables are at the basis of this framework: (1) the attitudes toward a particular behavior; (2) the perceptions of others' approval or disapproval of a particular behavior (subjective norms) and (3) the perceived behavioral control about easiness or difficulty in performing a particular behavior (Ajzen, 1991). This configuration is adopted as methodological basis for the theoretical model in which assessing the following hypotheses.

2.2 Hypotheses development (H1): BE and VD of IC

Transparent and reliable communication is essential to reflect the true image of a company (Bhimani, 2008): with this regard, financial transparency is a necessary condition for a firm that is involved in the BE process. In the specific context of disclosure, several authors have recognized that BE rooted in organizational culture has a tremendous influence on the development of IC-VD (Branco and Rodrigues, 2008).

For example, Jo *et al.* (2008) have analyzed the development of ethical standards in the business to improve the quality of the disclosed information, finding that entrepreneurs and managers that consider the promotion of ethical behaviors are urged to ensure permanent disclosure of the company's IC. Later, Navid *et al.* (2015) have found that unethical behaviors are at the basis of corporate financial scandals, workplace frauds and harassment or misleading financial reporting: such issues have raised awareness about the positive benefits of ethical behavior, also in improving VD (and then, also about IC), to limit the problems of the agency theory.

Mouritsen (2004) has found a significant gap between the market value and the book value resulting from the failure of the companies' hidden value in their annual reports: consequently, BE oriented to IC-VD would limit the problem of the business undervaluation (more specifically, VD of information about IC is positively influenced by the ethical behavior of the company's decision-makers).

On the other hand, the complexity and uncertainty of strategic decision-making require different combinations of data, information and knowledge. In this respect, some research has been conducted to examine the factors influencing disclosure of IC: Ferreira *et al.* (2012) have found that ownership concentration and firm size have a positive influence on the disclosure of IC, and ethical behaviors also positively influence this disclosure.

Several studies suggest that there are many benefits to acting ethically, such as improving the financial and nonfinancial performances as well as creating a sustainable competitive advantage (Goel and Ramanathan, 2014; Khondkar *et al.*, 2016). In addition, in highly risky and uncertain contexts, policymakers are forced to select powerful tools over VD.

Thus, when interacting with companies that adopt a VD policy even beyond the mandatory requirements, in which a large quantity of data is generated and analyzed, professionals are capable to deal with extensive volume of specific information and intelligence about the IC, but this is possible only with a disclosure policy influenced by BE. Based on the above considerations, the following hypothesis has been conceived.

H1. BE behaviors have positive impact on the extent of the IC-VD.

2.3 Hypotheses development (H2): CSR and VD of IC
The economic value of the company is expressed not only by its means of production but also by the global impact that fundamentally derives from its IC (Campanella *et al.*, 2014), activating human, structural and relational resources to generate shared value (Porter and Kramer, 2011) at business, social and environmental level (Elkington, 1998). As result, a new path on IC reporting sustains that all companies are increasingly required to be socially responsible and to better manage their environmental impact (Aslam *et al.*, 2018).

In this vein, organizations have developed accounting and management systems and improved their disclosure practices according to social and environmental principles (Khondkar *et al.*, 2016). In part, this has been due also to the fact that companies may have incentives for adopting globally responsible approaches and operating socially responsible initiatives (Gangi *et al.*, 2019); however, a study by Türkel *et al.* (2016) on the European Union has provided evidence that CSR is a mean that companies may voluntarily decide to adopt to contribute to better society and cleaner environment.

From one side, Sun *et al.* (2010) have found that companies that need to pursue a strategy of VD of IC are brought to value CSR, and this should be positively interpreted by the various stakeholders. On the other side, regarding the potential asymmetry of information and conflict of interest that may exist, CSR should constitute a behavioral method that would have positive effect on the corporate behaviors, as it promotes transparency, also with regard to the potential VD of IC (Beretta *et al.*, 2019).

Coherently to the dynamic resource capability perspective of (Bamel and Bamel, 2018), Luthan *et al.* (2016) found that in an uncertain world, the adoption of a CSR approach could help reducing uncertainty, especially if the company discloses information about its IC. Similarly, some researchers argue that CSR is a very broad domain, and VD of IC should be considered as a social responsibility action (Chan *et al.*, 2014).

Polo and Vázquez (2008) have described the relationship between CSR and the VD of information, to ensure the sustainability of the business in general and its operational goals more specifically. In other words, CSR is an asset for the company and the various stakeholders (Fukukawa *et al.*, 2007) because of its direct contribution to IC (indirect relational capital, for example), with consequent influence on the relevance of the information provided by the company about its IC and knowledge properties more in general (Rechberg and Syed, 2013).

Moreover, as aforementioned, Khondkar *et al.* (2016) have studied the effect of CSR on the quality of the information disclosed in companies' annual reports. They have found a positive relationship between the level of disclosure and the intensity of CSR, concluding that greater disclosure is a form of socially responsible behavior, thus directly and/or indirectly impacting IC (Vrontis *et al.*, 2020).

