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HOW DOES BOARD'S DIVERSITY INFLUENCE THE ADOPTION OF BEST PRACTICES WHEN PREPARING INTEGRATED REPORTS?

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Abstract

The integrated reporting (<IR>) is proposed by the International Integrated Reporting Council (IIRC) and aims to provide a complete picture of the organization, communicating about its process of value creation in short, medium and long term. Given the influence of corporate governance on corporate disclosure and the key role of the companies' board of directors in managing the disclosure of a wide range of information, the present study aims to analyze how some board diversity characteristics may influence the higher recognition of integrated reports, distinguishing between <IR> reference reports and <IR> regular reports.

This study comprises the integrated reports extracted from the IIRC Examples Database and the analysis consists in two phases. The first phase considers the entities that are listed and unlisted on a stock exchange, and the sample consists in 377 <IR> reporters. The second phase consists in a subsample of the first one, considering only the entities that are listed on a stock exchange, consisting in 344 <IR> reporters.

The results show that the characteristics that influence positively the recognition of the integrated reports, regardless of the entity being listed or unlisted on a stock exchange, are: (i) the size of the board; (ii) the proportion of non-executive directors; and (iii) the proportion of women directors. In turn, the role duality of the chief executive officer (CEO) negatively influences the recognition of integrated reports. However, this influence only occurs in the first phase of the analysis, considering listed and unlisted entities. Regarding the experience of the directors of the board, the results show that this variable is not relevant to explain the recognition of the integrated reports.

Key Words: Integrated reporting; IIRC Examples Database; board characteristics; board diversity.

JEL classification: G34, M41

Resumo

O relatório integrado (<IR>) é proposto pelo *International Integrated Reporting Council* (IIRC) e visa fornecer uma visão completa da organização, comunicando sobre o seu processo de criação de valor a curto, médio longo prazo. Dada a influência do *corporate governance* na estratégia de divulgação das empresas e o papel fundamental do conselho de administração no gerenciamento da divulgação de uma ampla gama de informações, o presente estudo tem como objetivo analisar a forma como algumas características da diversidade podem influenciar o maior reconhecimento de relatórios integrados, distinguindo entre relatórios de referência e relatórios regulares.

Este estudo compreende os relatórios integrados extraídos da base de dados do IIRC, e a análise consiste em duas fases. A primeira fase considera as entidades que são cotadas e não cotadas numa bolsa de valores, e a amostra consiste em 377 <IR> *reporters*. A segunda fase consiste numa subamostra da primeira, considerando apenas as entidades que estão cotadas numa bolsa de valores, consistindo em 344 <IR> *reporters*.

Os resultados evidenciam que as características que influenciam positivamente o reconhecimento dos relatórios integrados, independentemente de a entidade ser cotada ou não cotada numa bolsa de valores, são: (i) o tamanho do conselho; (ii) a proporção de administradores não-executivos; e (iii) a proporção de mulheres no conselho. No que respeita à dualidade de funções do CEO, tem uma influência negativa no reconhecimento dos relatórios integrados. No entanto, essa influência apenas se verifica na primeira fase da análise, considerando entidades cotadas e não cotadas. Em relação à experiência dos diretores do conselho, os resultados mostram que essa variável não é relevante para explicar o reconhecimento dos relatórios integrados.

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Index

Tables' Index

Acronyms

A4S	Prince's Accounting for Sustainability Project
ACCA	Association of Chartered Certified Accountants
AICPA	American Institute of Certified Public Accountants
CEO	Chief Executive Officer
CSR	Corporate Social Responsibility
ESG	Environmental, Social and Governance
GRI	Global Reporting Initiative
IASB	International Accounting Standards Board
IFAC	International Federation of Accountants
IIRC	International Integrated Reporting Council
<IR>	Integrated Reporting
IRQ	Integrated Reporting Quality
JSE	Johannesburg Stock Exchange
NGO	Non-governmental Organization
OECD	Organization for Economic Co-Operation and Development
SIC	Standard Industrial Classification

1. Introduction

The current economic context, characterized by globalization and an increasingly competitive environment, leads companies to diversify their responsibilities to any stakeholder and to society (Laptes & Sofian, 2016). This idea is emphasized by Morros (2016), who stated that companies must now report to a broader audience than shareholders, themselves often looking beyond numbers too, and speak to several categories of stakeholders. All of them expect more than accounts, financial and business indicators, and want to know why, where and how companies create and add value, and how they deal with responsibility and sustainability issues.

Company reports need to adapt to the constant changes through economic turmoil, new regulatory initiatives, and new business priorities over time (ACCA, 2013). While more and more companies are disclosing sustainability and corporate social responsibility (CSR) information, there is still little connection between such information and financial information. Over the past years there has been a growing concern with sustainability and corporate responsibility issues, both as such and in corporate reporting (Morros, 2016). These issues are one of the biggest requires of stakeholders, who, in addition to financial information, want to know the effects of companies' activities on the environment (Roxana-Ioana & Petru, 2017). Thus, integrated reporting (<IR>) has emerged, which combines traditional financial information with sustainability and corporate responsibility issues, enhancing the usefulness of corporate reporting to all stakeholders (Velte & Stawinoga, 2017).

The International Integrated Reporting Council (IIRC) proposed the integrated report, as an evolution of corporate reporting, focusing on conciseness, strategic relevance and future orientation. Integrated reporting represents the new frontier of external corporate reporting (Gianfelici et al., 2016), seen as the next step in evolution of corporate reporting (Cohen & Simnett, 2015).

Research on integrated reporting has been emerging, but gaps still exist. Considering the previous studies in the field of integrated reporting, a gap was noted related with the relationship between integrated reporting and corporate governance, more specifically in the way that the characteristics of diversity of boards of directors influence the best practices in doing a well-recognized integrated report. The diversity of the board of directors is a very current issue in corporate governance research (Bing &

Amran, 2017). In this way, this study intends to contribute and fill this gap in the literature.

This study aims to analyze the relationship between certain specific characteristics of the board of directors and the production of integrated reports of high recognition, contributing to a better understanding of the factors that influence a report to be considered as a reference, instead of a regular report. The characteristics to be covered in detail are board size, board independence, gender diversity, role duality and board experience.

The sample covers entities all over the world that prepare integrated reports, being considered as <IR> reporters, whose reports are included in the IIRC Examples Database. These integrated reports were extracted from the IIRC Examples Database and are classified, by the IIRC, into two sub-groups of entities: those classified as <IR> reference reporters and those as <IR> regular reporters. The analysis of this study is done in two phases. The first phase consists in all the <IR> reporters regardless of being listed on a stock exchange, including listed and unlisted entities in a total of 377 <IR> reporters. The second phase is a subsample of the previous one, consisting only in the entities that are listed on a stock exchange, and this subsample is composed of 344 <IR> reporters.

Main findings indicate that the characteristics that most influence positively the recognition of the integrated reports are the board size, the independence of the board and the gender diversity, which means that larger boards of directors, boards with more non-executive directors and boards with more women as directors are likely to produce integrated reports of higher recognition. These findings are consistent in both samples used. The main results suggest that the fact that an entity is unlisted on a stock exchange has no impact on the influence of diversity of the boards in the recognition of the integrated reports. On the other hand, the role duality of the chief executive officer (CEO) has a negative influence on the recognition of integrated reports. This conclusion is only verified when analyzing simultaneously listed and non-listed entities, and this variable loses its significance when considered only the listed entities. Board experience is never statistically significant, so there is no relationship of this variable and the recognition of the integrated reports.

The remainder of the dissertation is organized as follows. The succeeding section (section 2) presents a review of the literature on the integrated reporting, on the

framework for corporate governance and on the characteristics of diversity of the board of directors. Next, are presented the development of hypotheses, supported by the existing literature. Section 3 describes the research design, namely, the data and the sample, as well as the research models. Section 4 analyses and discusses the empirical results. Finally, section 5 presents the concluding remarks.