Thus, to limit some agency theory's problems and to highlight the quality of the company and its IC, it can be assumed that entrepreneurs, executives and managers are encouraged to manage the social responsibility of their company also by adopting VD policies about IC, to better communicate the real extent of the company's global impact. Based on the above considerations, the following hypothesis has been conceived.

H2. CSR behaviors have positive impact on the extent of the IC-VD.

3. Research design
3.1 Sample construction and data collection
Being the main purpose of this study to explore the effect of BE and CSR on IC-VD, a sample of firms already involved in the process has been selected. In other words, the selectable companies have been detected among those with evident commitment and involvement in ethical and social behaviors.

Several statistical institutes are responsible for making an appropriate classification in this specific field: however, since 2007, the Ethisphere Institute (Ethisphere.com) has been analyzing the global market to identify, sector by sector, the most committed companies in the field of ethical behaviors, drawing up a list of the most ethical companies in the world and gaining at international level high reputation in the field (BusinessWire.com).

Then, the following investigation has been grounded on the Ethisphere Institute database, which considers more than 100 criteria; the most important are social responsibility, good governance, environmental impact, implementation of code of good behavior, commitment of the direction to questions of ethics and CSR, setting up of internal monitoring indicators, citizen investment and so on (it also considers negative criteria, such as the existence of disputes or infringements to sector regulations). This database provides a global overview, and the list of elected representatives reveals a real geographical diversity with several companies located outside the United States, such as the United Kingdom, Australia, Sweden, Germany, India, Guatemala, Poland, Switzerland, Saudi Arabia, Portugal and Belgium.

The data under investigation have been obtained from the Global-100 KPI 2015 database published by the independent Ethics Expert Group of the Ethisphere Institute (secondary, which have been then summarized into composite indexes, and not empirical data have been used to avoid any potential bias deriving from individual interviews concerning BE and CSR, most of all in the context of the planned behavior theory). Considered as one of the most authoritative indexes in the world due to its methodology and reliability, the Corporate Knights Global 100 designates each year the top 100 companies (out of several thousands) that are the most responsible in terms of ethical behavior.

The year 2015 has been chosen so that the data under analysis could be taken as definitively reliable, considering the time that sometimes is necessary to validate all the accounting information, most of all from a social and environmental point of view. Thus, the 2015 database, to the best of the authors' ability, is the latest publicly available for which it has been possible to collect all the necessary information for implementing the current investigation, but evidently the methodology can be replicated for any other year, when all necessary data would be available (for example, searching for the adequate data starting from WorldsMostEthicalCompanies.com).

The initial population consisted of 4,353 companies (candidates); in a second step, 4,253 companies that did not meet the classification criteria for the first 100 companies were excluded. From the 100 best ranked companies, for the specific scope of the current research firms that are part of the financial sector, considering the very peculiar rules that govern this industry, have been excluded (i.e. 17 companies); thus, the final sample has included 83 firms, with Table 1 summarizing the sampling selection criteria.

Tables 2 and 3 describe the distributional profiles by country and by sector, respectively: the sample includes 18 developed countries belonging to 35 industries, according to the 48 industry group affiliations as figuring in Fama and French (1997), with most firms that are based in the USA, the UK and France (these three countries make up 54.28% of the total sample).

The companies from the USA are at the top of the list, with 25% of the sample (20 firms out of 83, 24.09%): French and British companies are entitled of the second position in this

The selection criteria of the sample	Numbers
Overall list	4,353
minus companies not respecting the ranking criteria for being the first 100	−4,253
minus financial firms (bank, insurance, et similia)	−4,217
Final sample	83
Source(s): Authors' calculation	

Table 1.
Sample selection process

| Sample distribution by country | | | |
Country	Firms	Country	Firms
United States of America	20	Sweden	3
France	10	Denmark	2
Great Britain	10	Ireland	2
Canada	8	Spain	2
Finland	5	Belgium	1
Germany	5	Brazil	1
Netherlands	4	China	1
Singapore	4	Japan	1
South Korea	3	Portugal	1
Total = 83			
Source(s): Authors' calculation			

Table 2.
Breakdown of selected
companies by country

ranking, respectively, represented with 10 companies on an equal basis. Then, Canada ranks fourth, since it is represented with eight firms, corresponding to 10% of the total sample (hence, these four countries account for almost 60% of the total sample).

In Table 3, the most represented sectors are Oil, Gas & Consumable Fuels (eight firms), Pharmaceuticals (seven firms) and Chemicals (four firms), respectively. Concerning other sectors, the number of companies is more limited (three or less).

3.2 The regression model

To test the impact of BE and CSR on the VD of IC, a multiple linear regression has been calculated. The research model has been engineered as follows.

| Sample distribution by sector | | | |
Sector	Firms	Sector	Firms
Oil, Gas & Consumable fuels	8	Software	2
Pharmaceuticals	7	Aerospace and defense	1
Chemicals	4	Auto components	1
Automobiles	3	Beverages	1
Diversified telecommunication	3	Biotechnology	1
Food products	3	Construction and engineering	1
Household products	3	Electric utilities	1
Industrial conglomerates	3	Energy equipment and service	1
Media	3	Food and staples retailing	1
Real Estate Management and Development	3	Gas utilities	1
Semiconductors and semicond. equipment	3	Hotels restaurants and leisure	1
Tech. hardware, storage and peripherals	3	Household durables	1
Communications equipment	2	IT services	1
Electrical equipment	2	Life sciences tools and services	1
Electronic equip., instruments	2	Multiutilities	1
Health care equipment and supplies	2	Multiline retail	1
Machinery	2	Specialty retail	1
Metals and mining	2	Textiles, apparel and luxury goods	1
Personal products	2	Transportation infrastructure	1
Real estate investment trusts	2	Wireless telecommunication services	1
Total = 83			
Source(s): Authors' calculation			

Table 3.
Breakdown of selected
companies by sector

$$DISC\_SCO = \beta_0 + \beta_1 ETH\_SCO + \beta_2 CSR\_INDEX + \beta_3 INVT + \beta_4 TAX\_PAID$$
$$+ \beta_5 ETH\_COUNTRY + \beta_6 WOM\_BOARD + \beta_7 LEG\_SYST + \beta_8 LEVE$$
$$+ \beta_9 POL\_SECTOR + \varepsilon_i$$

where:

(1) DISC_SCO: composite index about IC-VD, calculated as combination of several elements (cf. Table 4).

(2) ETH_SCO: composite index about BE, calculated as combination of several elements reflecting ethical principles.

(3) CSR_INDEX: composite index about CSR, calculated as combination of 40 indicators reflecting principles of individual and collective social responsibility.

(4) INVT: the degree of innovation intensity is the ratio between research and development (R&D) costs and the turnover (concerning 2015).

(5) TAX_PAID: the effective tax rate is the ratio between tax expenses and earnings before interest and taxes.

(6) ETH_COUNTRY: the scores about this variable range from 1 to 7, with 1 indicating a very low level of country ethics and 7 indicating a very high level of country ethics.

Human capital	Structural capital	Relational capital
(1) Number of employees	(1) Intellectual property	(1) Customers
(2) Employee age	(2) Processes	(2) Market presence
(3) Employee diversity	(3) Management philosophy	(3) Customer relationships
(4) Employee equality	(4) Corporate culture	(4) Customer acquisition
(5) Employee relationship	(5) Organization flexibility	(5) Customer retention
(6) Employee education	(6) Organization structure	(6) Customer training and education
(7) Skills/know-how	(7) Organization learning	(7) Customer involvement
(8) Employee work-related competences	(8) Research and development (R&D)	(8) Company image/reputation
(9) Employee work-related knowledge	(9) Innovation	(9) Company awards
(10) Employee attitudes/behavior	(10) Technology	(10) Public relation
(11) Employee commitments	(11) Financial dealings	(11) Diffusion and networking
(12) Employee motivation	(12) Customer support function	(12) Brands
(13) Employee productivity	(13) Knowledge-based infrastructure	(13) Distribution channels
(14) Employee training	(14) Quality management and improvement	(14) Relationship with suppliers
(15) Vocational qualifications	(15) Accreditations (certificates)	(15) Business collaboration
(16) Employee development	(16) Overall infrastructure/capability	(16) Business agreements
(17) Employee flexibility	(17) Networking	(17) Favorite contracts
(18) Entrepreneurial spirit	(18) Distribution network	(18) Research collaboration
(19) Employee capabilities		(19) Marketing
(20) Employee teamwork		(20) Relationship with stakeholders
(21) Employee involvement with community		(21) Market leadership
(22) Other employee features		

Source(s): Li *et al.* (2008)

Table 4.
IC categories and components

(7) WOM_BOARD: this variable measures the proportion of women that are present in the boards of directors.

(8) LEG_SYST: the legal system works as a binary variable, which numbers 1 if the company belongs to the Anglo-Saxon legal system (globally recognized as stricter), and 0 otherwise.

(9) LEVE: the level of indebtedness is the ratio between long- and medium-term debts and total assets.

(10) POL_SECTOR: the pollutant sector works as a binary variable, which numbers 1 if the company belongs to the polluting sectors (more regulated), and 0 otherwise.

3.3 Variables definition
To operationalize the hypotheses under test, all the variables that have been included in the empirical model are defined and commented as follows.

3.3.1 Dependent variable ("DISC_SCO"). To measure this dimension, Li *et al.* (2008) have adopted a content analysis method, investigating the annual reports of selected companies to derive the qualitative, quantitative, financial as well as nonfinancial data relating to IC. In Table 4 the several components for human, structural and relational capital are reported.