2. Literature review and hypotheses development

2.1. What is integrated reporting?

The definition of integrated reporting is given by the International Integrated Reporting Council (IIRC), who defined it as a process that results in a periodic integrated report by an organization, about how its strategy, governance, performance and prospects lead to the creation of value over the short, medium and long term (IIRC, 2013).

Companies are requiring an evolution in the reporting system, facilitating the communication to stakeholders without the complexity of current reporting requirements. According to IIRC, integrated reporting has been created to enhance accountability, stewardship and trust, and harness the information flow and transparency of business that technology has brought to the modern world.

Integrated reporting is an emerging international corporate reporting initiative to address limitations to existing corporate reporting approaches (Zhou et al., 2017), with a focus on conciseness, strategic relevance and future orientation. Integrated reporting requires an integrated thinking within the organization, enabling a better understanding of the organization's ability to create value over time. Integrated thinking is defined by IIRC as "the active consideration by an organization of the relationships between its various operating and functional units and the capitals that the organization uses or affects" (IIRC, 2013: 2). Integrated thinking implies a change of thinking within the company, shifting its focus to aligning profit maximization with environmental and social issues (Adams, 2015), leading to better integrated decision-making and actions in view to the creation of value over the short, medium and long term.

The traditional financial report alone is no longer enough to meet the needs of all stakeholders, neither to provide a full picture of the company (Roxana-Ioana & Petru, 2017). Integrated reporting aims to add to the current financial reporting model additional information about a company's strategy, governance and performance. In order to provide a full picture of the company, integrated reporting has been progressively adopted by companies, since the concern with environmental, social and governance (ESG) issues has been gaining importance.

The concern with ESG issues was first introduced by sustainability reporting, being in the origins of integrated reporting. According to Global Reporting Initiative

(GRI), a sustainability report is a report published by a company or organization about the economic, environmental and social impacts caused by its everyday activities. A sustainability report also presents the organization's values and governance model and demonstrates the link between its strategy and its commitment to a sustainable global economy. Companies have started formal reporting of their sustainability-related activities through the sustainability report, which is a stand-alone report that pretend to supplement the financial information of annual reports. However, this separation of disclosure has led to some criticism, because seems that the non-financial information is not considered with the same priority and relevance as financial information (Pavlopoulos et al., 2017). In fact, Eccles & Serafeim (2014) showed some concerns related to sustainability reports, and they defended that this stand-alone report tends to be published with a lag of several months compared to financial reports, and the information contained in them is rarely presented in the context of the business model and the strategy of an organization. This makes it difficult for investors to understand how ESG performance related to financial performance and how sustainability issues affect the value creation process in an organization. Integrated reporting aims to enhance corporate reporting by emphasizing interconnections between different types of information currently reported in stand-alone reports (Zhou et al., 2017).

According to IIRC (2013), an integrated report aims to benefit all stakeholders that are interested in the creation of value of an organization, including employees, customers, suppliers, business partners, local communities, legislators, regulators and policy-makers. Therefore, an integrated report integrates a stakeholder-oriented approach. Instead of focusing exclusively on financial shareholders and debt holders, requires a bigger focus on requirements and inputs from a wide range of financial and non-financial stakeholders (Smith, 2015). These two groups of stakeholders have a great interest in the decisions of companies and wish to receive information regarding firms' behavior (Fuente et al., 2017).

The IIRC was formally established in August 2010 by the collaboration of two organizations, the Prince's Accounting for Sustainability Project (A4S) and the GRI, and consists in a global coalition of regulators, investors, companies, standard setters, the accounting profession and non-governmental organizations (NGOs). This coalition is seeking to promote communication about value creation, making it the next step in the evolution of corporate reporting (IIRC, 2013). The council of IIRC includes a wide set of

groups working together and comprises 67 members. These members have leading roles in regulatory bodies such as the International Accounting Standards Board (IASB) and the American Institute of Certified Public Accountants (AICPA); international accounting bodies like the International Federation of Accountants (IFAC); Big 4 accounting firms such as Deloitte, EY, KPMG and PwC International; international organizations with sustainability agenda like the GRI; international bodies such as The World Bank; organizations such as Microsoft and Nestlé; investment groups and academics such as Professor Mervyn King, chairman of the IIRC and Professor Robert Eccles from Harvard Business School (IIRC, 2013; Cheng et al., 2014).

To put in practice the main objectives of integrated reporting, IIRC released, in 2011, a Discussion Paper - "Towards Integrated Reporting – Communicating Value in the 21st Century" - to receive feedback about their concept of integrated reporting. After that, in April 2013 released the Consultation Draft of the International <IR> Framework and, in December 2013, the IIRC published the International <IR> Framework (Cheng et al., 2014).

The International <IR> Framework is a voluntary principles-based document, establishing a set of guiding principles and content elements that guide the overall content of an integrated report and explain the fundamental concepts that underpin them (IIRC, 2013). By producing this framework, IIRC does not intend to prescribe a structure that companies should follow strictly, but rather to suggest a set of elements and principles that guide companies to produce their integrated reports (Roxana-Ioana & Petru, 2017).

To better understand the process of value creation, IIRC defines some fundamental concepts, such as the capitals that a company uses and affects, the value creation for the organization and for others and the company's business model. According to IIRC, the capitals contribute to the success for all organizations, and the six capitals are: financial (the source of funds), manufactured (the manufactured physical objects), intellectual (the organizational intangibles), human (the people's competencies and experience), social and relationship (relationships between stakeholders), and natural (the environmental resources). The process of value creation is dependent on an organization's business model, which is the system that transform inputs into outputs and outcomes through the business activities of the organization (IIRC, 2013).

South Africa was the first country to require the mandatory regime for integrated reporting, in March 2010, to all listed companies on the Johannesburg Stock Exchange (JSE), on an "apply or explain" approach (Slack & Tsalavoutas, 2018). Following the example of South Africa, integrated reporting is part of the listing demands in Brazil (PwC, 2015; Robertson, 2015), country where companies need to explain why they did not prepare an integrated report. There are also some countries strongly supporting the practice of integrated reporting, such as United Kingdom, Netherlands, Australia, Spain, Singapore, Japan and United States of America (Robertson, 2015).

2.2. Earlier studies in integrated reporting

Research on integrated reporting has been emerging. Because it is a relatively new concept, most of the contribution to the literature in the early stage of integrated reporting were theoretical and conceptual in nature. Some of these theoretical studies had focused on presenting the concept of integrated reporting, debating key issues related to the integrated reporting framework development. Cheng et al. (2014) introduced the concept of integrated reporting, its background from the inception of the IIRC in 2010, discussed issues about the Consultation Draft of the Framework and provided a range of potential further research issues related to the development and implementation of integrated reporting. Morros (2016) also synthetized the meaning of the emerging field of integrated reporting and contributed with issues for future research. Dumay et al. (2016) and Velte & Stawinoga (2017) provided useful reviews of the literature on integrated reporting, by criticizing the research existing to date.

Motivations and benefits for integrated reporting are under research. There are prior theoretical studies in the literature suggesting that the development of an integrated report brings real benefits for the company. According to Eccles & Saltzman (2011), the motivation for adopting integrated report arises from three classes of benefits. The first is internal benefits, including better resource allocation decisions, greater engagement with shareholders and other stakeholders and lower reputational risk. The second is external market benefits, including meeting the needs of mainstream investors who want ESG information, appearing on sustainability indices, and ensuring that data vendors report accurate non-financial information on the company. The third benefit is managing regulatory risk, including being prepared for a likely wave of global regulation,

responding to requests from stock exchanges, and having a seat at the table as frameworks and standards are developed. However, Eccles & Armbrester (2011) argued that the external market benefits are harder to measure because few companies have been practicing integrated reporting at the time. Despite this, they believe that these benefits will grow stronger over time as the company, stakeholders, analysts and investors learn how to use non-financial information. Nonetheless, these benefits were identified at a very early stage of the integrated report, with a low number of companies producing these reports, which make these benefits merely theoretical, leading to the need for further research and for evidence to corroborate them. Some other researchers also present benefits in a theoretical context. For Krzus (2011) there are four critical benefits of integrated reporting. These benefits are greater clarity of the relationship between financial and non-financial information and better decisions, which improve the efficient and effective use of capital and other resources, deeper engagement with stakeholders and lower reputational risk, helping companies to understand the effect of its strategic and tactical choices on society. For Morros (2016), the benefits associated to the integrated reporting are: the emphasis in the need for a long-term planning, encourage thinking about the business model beyond the money flow, focus on creating value across the six capitals, develop a culture of collaboration and getting senior executives and the board involved in considering these reported issues. According to ACCA (2017), a group of participants in an <IR> Business Network identified some benefits from the adoption of integrated reporting. These benefits include more integrated thinking and management within a company, greater clarity on business issues and performance, improved corporate reputation and enhanced stakeholder relationships, greater efficiency of corporate reporting for users and preparers, more employee engagement and improved gross margins.

A strand of research contributed to the literature from a critical perspective by presenting the challenges and deficiencies in the IIRC project. Flower (2015) is one of the most critical, arguing that the IIRC, on his framework, has abandoned sustainability accounting. This author states that the IIRC made a mistake in not obligating companies to report the negative impact of outside sources, such as the environment, and that the IIRC's proposals do not have force enough to have a significant impact on corporate reporting. Based on Flower's study, also Thomson (2015) criticized the IIRC framework, arguing that the current format of the integrated report excluded the sustainability

programmatic, being too rooted in the business case for sustainability rather than the sustainability case for business. In contrast, as a response to the criticism of Flower's paper, Adams (2015) defended that the main purpose of the integrated reporting framework is not addressing the sustainability issues, and this is not a source of weakness.

Other researchers have used a qualitative approach, conducting interviews and surveys to gather information regarding the perception of various stakeholders in the adoption of integrated reporting practices (e.g. Steyn, 2014; James, 2015; Perego et al., 2016; Chaidali & Jones, 2017; Stubbs & Higgins, 2018). Steyn (2014) interviewed the senior executives of listed companies on the JSE in South Africa, where exists a mandatory regulatory regime, regarding the benefits and motivations for preparing an integrated report. This author found that these companies attribute value to the process of integrated reporting primarily from the perspective of their corporate image, investor needs, and stakeholder engagement and relations. James (2015) investigated the accounting majors' perceptions regarding sustainability and integrated reporting, using a survey to a group of accounting majors at a Western Region University. This study pretended to focus on the perceived benefits to multiple stakeholders, the expected scope and type of issues reported, the reporting time frame and the need for high-quality global sustainability and integrated reporting standards. The results showed that overall accounting majors tend to support both sustainability and integrated reporting, and most of the students that participated in this study felt that companies should issue integrated instead of stand-alone reports, contributing to enhance the value and comparability of annual reporting. Stubbs & Higgins (2018) also found evidence in favor of integrated reports rather than sustainability reports. Through an investigation of the preferences of some users of non-financial reporting for regulatory or voluntary approaches, their research's findings underlined that exists more support for voluntary approaches. However, although most of the participants felt that is too early for a regulatory reform, they support mandatory integrated report, arguing that voluntary sustainability reporting has not led to more substantive disclosures or increased the quality of reporting. Through a qualitative analysis to three experts and entrepreneurs of integrated reporting field, Perego et al. (2016) concluded that experts view the field of integrated reporting as fragmented and incoherent, and that companies have weak understanding of the business value of this type of report, but, despite challenges, integrated reporting has been showing a significant progress. Chaidali & Jones (2017), to get an opinion about the IIRC

framework, interviewed a group of preparers, namely corporate managers and design consultants, who influence the production of integrated reports. Their findings showed that most of the preparers are suspicious about the motives of the IIRC professionals, and that the credibility of the integrated report is impaired by the composition of the IIRC board, feeling that the IIRC's reputation is associated with the satisfaction of personal incentives. Moreover, preparers also demonstrated concern with the credibility of a single report, because its non-mandatory nature could be an obstacle for success. They also showed some apprehension with the performance and appearance of the integrated report, its lack of clear guidance and its high preparation costs.

Focusing on the investigation of the adoption of integrated reporting and its practice application in specifically cases, Mio et al. (2016) examined the case of Generali, an Italian insurance company, analyzing how the internal implementation of the integrated reporting principles by this company contribute to their management control system. The authors used multiple sources, namely, interviews, field observations and internal document analysis, and showed that Generali's Internal Integrated Reporting enhance their management control system by increasing connection with strategy and organizational culture, increasing usage of non-financial indicators and contribute with a better understanding of cause-effect relationship. Lueg et al. (2016) developed a case study at a Danish carpet manufacturer company, illustrating how standards and guidelines for CSR can help a company in its <IR> development. The authors suggested that the standardized approaches to CSR can be suitable for internal planning and control, but, to achieve <IR>, companies must go beyond these measurements.

A strand of research has produced empirical studies investigating the impact that integrated reporting may have on the reporting practices of their adopters. Stacchezzini et al. (2016) obtained pessimistic evidences about the ability of this type of report to integrate corporate sustainability management, concluding that companies disclose little forward-looking information about their sustainability actions and do not provide enough information about their sustainability performance when their social and environmental results are bad. These authors did not see the integrated report as the most appropriate accounting mechanism for the creation of ethically correct corporate cultures, and that in some companies the use of integrated reports is a way to opportunistically manage public impressions on corporate behavior. A study performed by Maniora (2017) examined the impact of integrated reporting on the integration of ESG issues into the business model

and the related economic and ESG performance changes. Using data from companies around the world, this author matched companies using integrated reporting with companies applying (i) no ESG reporting, (ii) stand-alone ESG reporting or (iii) ESG reporting in the annual report. Maniora (2017) concluded that companies do not benefit in terms of economic and sustainability performance by switching from stand-alone ESG reporting to integrated reports, arguing that stand-alone reporting leads more attention to ESG issues and increases their awareness among managers, employees and other stakeholders.

Some empirical studies focused on the relationship between integrated reporting and market reaction (Barth et al., 2017; Zhou et al., 2017; Bernardi & Stark, 2018). Barth et al. (2017), using data from South Africa, developed a study around the association between integrated reporting quality (IRQ) and firm value, considering two channels – a capital market channel (reflecting the quality of information provided to capital market participants), and a real effects channel (reflecting the quality of internal decision making). These authors disaggregated firm value into liquidity, cost of capital and expected future cash flows, and found a positive association of IRQ with liquidity and with expected future cash flows, but not with cost of capital. Their results showed a positive association between the quality of the integrated reporting and firm value, which lead the authors to argue that this result is a consequence of both capital market and real effects. Zhou et al. (2017), using a sample of companies listed on the JSE, found that when the level of alignment with the <IR> framework grows, analyst forecast error decreases, and this alignment is associated with a reduction in the cost of equity capital. Bernardi & Stark (2018) studied the investors' perception of the usefulness of integrated reporting, analyzing if the implementation of integrated reporting in South Africa is associated with a change in the relationship between levels of ESG disclosures and analyst forecasts accuracy. These authors theorized that any effect of integrated reporting will be greater the greater is the level of ESG disclosures. They concluded that this level of ESG disclosures is, indeed, a mediating variable in determining the effectiveness of integrated reporting, supporting the idea that the mandatory regime of integrated reports enhances analysts' understanding of the ESG data, and suggested that integrated reporting can provide useful information to capital markets.