In the current research, according to the measure used by Li *et al.* (2008), cited also in Maaloul and Zeghal (2015), the variable "DISC_SCO" has been adopted as a proxy of IC-VD, concerning published items about IC. Based on the examination of the annual reports, this dimension appraises the disclosed information on IC.

3.3.2 Independent variables. As aforementioned, several categories of explanatory variables have been selected to test their combined effects on the VD of IC. In the empirical model under analysis, to test H1 and H2, two explanatory variables are naturally the most relevant, namely, BE and CSR.

3.3.2.1 BE ("ETH_SCO"). The ethical measurement has been differently implemented in different contexts because this concept is highly complex and relates to several nonmeasurable dimensions. In addition, several studies have recently operationalized this measure by various means, originating from several international organizations.

In this research, the Ethisphere Quotient developed by the Ethisphere Institute has been adopted to measure the BE of the firms, as result of an investigation that consists of a series of multiple-choice questions that count the company's ethical performance. It is a composite index based on the combination of several items, reflecting each company's level of ethical principles.

3.3.2.2 CSR ("CSR_INDEX"). In the current study, this measure has been derived from Dias *et al.* (2017), who have constructed a list of indicators for measuring the CSR associated practices. The construct involves 40 CSR indicators categorized into three CSR dimensions (5 economic, 15 environmental and 20 social), as shown in Table 5, thus providing a global view on the CSR of each firm.

The choice of the 40 indicators has been influenced by the most widely adopted standards on CSR disclosure (CSRD), i.e. the Global Reporting Initiative (GRI) Guidelines (Bebbington *et al.*, 2008). Dias *et al.* (2017) have primarily focused on the GRI core indicators representing the well-established CSR indicators, and the selected items have been adapted to avoid penalizing companies that do not apply the GRI model.

Each component provides as score 1 if disclosed, and 0 otherwise (no penalty has been imposed if an item is considered irrelevant by a company); similarly to other studies (Haniffa and Cooke, 2005), the scoring approach that has been adopted is additive and equally weighted. The final index of CSRD ("CSR_INDEX") has been calculated as follows:

Dimension	Category	Indicator
Economic	Economic performance	Direct economic value generated, revenues, operating costs, employee compensation, retained earnings, payments to capital providers, donations, taxes
		Governmental financial assistance received
	Market presence	Policy and practices of spending on locally based suppliers
		Procedures for local hiring
	Indirect impacts	Infrastructure investments and services provided for public benefit
Environmental	Materials	Materials used
		Recycled materials used
	Energy	Direct energy consumption
		Indirect energy consumption
	Water	Total water withdrawal
	Biodiversity	Location size of land in protected biodiversity value areas
		Description of significant impacts of activities on biodiversity
	Emissions, effluents, waste	Total direct and indirect GHG emissions
		Other relevant indirect GHG emissions
		Total water discharge
		Total weight of waste
		Total number of significant spills
	Products and services	Initiatives to mitigate environmental impacts products/services
		Products sold and packaging materials reclaimed
	Compliance	Significant sanctions for noncompliance with environmental laws
Social	*Labor practices*	
	Employment	Total workforce by employment type or contract
		Information related to new employee hires and turnover
	Labor relations	Employees covered by collective bargaining agreements
	Occupational health/safety	Compliance with health and safety standards
	Training and education	Employee training
	Diversity/equal opportunity	Composition of governance bodies and breakdown of employees
	Human rights	
	Investment, procurement practices	Significant investment agreements and contracts that include clauses incorporating human rights concerns
		Information on significant business partners that have had human rights screening
		Information on education of employees on human rights
	Non-discrimination	Incidents related to discrimination
	Freedom of association and collective bargaining	Procedures to identify operations in which the right to exercise freedom of association and collective bargaining may be at risk
	Child Labor	Procedures to identify operations with significant risk for incidence of child labor
	Forced and compulsory labor	Procedures to identify suppliers with significant risk for incidence of forced or compulsory labor
	Society	
	Local community	Operations to implement local community engagement and development programs
	Corruption	Procedures to identify risks related to corruption
	Public policy	Info related to public policy positions
	Product responsibility	
	Customer health/safety	Info on safety and health impacts of products and services
	Product/service labeling	Type of product and service info required by laws
	Marketing communication	Programs to adhere to laws, standards and voluntary codes related to marketing communications
	Compliance	Significant fines for noncompliance with laws and regulations concerning the provision and use of products and services
Total	40 items	

Source(s): Dias *et al.* (2017)

$$CSR\_INDEX = \sum_{j=1}^{e} ej/e$$

where:

(1) CSR_INDEX = Level of CSR disclosure

(2) e_j = Attributed analysis (1 if the disclosure item is found, and 0 otherwise)

(3) e = Maximum number of items a company can disclose (40).

3.3.3 The control variables: characteristics about the firm and the environment of the firm. BE and CSR are not the only factors that may influence the VD of IC. A control has been operated about other determinants of VD that have been documented in prior studies and that might explain the effects of financial and economic peculiarities of the firms on the scale and design of voluntary, and sometimes even mandatory, disclosure of IC (Ribeiro Lucas and Costa Lourenço, 2014).