Determinants of integrated reporting are one of the first areas of interest in scholarly research. Previous literature has identified determinants at a country level,

which includes legal system, investor protection, economic development and cultural characteristics (Jensen & Berg, 2012; Frias-Aceituno et al., 2013b; García-Sánchez et al., 2013; Vaz et al., 2016), and at a company level, which includes firm size, industry, profitability and growth opportunities (Frias-Aceituno et al., 2014; Sierra-Garcia et al., 2015; Lopes & Coelho, 2018).

At a country level, Jensen & Berg (2012) found that an increase of integrated reporting is influenced by a higher investor protection, stronger market orientation, dispersed ownership structures, higher private expenditures for tertiary education, higher trade union density, and higher national corporate responsibility, a higher level of secular-rational values and higher development level of a country. Likewise, Frias-Aceituno et al. (2013b) suggested that companies located in civil law countries are more likely to publish integrated reports for favoring decision-taking by the different stakeholders. By considering the impact of national cultural system, García-Sánchez et al. (2013) found that companies located in countries with a stronger collectivist and feminist values tend to give more importance to information integration, publishing integrated reports that contain more relevant and comparable information, in view to facilitate decision-taking by stakeholders. These findings are consistent with Vaz et al. (2016), who found significant differences among countries presenting integrated reports, and found evidence that companies in countries with a "comply or explain" approach and in higher collectivist dimension are more likely to disclose an integrated report. These authors stated that this is due to both coercive and normative institutional mechanisms that pressure companies to produce integrated reports.

At a company level, Frias-Aceituno et al. (2014) investigated the effect of industry concentration, together with other factors, in the development of integrated reporting, and found that company size and profitability have a positive impact on the produce of integrated reports but, on the other hand, business growth opportunities and industry are not significant. Sierra-Garcia et al. (2015) analyzed the association between producing an integrated report and some company features, such as year, company size and industry, and the assurance to have a CSR report. Their findings showed that the likelihood of disclosing an integrated report is positively associated to having CSR report assured, year, company's size and if the company follows the GRI supplement industry. Lopes & Coelho (2018) used company and geographic level to distinguish between companies with or without recognized integrated reports.

A number of recent studies are focusing on study the impression management in integrated reports. Melloni et al. (2017) investigated a set of performance determinants to gain insights into the factors associated with conciseness, completeness and balance in integrated reporting, using a sample of <IR> early adopters. Their results showed that in companies with weak financial performance, the integrated reports tend to be significantly longer and less readable (less concise) and more optimistic (less balanced). They also found that companies with weak social performance produce reports that are foggier (less concise) and with less information on their sustainability performance (less complete). Toit (2017) performed a study to investigate the readability of integrated reports to a sample of companies listed on the JSE and used the ranking of EY Excellence in Integrated Reporting Awards, which rates the quality of integrated reports of the top 100 JSE companies. The findings suggested that a complex language used in integrated reports impairs readability, affecting the value of the information to stakeholders. Further, the results from the correlation with the EY Excellence in Integrated Reporting Awards showed that an integrated report is considered of higher quality when is written with more complex language.

2.3. Corporate governance and integrated reporting

After introducing the concept of integrated reporting and the earlier studies related and given that this study examines the influence of board diversity characteristics on the recognition of integrated reports, it is pertinent to introduce the concept of corporate governance.

Corporate governance is an old concept arose from financial crisis and corporate scandals around the world, due to fraud and weak systems of control. These conflicts are related to divergences of interests between the managers and the shareholders, which arises from the separation of management and ownership control (Roxana-Ioana & Petru, 2017).

A most widely-used definition is given by the Cadbury Committee (1992: 14), defining corporate governance as "the system by which companies are directed and controlled". The Organization for Economic Cooperation and Development (OECD) also says that corporate governance consists in "a set of relationships between a company's management, its board, its shareholders and other stakeholders" (OECD, 2004: 11). This

organization further adds that "corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined" (OECD, 2004: 11). Smith (2015) stated that corporate governance is related to the way that managers of an organization manages its affairs and interacts with the external stakeholders necessary to implementing the strategic objectives, and that the managers must be able to examine, rank and compare information against benchmarks and competitive peer groups.

Corporate governance has the role of providing a structure that allows companies to achieve their objectives, from action plans and internal controls, performance measurement and corporate disclosure. This influence of corporate governance on corporate disclosure arises from the role of the board of directors in deciding what should be disclosed in annual reports, managing the disclosure of a wide range of information that will have an impact on capital providers (Hurghis, 2017). According to Harjoto et al. (2015), boards of directors have an important role in overseeing the creation and execution of management's plans to balance the interests of multiple stakeholders, acting as representatives of shareholders.

Disclosure of voluntary information has been becoming an increasingly common and fundamental task for any company, so thus it is important to explore the factors that influence the decision to prepare these voluntary reports. Allegrini & Greco (2013) argued that voluntary disclosure may be considered a critical device to moderate the information asymmetry between different types of shareholders. According to Fasan & Mio (2016), the board of directors plays a crucial role in influencing company disclosure. These authors also argued that, from the agency theory perspective, company disclosure is one of the main tools used to harmonize the interests of managers and shareholders. From a stakeholder theory perspective, the board is responsible for balancing the interests of all stakeholders and safeguarding their interests. Among other means, this can be achieved through the dissemination of information (Frias-Aceituno et al., 2013a).

The relationship between corporate governance and board diversity is a relatively new topic (Bing & Amran, 2017). According to Prado-Lorenzo & Garcia-Sanchez (2010), diversity is a characteristic that refers to the board of directors of an organization, characterized by the existence of differences on its members' traits. Therefore, diversity in boards of directors contributes to a greater variety of backgrounds and knowledges, implying different points of view that lead to better strategic decision making (Pechersky,

2016). Rao & Tilt (2016) stated that the diversity of board members provides broad and heterogeneous perspectives to the decision-making process, which is crucial for voluntary and more complex decisions.

Some researchers looked to the relationship between board characteristics and the production of integrated reporting. Frias-Aceituno et al. (2013a) examined the influence of some board of directors' characteristics in the degree of information integration and they found that board size and gender diversity are the most influential factors in the decision to disclosure integrated information, but greater independence of the board does not seem to contribute positively to the integration of corporate information. These results suggested that larger boards positively contribute to the integration of the various reports made by their companies, whether mandatory or voluntary, due to the greater diversity of backgrounds of directors and their experience.

Hurghis (2017) investigated whether the production of an integrated report might be influenced by the characteristics of the company's board of directors. To perform the study, the author used a sample of the integrated reports of the IIRC Examples Database and constructed a disclosure index based on the <IR> Framework. The board characteristics considered were board size, the percentage of independent non-executive directors, CEO gender, CEO duality, the existence of a CEO change during that year, and gender diversity. However, the conclusions were that only the size of the board have an influence on the extent to which the issued integrated report is in accordance with the international <IR> Framework, arguing that one possible reason for these results is because the <IR> Framework is not mandatory for all the companies.

Pavlopoulos et al. (2017) investigated the relationship between integrated reporting disclosure quality and corporate governance mechanisms. The authors constructed an integrated disclosure score index in accordance with the degree of compliance with integrated reporting disclosures, and used various board characteristics, such as independence, duality and diversity. Their findings showed that these board characteristics increase the quality of accounting information. Moreover, they also concluded that the higher the percentage of independent directors on boards, the greater is the alignment of integrated reporting with disclosure principles, and more likely to be in accordance with the IIRC framework.

Buitendag et al. (2017) investigated the impact that entity's characteristics can have on the quality of their integrated reports based on an annual survey by EY about the quality of the integrated reports of the top 100 listed companies on JSE. Their results for the corporate governance characteristics showed that companies with more women directors and directors of color provided better integrated reports, adding that these companies also tend to have a fewer number of executive directors on their board of directors.

Despite the existence of a few number of studies on the influence of board characteristics on the production of the integrated reports, it is a subject that has not yet been deeply studied. In addition, the IIRC database distinguishes the integrated reports that are of superior recognition and consequently considered as a leading practice. So far, no study has examined how the diversity characteristics of boards can influence the best practices of integrated reporting. In this way, this study intends to fill this gap in the literature, investigating if some characteristics of diversity contribute to a report presenting a higher recognition.