More specifically, control variables related to the characteristics of the firm are the following: the degree of innovation intensity (INVT), the effective tax rate (TAX_PAID), the percentage women on board of directors (WOM_BOARD), the leverage level (LEVE) and the pollutant sector (POL_SECTOR). Control variables related to the characteristics of the environment of the firm are the following: the level of country ethics (ETH_COUNTRY) and the legal system (LEG_SYST) because the sample includes several countries.

Generally, positive signs should be expected for INVT, WOM_BOARD, ETH_COUNTRY and LEG_SYST, whereas negative signs should be expected for LEVE, and POL_SECTOR, while no directional prediction is assumed for TAX_PAID. Finally, for an overall overview about the model variables composition, cf. Table 6.

4. Empirical results and discussion
The current research, although engineered for testing specific hypotheses, has an explanatory purpose, aiming at identifying the potential determinants for the VD of the IC through ethical-and-social responsibility approach. As a result, a linear relationship could be established between the variable to be explained (IC-VD) and the potential explanatory variables (BE and CSR).

4.1 Descriptive analysis
Sections A and B, as figuring in Table 7, provide the descriptive statistics characteristics concerning the continuous and dichotomous variables under investigation. Section A depicts mean, standard deviation, minimum and maximum relevant to the continuous variables, whereas Section B provides the frequency of the dichotomous variables; globally speaking, the sample seems to be evenly distributed.

Starting with the analysis of Section A in Table 7, the descriptive analysis provides evidence that the mean level of IC-VD (DISC_SCO) is 0.59; this score is high with respect to the Maaloul and Zeghal (2015) reached index (0.46), relevant to a sample of US companies in 2013. Moreover, the current sample encloses firms that should also tend to improve their informational capacity related to IC.

The BE score (ETH_SCO) has a mean value of 0.608. Most companies in the sample tend to be more involved in BE activities.

The CSR scores range from a minimum of 0.15 to a maximum of 0.95, with a mean of 0.698. A higher CSR score denotes that the company displays a better CSR performance (Hassan and Guo, 2017).

Variable	Code	Measure	Source
Dependent variable			
Proxy for IC-VD ("DISC_SCORE")			
VD of IC	DISC_SCO	Composite index of IC-VD calculated as combination of business elements	Annual reports
Independent variables			
Corporate ethics			
BE	ETH_SCO	The scores provided by the Ethisphere Institute represent the firms' level of moral development or BE	Ethisphere (2015)
CSR	CSR_INDEX	CSR is a composite index calculated as a combination of 40 indicators reflecting the principles of individual and collective social responsibility of each company	Annual reports Dias *et al.* (2017)
Control variables			
Characteristics of the firm and characteristics of the environment of the firm			
Degree of innovation intensity	INVT	Ratio between the research and development costs and the turnover	Ethisphere (2015) Annual reports
Effective tax rate	TAX_PAID	Tax expenses divided by earnings before interest and taxes	Ethisphere (2015) Annual reports
Country level ethics	ETH_COUNTRY	A score ranging from 1 to 7, with 1 indicating a very low level of country ethics, and 7 indicating a very high level of country ethics	World Economic Forum (2015)
Percentage of women on board of directors	WOM_BOARD	Proportion of women on boards of directors	Ethisphere (2015)
Legal system	LEG_SYST	A binary variable that scores 1 if the company belongs to the Anglo-Saxon legal system, and 0 otherwise	The World Bank (2015)
Leverage level	LEVE	Total debts reported to total assets	Annual reports
Pollutant sector	POL_SECTOR	A binary variable that scores 1 if the company belongs to a pollutant sector, and 0 otherwise	Annual reports

Source(s): Authors' calculation

Table 6.
Variables composition summary

As regards the control variables, the following considerations may arise. The intensity of innovation (INVT) displays an average of 0.068, with a minimum of 0 and a maximum of 0.745; whereas the mean level of debt (LEVE) scores 33.3 (that seems an appreciable level of indebtedness), and the effective tax rate (TAX_PAID) exhibits an average of 0.166.

Regarding women's percentage on directors' boards (WOM_BOARD), it has been discovered that, on average, 0.223 of board members are female, with a minimum and a maximum value of 0.10 and 0.429, respectively. Consequently, there is predominance of men in the boards of directors.

As concerns the measure of the level of the country ethics (ETH_COUNTRY), Finland (6.4), Denmark (6.2) and Japan (6) rank as the most ethical, while Spain (3.8), Canada (3.51) and South Korea (0) exhibit the lowest ethical values. This finding is very relevant, affecting the potential influence of the countries' ethical approach on the adoption of IC-VD policies on behalf of enterprises.