2.4. Hypotheses development

The present section develops the main hypothesis of investigation of this study and the respective sub-hypotheses, exposing the different perspectives in the existing literature about the characteristics under study.

The main objective of this study is to analyze the effect of different characteristics of diversity on boards of directors - board size, board independence, gender diversity, role duality and board experience - on the recognition of integrated reports, distinguishing between <IR> reference reports and <IR> regular reports. This objective is reached by the following research hypothesis:

H_1: *There is an association between board diversity and the higher recognition of the integrated reports.*

The hypothesis H_1 is tested in two samples: sample 1, consisting in all the entities considered as <IR> reporters regardless of being unlisted in a stock exchange; sample 2, which is a subsample of the sample 1, and consists only in the <IR> reporters that are listed in a stock exchange.

Board diversity is measured through board size, board independence, gender diversity, role duality and board experience, and included in the hypothesis H_1, as independent variables. Each variable, detailed in the following lines, is firstly tested, in the form of sub-hypothesis of the main hypothesis H_1.

Board size

According to Pechersky (2016), diverse and larger boards contribute with different backgrounds that provide broader perspectives in controlling area. There are some empirical studies suggesting a positive association between the size of the board and voluntary disclosure (e.g. Akhtaruddin et al., 2009; Allegrini & Greco, 2013; Samaha et al., 2015), and others that found no association between both variables (e.g. Cheng & Courtenay, 2006).

For Janggu et al. (2014), board size is the strongest determinant of sustainability disclosures, what implies that the larger the board, the greater the influence on sustainability issues. Furthermore, Akbas (2016) analyzed the relationship between some board characteristics and the extent of environmental disclosures in annual reports of Turkish companies and found that only board size is positively related to environmental disclosures. Jizi et al. (2014), using a sample of american commercial banks, suggested a positive association between board size and CSR disclosures. Handajani et al. (2014) showed that board size is positively associated with corporate social disclosure on Indonesian companies.

Therefore, based on the above conclusions and following that larger boards have a positive influence of the production of integrated reports with a higher recognition, the following hypothesis is expected:

H_{1a}: *There is a positive association between the size of the board of directors and the higher recognition of the integrated reports.*

Board independence

Independent directors have the role to monitor management actions and to take decisions that best serve the interests of shareholders (Fama & Jensen, 1983). According

to Mahmood et al. (2018), the presence of independent directors on a board is a key element for the corporate governance, due to their role in monitoring and controlling management of the company.

Some previous studies suggest a positive association between the proportion of independent directors on the board and voluntary disclosures (e.g. Cheng & Courtenay, 2006; Lim et al., 2007; Donnelly & Mulcahy, 2008; Akhataruddin et al., 2009; Samaha et al., 2015). In fact, Lim et al. (2007) defended that boards with a majority of independent directors discloses more forward looking quantitative and strategic voluntary information and Donnelly & Mulcahy (2008) stated that companies with a non-executive chairman provide greater voluntary disclosures than other companies. Furthermore, Herda et al. (2012) found that companies with more independent directors are more likely to publish stand-alone sustainability reports and even to publish higher quality sustainability reports. Jizi et al. (2014) analyzed the impact of board of directors on the quality of CSR disclosure and found a positive association between both variables, as well as Fuente et al. (2017), who found that more non-executive directors on the board contribute to improve the CSR information disclosed according to the GRI. On the other hand, Allegrini & Greco (2013) did not find any association between the proportion of independent directors and voluntary disclosure. Haniffa & Cooke (2005) found that the presence of more non-executive directors on boards does not have a significantly influence on CSR disclosures. Michelon & Parbonetti (2012), Janggu et al. (2014) and Mahmood et al. (2018) found no association between board independence and sustainability reporting, and Frias-Aceituno et al. (2013a) concluded that more independent directors does not seems to contribute to the integration of corporate information.

Considering the findings of previous studies and following that a higher proportion of independent directors on boards contribute to produce integrated reports of higher recognition, the next hypothesis is expected:

H_{1b}: *There is a positive association between the independence of the board of directors and the higher recognition of the integrated reports.*

Gender diversity

Gender diversity became a widely recognized characteristic of board diversity (Mahmood et al., 2018), being one of the most important factors in the integrated dissemination of information (Frias-Aceituno et al., 2013a). The differences in the companies' board of director's decisions are due to its gender composition (Fernandez-Feijoo et al., 2014).

One of the issues the literature has explored widely is whether the presence of women on the board of directors has an impact on board performance and, consequently, on voluntary disclosures. According to Konrad et al. (2008), having one or two women on a board of directors is insufficient for change to happen, defending that three or more women may be more beneficial for creating change. In this sense, Fernandez-Feijoo et al. (2014) found that in countries with a higher proportion of boards with at least three women, the levels of CSR reporting are higher, and that countries with a more gender equality tend to have more companies with boards of directors with at least three women. Dienes & Velte (2016) studied the influence of board composition of the CSR reporting on the German two-tier system and found evidence that gender diversity has a positive impact on CSR disclosures. These authors stated that women can deliver new input to improve CSR activities as well as respective performance. Moreover, Setó-Pamies (2015) highlighted that the presence of more women in the top tiers of management can play a key role in driving CSR forward. Al-Shaer & Zaman (2016) suggested that companies with more gender diversity on boards of directors produce higher-quality sustainability reports, adding that having independent female directors has a more positive effect than just female directors on board. A study by Nadeem et al. (2017) also revealed a significant and positive relationship between female directors and corporate sustainability practices. On the other hand, Handajani et al. (2014) developed a study on a group of Indonesian companies and presented a contrary opinion, founding that the increasing number of women on board of directors does not have a positive impact on corporate social disclosure.

Accordingly, considering the findings from previous studies, this study follows that a greater presence of women on boards has a positive influence on the production of integrated reports with a higher recognition. Thus, the following hypothesis is expected:

H_{1c}: *There is a positive association between the presence of women on the board of directors and the higher recognition of the integrated reports.*

Role duality

When the same person occupies cumulatively the positions of CEO and chairman, we are in the presence of a duality of functions (Prado-Lorenzo & Garcia-Sanchez, 2010). CEO duality can be seen from two different views. The agency theory supports the separation of the two functions, since the concentration of both functions in one person creates abuse of power, undermining the board's independence and reducing the power of the board. On the contrary, the stewardship theory is in favor of linking the two functions in the same person, arguing that, by restricting responsibilities and decisions to a single person, it has a greater understanding and knowledge of the company's operations, which contributes to better decisions taking (Haniffa & Cooke, 2002; Shrivastav & Kalsie, 2016).

Empirical studies on the relationship between CEO duality and the level of disclosure are mixed. Cheng and Courtenay (2006) and Michelon & Parbonetti (2012) demonstrated that CEO duality is not associated with voluntary disclosure. On the other hand, while Allegrini & Greco (2013) and Samaha et al. (2015) obtained evidences of a negative impact of CEO duality on voluntary disclosures, Jizi et al. (2014) found that CEO duality have a positive impact on the CSR disclosure. Thus, with no expectations of the association's sign, the following hypothesis is expected:

H_{1d}: *There is an association between the CEO duality role and the higher recognition of the integrated reports.*

Board experience

Age diversity can be seen as a means of gaining new insights for boards of directors, bringing together younger and older age groups, in order to promote the wider level of knowledge of the group as a whole (Kang et al., 2007; Hagendorff & Keasey, 2012). Older directors contribute with knowledge and experience, and younger directors contribute with more dynamism and fresh ideas.

Age is a feature that reflects directors' business experience, evidencing their maturity in directing the business (Hafsi & Turgut, 2013). These authors argued that younger directors are more sensitive to environmental and ethical issues, which lead that them make more balanced decisions regarding companies' social responsibility behavior. For Hafsi & Turgut (2013), age diversity has a significant negative effect on corporate social performance, that is, the higher the age diversity, the lower the social performance.

In contrast, Kang et al. (2007) found a preference for directors in the older age, and Post et al. (2011) found that boards whose directors average closer to 56 years in age tend to report more environmental corporate social responsibility information. Also, in this vein, Hagendorff & Keasey (2012) have developed a study on the diversity of boards of directors in the US banking sector, and concluded that investors, while valuing the resources that diverse boards exhibit, prefer more experienced boards, in the context of age and tenure, that is, they prefer older directors and directors with more time in the company. Handajani et al. (2014) defended that the experience of older boards is more preferential than the dynamics and new ideas of younger boards.

In this study, the age of directors of the boards is used as a proxy variable for the board's experience. However, considering the mixed literature, there are no expectations that the association is positive or negative, leading to the following hypothesis:

H_{1e}: *There is an association between the board experience and the higher recognition of the integrated reports.*

3. Research design

3.1. Data and sample

The sample of this study comprises entities that prepare integrated reports and send them to IIRC website. These integrated reports are obtained through the IIRC Examples Database, which contains the entities that have either produce a report that referrer to the IIRC and/or the IIRC Framework or are influenced by the Framework through participation in <IR> Network, which are considered as <IR> Reporters.

These reporters were divided into two groups: 1) one group that includes entities that are considered as reference reporters; 2) another group with all the other entities publishing an integrated report, who that are not considered as reference reporters but regular reporters. In this study, a reference reporter is any entity whose report was recognized as a leading practice by IIRC, or that was recognized as a leading practice by a reputable award process or through benchmarking (known as recognized reporters in the IIRC Examples Database).

The integrated reports needed to perform the research were hand-collected from the IIRC Examples Database, and all the data about the characteristics of boards of directors was hand-collected directly from those integrated reports. The World Bank database was used to obtain information about the country-level characteristics and was also used the Thompson Reuters Datastream database to retrieve financial data, namely, the firm-level characteristics.

The sample comprises the entities presented in the IIRC database from Africa, Asia, Australasia, Europe, North and South America. For the reference reporters, was analyzed the last report considered as a reference report in the period between 2013 to 2017, and for the regular reporters was considered the last report available on the entity website.

Table 1 details the construction of the sample. As shown in panel A, the sample selection begins by considering all entities in the IIRC Examples Database, which are 532 entities considered as <IR> Reporters. Subsequently, some entities were eliminated in accordance with the following criteria: entities with insufficient information about the characteristics of corporate governance; entities whose report was unavailable; entities whose website was unavailable; entities whose report were not in English. Thus, the initial

sample of this study consists in 377 companies. Taking this number as a starting point, the final sample size varies across analysis due to the data availability. The first analysis consists in listed and non-listed entities, in a total of 377 entities. Then, on the second analysis, part of the entities is included in a subsample of 344 entities only with those that are listed.

Panel B shows the distribution of each of the samples by type of reporter: <IR> reference reporter and <IR> regular reporter. In analysis 1, in a universe of 377 entities, 140 are <IR> reference reporters and 237 are <IR> regular reporters. In analysis 2, of the 344 entities, 119 are <IR> reference reporters and 225 are <IR> regular reporters.

Table 1 - Sample selection

Panel A: Sample selection	Entities
<IR> Reporters	532
Entities with insufficient information on corporate governance	(120)
Entities with website without sufficient information available	(27)
Entities with unavailable websites	(6)
Entities with reports without english version	(2)
	377
Analysis 1: Potential sample	
<IR> Reporters	377
Analysis 2: Potential sample	
Starting sample	377
Non-listed entities	(33)
	344
Panel B: Sample distribution by type of reporters	**Entities**
Analysis 1	
<IR> Reference reporters	140
<IR> Regular reporters	237
	377
Analysis 2	
<IR> Reference reporters	119
<IR> Regular reporters	225
	344

Table 2 shows the geographical dispersion of the sample. As shown in panel A, in analysis 1, Africa is the most representative region of the sample, with 34%, followed by Europe, with 33%, both representing more than half of the total sample (67%). Likewise, according to Panel B, in analysis 2, Africa and Europe represent 34% and 31% of the total sample, respectively, representing for 65% of the total sample.

The geographical analysis is in line with the literature review. The African continent should be where there is a greater predominance of integrated reports, since as from 1 March 2010 all companies listed on the JSE were required to adopt the Integrated Reporting (Hoffman, 2012).

Table 2 - Geographical dispersion

Panel A: Analysis 1

Region	<IR> Reporters		<IR> Reference reporters		<IR> Regular reporters	
	N	%	N	%	N	%
Africa	128	34	40	29	88	37
America[a]	14	3	8	6	6	3
Asia	105	28	19	13	86	36
Australasia	7	2	4	3	3	1
Europe	123	33	69	49	54	23
All	377	100	140	100	237	100

Panel B: Analysis 2

Region	<IR> Reporters		<IR> Reference reporters		<IR> Regular reporters	
	N	%	N	%	N	%
Africa	116	34	32	27	83	37
America[a]	12	3	7	6	5	2
Asia	102	30	19	16	85	38
Australasia	6	2	4	3	3	1
Europe	108	31	57	48	49	22
All	344	100	119	100	225	100

[a] Includes North America and South America

Regarding the type of reporter, the majority of the <IR> reference reporters are from Europe. As shown in panel A, almost half of the <IR> reference reporters of analysis 1 are from Europe (49%), followed by Africa (29%). Similarly, Panel B reveals that, in analysis 2, 48% of the <IR> reference reporters are from Europe and 27% are from Africa. This evidence shows that the mandatory adoption of the integrated reporting in South Africa does not have a major influence on the quality of its reports, also consistent with previous research (Lopes & Coelho, 2018).

The geographical dispersion is presented in more detail in Table 3, which presents the distribution of the sample by country. The sample covers 36 countries, from Africa, Asia, Australasia, Europe, North and South America. The most representative country in the samples are South Africa, which is an expected conclusion due to the mandatory regime of integrated reporting in South Africa. The second country presenting a higher number of <IR> reporters in both samples is Japan, followed by United Kingdom, in third place.

Table 3 - Sample distribution by country

Number of entities

Country	Analysis 1			Analysis 2		
	<IR> Reporters	<IR> Reference reporters	<IR> Regular reporters	<IR> Reporters	<IR> Reference reporters	<IR> Regular reporters
Africa						
South Africa	126	39	87	113	31	82
Botswana	2	1	1	2	1	1
America						
Brazil	2	2	0	2	2	0
Canada	2	1	1	0	0	0
Colombia	2	0	2	2	0	2
Mexico	1	0	1	1	0	1
USA	7	5	2	7	5	2
Asia						
Bangladesh	1	1	0	1	1	0
Dubai	1	0	1	1	0	1
Hong Kong	3	1	2	3	1	2
India	4	1	3	4	1	3
Japan	78	8	70	77	8	69
Malaysia	1	0	1	1	0	1
Philippines	1	0	1	1	0	1
Singapore	1	1	0	1	1	0
South Korea	3	3	0	3	3	0
Sri Lanka	9	3	6	9	3	6
Taiwan	2	1	1	2	1	1
Australasia						
Australia	5	2	3	5	2	3
New Zealand	2	2	0	2	2	0
Europe						
Belgium	1	0	1	1	1	0
Denmark	1	1	0	1	0	1
Finland	4	0	4	4	0	4
France	4	2	2	4	2	2
Germany	5	3	2	4	3	1
Italy	13	7	6	9	4	5
Luxembourg	2	1	1	2	1	1
Netherlands	16	11	5	10	7	3
Poland	1	0	1	1	0	1
Russia	5	5	0	2	2	0
Slovenia	1	0	1	1	0	1
Spain	12	2	10	12	2	10
Sweden	5	1	4	4	1	3
Switzerland	9	3	6	9	3	6
Turkey	2	1	1	1	0	1
UK	43	32	11	42	31	11
All	377	140	237	344	119	225

Table 4 displays the sample distribution by type of industry of analysis 2. Analysis 1 is not considered due to the absence of availability of information about the industries of unlisted entities.