From the analysis of Section B in Table 7, highlighting the binary variables related frequencies, as regards the legal system (LEG_SYST) most of the companies in the sample turn out to pertain to the Anglo-Saxon rules (55%). Additionally, concerning the pollutant

Section A. Descriptive analysis of continuous variables					
Variables	N	Mean	St. Deviation	Minimum	Maximum
DISC_SCO	83	0.590	0.130	0.150	0.850
ETH_SCO	83	0.608	0.059	0.481	0.735
CSR_INDEX	83	0.698	0.461	0.150	0.950
INVT	83	0.068	0.107	0.000	0.745
LEVE	83	33.305	15.946	7.050	73.240
WOM_BOARD	83	0.223	0.076	0.100	0.429
TAX_PAID	83	0.166	0.077	0.000	0.483
ETH_COUNTRY	83	5.960	0.867	0.000	6.400

Section B. Frequencies (%) for binary variables		
Variables	Class	Percentage
LEG_SYST	0	45
	1	55
POL_SECTOR	0	51
	1	49

Source(s): Authors' calculation

Table 7.
Descriptive analysis

sector variable (POL_SECTOR), 51% of the companies in the sample appears to belong to nonpolluting sectors.

4.2 Correlations analysis

The Pearson coefficients were computed to examine the associations between the independent variables. According to Gujarati (2004), if the pair-wise comparison between two independent variables is over 0.8, serious multicollinearity exists.

The maximum pair-wise value in the current investigation is 0.2649 (cf. Table 8); thus, multicollinearity should not be a concern for the regression analysis. Nonetheless, the null hypothesis of autocorrelation can be accepted because the explanatory variables are weakly correlated with each other, indicating that autocorrelation is not a problem. Table 8 presents all the correlation coefficients between the various explanatory variables that have been adopted in the empirical model.

The intercorrelations for all the explanatory variables have been examined by applying the variance inflation factors (VIF) analysis, which revealed no sign of multicollinearity. In fact, the VIF values corresponding to all the independent variables ranged from 1.05 to 1.47, very far below the acceptable upper bound of 10 (Hair *et al.*, 2006).

The VIF values have been reported for each regression to demonstrate the model stability. Finally, both tests suggest that the regression estimations are not degraded by the presence of multicollinearity.

4.3 Regression analysis

The empirical results reveal that 32.5% of the variation for the level of IC-VD is explained by BE, CSR and control-related variables (cf. Table 9). As per Fisher's (F) statistics, equal to 2.8, the model's reliability is confirmed at a significant threshold lower than 0.01, and consequently, we tend to reject the null hypothesis, and assume that regression has significant potential to exist.

As expected, the empirical findings, even though with not definitive statistical values, in accordance with the exploratory nature of the research, show some evidence about supporting the research hypotheses (H1 and H2), as further analyzed in detail. Thus, it can be

Variables	INVT	TAX_PAID	ETH_SCO	ETH_COUN	WOM_BOA	CSR_IND	LEG_SYST	LEVE	POL_SECT	VIF
INVT	1									1.17
TAX_PAID	0.0818	1								1.05
ETH-SCO	0.0260	0.0783	1							1.06
ETH-COUNTRY	0.0892	0.0797	0.0634	1						1.11
WOM_BOARD	-0.0429	-0.1086	0.0763	0.0405	1					1.42
CSR_INDEX	-0.1057	-0.0680	0.0391	-0.1072	0.1213	1				1.05
LEG_SYST	-0.0155	-0.0005	-0.1921	-0.1865	-0.4703	-0.0874	1			1.47
LEVE	-0.2621	-0.0420	-0.0283	0.0606	0.1260	0.0223	0.0124	1		1.15
POL_SECTOR	0.2649	0.1448	-0.0402	0.1578	-0.0589	-0.0086	-0.1323	-0.1938	1	1.17

Source(s): Authors' calculation

Table 8.
Correlation coefficients
and VIF test

Variables	Coefficients	T-student	Significance
Constant	0.346*	1.85	0.069
ETH_SCO	0.485**	1.99	0.045
CSR_INDEX	0.116***	3.28	0.002
INVT	0.455*	1.76	0.084
TAX_PAID	−0.173	−0.81	0.420
ETH_COUNTRY	0.007	0.66	0.512
WOM_BOARD	−0.136	−0.59	0.559
LEG_SYS	−0.078**	−2.07	0.043
LEVE	0.001	0.18	0.861
POL_SECTOR	−0.056*	−1.70	0.091
Model statistics	$R^2 = 0.325$		
	R^2 Adjusted $= 0.209$		
	$F = 2.800$ (Sig. $= 0.0068$)		

Note(s): *, ** and *** represent significance at 0.1, 0.05 and 0.01, respectively
Source(s): Authors' calculation

Table 9.
Results of the multiple
linear regression model

concluded that the model is statistically significant and somehow fruitful for exploring the phenomenon under investigation.

4.3.1 Empirical evidence on BE impacting IC-VD (H1). This hypothesis has been assumed to verify whether the ethical behavior of the companies under analysis positively influences the level of VD of IC: examination of the statistical tests (beta coefficient, *t*-test and *p*-value) shows that this variable has a positive and significant effect on the VD of IC. Indeed, the study of causal relationships shows that the coefficient associated with the link between BE and IC-VD is positive (0.485) and statistically significant (the value of the associated *t* is 1.99 with $p = 0.045$), corroborating the hypothesis predictions (H1).

It could be noted the existence of some similarity between these findings and those published by Wirth *et al.* (2016). In addition, the results show that divergence of interests and information asymmetry are issues that hinder the success of the enterprise (Rubinstein *et al.*, 2001); similarly, the rigidity of the corporate governance system could also prevent managers from disclosing information about IC.

The problems of moral hazard and adverse selection are obvious; nevertheless, the results found in this study show that the abovementioned risks are not constraints that prevent the company from disclosing information on IC. These results turn out to be in-line with those reported by Goel and Ramanathan (2014).

As a further result, the company's commitment in the BE process is a trigger for improving VD of IC, corroborating the results found by Areal and Carvalho (2012) on a sample of the most ethical companies in the world, as these companies can have advantages over others because of three distinct effects, namely, culture, diversity and reputation. This attitude positively influences the level of IC-VD, suggesting for example that these companies may benefit from special protection in the event of a crisis.

4.3.2 Empirical evidence on CSR impacting IC-VD (H2). This hypothesis has assumed that CSR has a positive influence on the level of VD of IC. The statistical tests analysis shows that this variable positively and statistically influences the VD of information.

The estimated coefficient of CSR_INDEX is positive and statistically significant (0.116, $p < 0.01$), meaning that CSR influences the VD of the IC. This corroborates the hypothesis predictions (H2).

These results turn out to be in-line with those reported by Branco and Rodrigues (2008) and Dias *et al.* (2017). In this respect, CSR is positively interpreted by the various stakeholders

via its effect on the decisions made by the company's organs and on the cognitive and mental patterns of the managers as well as on the legitimacy of the decisions (Fontana *et al.*, 2019).

Likewise, these results align perfectly with the conclusions about the legitimacy of the company's managers (Bond *et al.*, 2016). Thus, in some cases, and more specifically those based on the postulates of the agency theory, the manager who engages in specific activities related to CSR seems to reduce asymmetric information adopting these actions.

Indeed, the current findings support the view suggesting that VD of information about IC is sustained by CSR, in a mutual influence. Nevertheless, the commitment of the company in the activities of social responsibility, also when impacting IC-VD, is an asset that improves the confidence of investors in the business in the long run (Saeidi *et al.*, 2015).

These results show the potential existence of a link between CSR and socially responsible disclosure and therefore, the transparency of information. Indeed, as shown by Su (2014), engagement in social responsibility is a form of commitment to sustainable development and integration into VD that is needed for the most innovative companies.

In addition, as indicated by Garcia-Sanchez *et al.* (2016), the company's commitment to social responsibility activities may affect the level of VD and promote financial transparency. Therefore, engagement in social responsibility activities could be dominated by a strategy of transparency and reliability, which may have significant impact on IC-VD.

4.3.3 Complementary considerations. Regarding the control variables, not all the related coefficients show the expected signs. The degree of innovation intensity (INVT) is positively and significantly associated ($p < 0.1$) with VD of IC: this finding suggests that the most innovative firms worldwide have adopted more VD practices about IC; in fact, innovative firms are often under greater pressure from the part of investors and financial analysts to disclose IC relating information.

In addition, the influence of pollutant sector (POL_SECTOR) turns out to be negatively and significantly correlated ($p < 0.1$) with the IC-VD, as expected. Similar confirmation can be found also as concerns the ethical level of the country (ETH_COUNTRY), positively associated with IC-VD.

However, the legal system relevant to each country (LEG_SYST) seems to be involved in controlling the corporate transparency, but this variable appears to be negatively correlated and statistically significant ($p < 0.05$) with IC-VD. Most probably, and differently from what expected, stricter legal system may stimulate in reinforcing potential conflicts of interest and information asymmetry.

Similarly, the percentage of women on boards of directors and the level of indebtedness present directions that are contrary to what expected. Globally speaking, these potential contradictions about the control variables estimations suggest caution and confirm the initial assumption about the exploratory nature of the research.

5. Theoretical and practical implications

The overall results of the research show some applicative potential. From a scientific point of view, essentially, the study helps highlighting the persistence of several connections associating corporate ethics and the extent of IC-VD, within a context characterized with a new tendency of the companies to be responsible in this respect. From a managerial point of view, furthermore, the current study can be useful to promote the implementation of BE and CSR-related strategies, enabling to protect majority or minority shareholders through an enhanced high-quality disclosure of IC.