Table 4 - Sample distribution by industry

Industries	<IR> Reporters		<IR> Reference reporters		<IR> Regular reporters	
	N	%	N	%	N	%
Agriculture, Forestry and Fishing (SIC 0)	4	1	2	2	2	1
Mining and Construction (SIC 1)	48	14	24	20	24	11
Manufacturing (SIC 2 and 3)	110	32	27	23	83	37
Utilities (SIC 4)	47	14	18	15	29	13
Wholesale and Retail Trade (SIC 5)	30	9	9	8	21	9
Finance, Insurance and Real Estate (SIC 6)	76	22	29	24	47	21
Services (SIC 7 and 8)	29	8	10	8	19	8
All	344	100	119	100	225	100

SIC is the Standard Industrial Classification

Analyzing the <IR> reporters, the most representative sector in the sample is the manufacturing (32%), followed by the finance, insurance and real estate (22%), together representing more than half of the sample (54%). Following are the mining and construction and utilities sectors, both having a representativeness of 14% in the sample. These sectors are also predominant in <IR> reference reporters and <IR> regular reporters.

3.2. Research model

3.2.1. Analysis 1

In order to test H_1, to analyze how the recognition of the integrated reports is influenced by the board diversity characteristics, was estimated the following logistic regression model (1). This first analysis was accomplished with the entire sample, that includes all the entities, listed and unlisted on a stock exchange, considered as <IR> reporters.

$$RECOGN = \alpha_0 + \alpha_1 BSIZE + \alpha_2 BINDEP + \alpha_3 GENDER + \alpha_4 DUALITY + \alpha_5 BEXPER + \alpha_6 STATUSLIST + \alpha_7 COUNTRY + \varepsilon \quad (1)$$

Where:

RECOGN is the dependent variable that represents the recognition of the integrated reports and is a dummy variable that equals 1 if the entity is considered a <IR> reference reporter and 0 if the entity is considered a <IR> regular reporter.

BSIZE represents the size of the board of directors and was measured by the number of board members (Prado-Lorenzo & Garcia-Sanchez, 2010; Frias-Aceituno et al., 2013a).

BINDEP represents the independence of the board of directors and, as a proxy variable, was measured by the percentage of non-executive directors (Haniffa & Cooke, 2005; Frias-Aceituno et al., 2013a).

GENDER represents the gender diversity of the board of directors and was measured by the percentage of women directors (Setó-Pamies, 2015; Al-Shaer & Zaman, 2016; Nadeem et al., 2017).

DUALITY represents the role duality of the CEO and is a dummy variable that assumes 1 if the entity's CEO is also the chairman of the board of directors and 0 otherwise (Prado-Lorenzo & Garcia-Sanchez, 2010; Nadeem et al., 2017).

BEXPER represents the board experience and, as a proxy variable, was measured by the medium age of board members (Post et al., 2011).

In addition, the status listing and the country institutional variables are included as control variables, as follows:

STATUSLIST is a dummy variable that assumes 1 if the entity is listed on a stock exchange and 0 otherwise. This variable was used to control the differences between listed and unlisted entities.

COUNTRY represents the country institutional variables. The proxy for the institutional variables with the impact on the recognition of the integrated reports follows De Villiers & Marques (2016) and Cahan et al. (2016), which considered the impact of some nation-level characteristics in CSR disclosures. Specifically, those authors used country-level variables extracted from the World Bank, namely:

i. **Voice & Accountability (VA)** is the perception of the citizens' ability to select their country's government, their freedom of expression and association. Higher values reflect higher citizen participation.
ii. **Government Effectiveness (GE)** is the perception of the quality of public services and policy quality and the government's commitment to such policies. Higher values reflect higher effective governments.

iii. **Regulatory Quality (RQ)** is the perception of the sound regulatory quality of the government, in view to promote private sector development. Higher values reflect higher regulatory quality.

iv. **Control of Corruption (CC)** is the perception of the public power that is exercised for private gains, including forms of corruption. Higher values reflect a higher control of corruption.

v. **Rule of Law (RL)** is the perception of agents have confidence in, and abide by, the rules of society. Higher values reflect a stronger enforcement environment.

vi. **Press Freedom (PF)** is an index constructed by Reporters Without Boarders and reflects the degree of freedom of journalists and the media, with lower values reflecting higher freedom of the press (De Villiers & Marques, 2016).

vii. **Efficacy of corporate boards (ECB)** is the characterization of corporate governance by investors and boards of directors. This measure ranges between 1 and 7, being 1 if the management has little accountability to investors and boards and 7 if the management is highly accountable to investors and boards.

viii. **Gross Domestic Product (GDP)**, expressed in percentage.

3.2.2. Analysis 2

A second analysis was performed to test H_1, considering only the entities that are listed on a stock exchange. Thus, was estimated a second logistic regression model (2), as follows:

$$RECOGN = \alpha_0 + \alpha_1 BSIZE + \alpha_2 BINDEP + \alpha_3 GENDER + \alpha_4 DUALITY + \alpha_5 BEXPER + \alpha_6 COUNTRY + \alpha_7 IND + \alpha_8 LEV + \alpha_9 MTB + \alpha_{10} ROE + \alpha_{11} AUD + \alpha_{12} CGPERF + \alpha_{13} CSRPERF + \varepsilon \quad (2)$$

The dependent variable (RECOGN), the five main independent variables (BSIZE, BINDEP, GENDER, DUALITY and BEXPER) and the country-level variables are identical to model (1).

However, firm-level characteristics, corporate governance, and CSR performance characteristics are added now to the model, as follows:

IND represents industry and was used to control the differences between sectors. Sectors have frequently been used as variable to explain the amount of information disclosed by companies (Fuente et al., 2017). According to Brammer & Pavelin (2006), industry sector can have a significant influence on a company's disclosure strategy. Therefore, was included in the logistic regression model a set of variables related with the SIC codes of each industry sector, creating 4 dummies for each sector, which are the ones that have the highest weight in the sample: mining and construction (SIC 1), manufacturing (SIC 2 and 3), utilities (SIC 4) and finance, insurance and real estate (SIC 6).

LEV represents the company's leverage calculated as the end-of-year total debt divided by end-of-year total equity. Bouten et al. (2012) found a positive relationship between leverage and the level of disclosure of social and environmental information.

MTB is the market-to-book value ratio and was used as a proxy for a company's growth opportunities (Prado-Lorenzo & Garcia-Sanchez, 2010; Frias-Aceituno et al., 2013a; Fuente et al., 2017; Pavlopoulos et al., 2017).

ROE is the return on equity and represents the company's profitability (Haniffa & Cooke, 2005; Pavlopoulos et al., 2017).

AUD[1] is a dummy variable that assumes 1 if the entity is audited by one of the Big 4 audit companies and 0 otherwise. Large audit companies tend to have access to more specialized knowledge, contributing to the implementation of new strategies and processes, such as the new concept of integrated reporting (Maniora, 2017). Thus, the higher recognition of the integrated reports is likely to be associated with big 4 audit companies in some way.

CGPERF is the corporate governance score calculated as the average of board structure, compensation policy, board function, shareholder rights and vision and strategy, scores from Asset 4 (Barth et al., 2017).

CSRPERF is the corporate social responsibility performance score calculated as the average of the environmental and the social performance scores, from Asset 4 (Barth et al., 2017).

[1] Big 4 accounting firms are Deloitte, EY, KPMG and PricewaterhouseCoopers (PwC).

These data were retrieved from Thomson Reuters Datastream database for all the entities included in the sample with listed firms, for the same year of the respective report. If any value of leverage, market-to-book value ratio, return on equity, corporate governance score or corporate social responsibility score was missing, was used the average of the remaining measures.