Ethically, nevertheless, companies should allot greater engagement about the necessity and importance of transparent and reliable communication helping reflecting the firm's true image (Mathuva *et al.*, 2017). In this respect, financial transparency constitutes a necessary condition for the effective promotion of a firm involved in ethical and socially responsible

behaviors, and with this regard, several studies have acknowledged that global ethics, as engraved within the organizational culture, has a remarkable impact on the development of VD, and specifically on the various components of IC (Luthan *et al.*, 2016).

For example, Rezaee *et al.* (2020) have stressed the promotion of ethical standards within the company to improve the quality of disclosed information. Indeed, it has been recently discovered that the companies envisaging to promote ethical behaviors are called upon to adopt a rather intensive disclosure policy regarding their IC characteristics: in other words, the quality of disclosed information about IC contributes to outline the social legitimacy (Slack and Munz, 2016).

The quality of information disclosed about the company's IC as based on corporate ethics should necessarily help improving the confidence of the user of the information, while enhancing the firm's social legitimacy. In this context, Su (2014) has found that companies involved in stakeholders' ethical issues can gain a competitive advantage and higher performance attracting excellent employees, as concerns human capital, and enhancing the brand image, as concerns relational/social capital (Pedrini, 2007).

The VD program is an organized process that abides by specific rules conforming to the company's social approach and the executive's behavior. In this respect, the agency theory helps only partially reflecting the reality of the company, as it outlooks other aspects of the business value, especially within the new context of the knowledge-based economy (Long Kweh *et al.*, 2014).

More particularly, managers are representative agents that rationally respond to the firm's economic stakeholders and the control mechanisms/contractual motivations (Bamber *et al.*, 2010). Yet, the enterprises' decision-makers are not interchangeable, and companies' actions are a reflection of the values, skills and cognitive competences of the human capital (Rodriguez Perez and de Pablos, 2003); thus, as an organizational option, VD is rather potentially dependent on other considerations than on just the firm's environmental characteristics.

Moreover, the process of communication is complex, as it involves judgments and arbitrations that account for the various constraints relating to the environment of the company, and managers act on the basis of their personal interpretations of the strategic situations they encounter. These interpretations are therefore based also on the individual and organizational values that the manager enjoys (López-González, 2019).

To this end, the theory of planned behavior has been considered as means whereby the disclosure decision about IC could be influenced by several attitudes about BE and CSR. Indeed, it helps understanding a certain behavior in individual's psychological processes, as subjected to various influences, particularly to ethical and social factors.

Like any other behavior, information disclosure about IC also rests on perceived opportunities as well as probable outcomes, as entirely based on managers' values and proper knowledge. Moreover, the generated and disseminated information highly depends on the capacity of the company's information systems not only in terms of quantity but also in terms of growth and ability to account for the needs issued by parties that are external to the company, along with other organisms' requests, ever more with respect to IC.

At even more practical level, the reached findings appear to provide effects for global regulators and policymakers intending to install social reporting standards. They may provide ground that institutional and/or cultural factors affect top management's social reporting behavior or ethical/social values more in general, influencing the quality of published information about IC.

6. Research limitations and future avenues

The study shows several constraints, and two seem quite relevant. First, the research sample corresponds to firms without homogeneous characteristics, especially with regard to their

pertinence to two different legal systems (the selected sample encloses several countries with two distinct legal system assumptions), probably affecting the companies' behaviors in terms of VD (mandatorily for sure); for this reason, it seems very desirable to control more thoroughly the legal system's effect, for example, subdividing further research samples into subsamples on the basis of the legal system pertinence. Furthermore, it could be useful to implement a comparison of the investigated model between companies pertaining to civil law or common law, since the legal system directly influences the accounting system, and then, the quality of the financial information.

Second, this finding appears to demonstrate that VD depends highly on corporate culture rather than the respective countries' accounting culture: this should also highlight that IC-VD stands as a form of socially responsible behavior, or an outcome of ethical behavior regarding the entirety of partners, more than mere legal constraint. Thus, further research on cross-cultural management influence could be useful, along with longitudinal analyses that could support major reliability of the global research.

7. Conclusion
This study has explored the impact of BE and CSR on the process of IC-VD, concerning a sample including 83 of the most ethical companies in 2015 in the world. Among the research motivations, it is to highlight that very few empirical studies appear to demonstrate the persistence of a relationship between ethical and social approaches and IC-VD: attempting to fill such a noticeable gap, the current study has been conducted to investigate, empirically, the relationship binding both variables.

Findings support arguments that companies with ethical behaviors and socially responsible practices appear to be highly committed to VD about their IC. It could follow, therefore, that IC-VD can also be considered as a form of ethical and socially responsible behavior.

The results achieved in this research afford empirical evidence as to the extent of external disclosure practices in the global context, also considering ever more frequent interfirm networks, providing useful means for investors seeking profitable investment opportunities and for financial report users, acting as operative orientations of knowledge management and IC strategy (Del Giudice and Maggioni, 2014). In this respect, an ethical behavior (structural capital), influenced by personal values (human capital), affects IC-VD and then, practically, also the relational/social capital of the organization.

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