4. Results and discussion

4.1. Results for analysis 1

4.1.1. Descriptive analysis and correlations

Table 5 reports the descriptive statistics of the variables used in the empirical analysis of Equation (1), for the entire sample and for the two subgroups of reporters analyzed: <IR> reference reporters and <IR> regular reporters. On average, 37% of the <IR> reporters are <IR> reference reporters.

Analyzing the entire sample, on average, boards are composed of about 11 directors, with the smallest board only with 2 members, and the largest with 31 members. It is notable a high percentage of independence of the board (68%) on the selected entities but there is a weak presence of women as directors (19%). The proportion of entities in which the CEO is also the chairman of the board is very small (10%). This reveals that the dual role is not a very common practice in the entities of this study, which is mainly due to the agency theory that defends the separation of both functions (Shrivastav & Kaise, 2016). The boards of directors in the sample have an average age of 58 years, with the youngest board having an average age of 42 years, and the oldest being approximately 73 years. According to Kang et al. (2007), most of the boards are mature and middle-aged. Of the 377 entities in the sample, 91% are listed on a stock exchange. Regarding the country institutional variables, for example, voice & accountability, government effectiveness, regulatory quality, control of corruption and rule of law have high mean values and close to each other.

Comparing <IR> reference reporters with <IR> regular reporters, most of the variables have higher mean values in the first. On average, <IR> reference reporters have larger boards of directors, a larger proportion of independent directors as well as a larger proportion of women directors. On the other hand, <IR> regular reporters have, on average, a higher percentage of CEOs who cumulatively act as chairman of the board, and who also have a higher average age of directors compared to <IR> reference reporters, which means that <IR> regular reporters have older directors. Regarding the country institutional variables, voice & accountability, regulatory quality, control of corruption, rule of law and gross domestic product present higher average values in <IR> reference reporters.

Table 5 - Descriptive statistics (analysis 1)

Variable	Mean	Std. Dev.	Median	Min	Max
<IR> Reporters (n=377)					
RECOGN	0.37	0.48	-	-	-
BSIZE	11.14	3.92	11.00	2.00	31.00
BINDEP	0.68	0.21	0.71	0.00	1.00
GENDER	0.19	0.13	0.18	0.00	0.81
DUALITY[a]	0.10	0.31	-	-	-
BEXPER	58.06	4.27	57.79	41.88	72.67
STATUSLIST[a]	0.91	0.28	-	-	-
VA	75.69	15.51	77.83	15.27	99.51
GE	79.80	16.44	89.42	25.48	99.52
RQ	78.30	16.81	84.13	22.12	100.00
CC	75.52	18.96	88.46	18.75	100.00
RL	75.62	18.13	86.06	21.15	100.00
PF	24.04	8.30	21.92	6.46	52.96
ECB	5.27	0.54	5.19	3.91	6.02
GDP	1.41	1.39	0.94	-3.59	7.11
<IR> Reference Reporters (n=140)					
BSIZE	11.73	4.02	11.00	3.00	26.00
BINDEP	0.72	0.19	0.78	0.00	1.00
GENDER	0.23	0.14	0.23	0.00	0.81
DUALITY[a]	0.07	0.26	-	-	-
BEXPER	57.44	3.79	57.68	44.45	66.80
STATUSLIST[a]	0.85	0.36	-	-	-
VA	77.24	18.97	79.31	15.27	99.51
GE	79.41	17.34	91.35	25.48	99.52
RQ	79.31	18.73	86.06	22.12	100.00
CC	75.54	21.56	89.90	18.75	100.00
RL	76.76	20.08	88.46	21.15	100.00
PF	23.24	9.44	21.92	6.46	52.96
ECB	5.21	0.57	5.19	3.91	6.02
GDP	1.59	1.45	1.70	-3.59	7.11
<IR> Regular Reporters (n=237)					
BSIZE	10.80	3.83	10.00	2.00	31.00
BINDEP	0.65	0.22	0.67	0.00	1.00
GENDER	0.16	0.12	0.16	0.00	0.56
DUALITY[a]	0.12	0.33	-	-	-
BEXPER	58.43	4.49	57.92	41.88	72.67
STATUSLIST[a]	0.95	0.22	-	-	-
VA	74.77	13.00	77.83	19.21	99.51
GE	80.03	15.92	83.17	44.71	99.52
RQ	77.71	15.57	81.73	41.35	99.52
CC	75.50	17.29	76.44	23.08	99.52
RL	74.95	16.89	80.77	33.17	100.00
PF	24.52	7.52	21.92	8.59	50.76
ECB	5.31	0.52	5.19	3.91	5.93
GDP	1.30	1.35	0.94	0.28	7.11

RECOGN is the recognition of the integrated reports; BSIZE is the number of board members; BINDEP is the proportion of non-executive directors; GENDER is the proportion of women directors; DUALITY assumes 1 if the CEO is also the chairman of the board and 0 otherwise; BEXPER is the medium age of board members; STATUSLIST assumes 1 if the entity is listed on a stock exchange and 0 otherwise; VA is the voice & accountability; GE is the government effectiveness; RQ is the regulatory quality; CC is the control of corruption; RL is the rule of law; PF is the press freedom; ECB is the efficacy of corporate boards; GDP is the gross domestic product.

[a] These variables, because they are binary, present minimum and maximum values of 0 and 1, respectively.

Table 6 shows the correlations for the continuous variables included in the regression Equation (1). Due to its discrete nature and limited range, the binary variables were not included in the Pearson correlation analysis.

Regarding the main variables, BSIZE is statistically and positively correlated with GENDER (0.150) and VA (0.241), and negatively with BEXPER (-0.133) and PF (-0.348). The variable BINDEP, is statistically and negatively correlated with most of the variables, namely, BXPER (-0.176), VA (-0.146), GE (-0.267), RQ (-0.234), CC (-0.241) and RL (-0.231), and positively with GENDER (0.301) and ECB (0.161). GENDER is statistically and positively correlated with VA (0.262) and ECB (0.146), and negatively with BEXPER (-0.256) and PF (-0.329). BEXPER is statistically correlated with all the variables, being positively correlated with most of the country-level variables, namely VA (0.130), GE (0.371), RQ (0.337), CC (0.339), RL (0.344), PF (0.223) and GDP (0.151), except with ECB, being negatively correlated (-0.312).

Regarding the country-level variables, a number of these variables are highly correlated, i.e. coefficients greater than 0.80, especially among the variables VA, GE, RQ, CC and RL. These highly correlations suggest problems of multicollinearity. Except for the country-level variables mentioned, the correlations between the other variables are low, which indicates that multicollinearity problems are minimal.

Table 6 - Correlation matrix (analysis 1)

	BSIZE	BINDEP	GENDER	BEXPER	VA	GE	RQ	CC	RL	PF	ECB	GDP
BSIZE	1	-	-	-	-	-	-	-	-	-	-	-
BINDEP	.000	1	-	-	-	-	-	-	-	-	-	-
GENDER	.150***	.301***	1	-	-	-	-	-	-	-	-	-
BEXPER	-.133***	-.176***	-.256***	1	-	-	-	-	-	-	-	-
VA	.241***	-.146***	.262***	.130**	1	-	-	-	-	-	-	-
GE	.044	-.267***	.019	.371***	.785***	1	-	-	-	-	-	-
RQ	.078	-.234***	.084	.337***	.798***	.957***	1	-	-	-	-	-
CC	.066	-.241***	.059	.339***	.799***	.951***	.959***	1	-	-	-	-
RL	.088*	-.231***	.078	.344***	.810***	.949***	.968***	.975***	1	-	-	-
PF	-.348***	-.053	-.329***	.223***	-.781***	-.434***	-.429***	-.463***	-.463***	1	-	-
ECB	.081	.161***	.146***	-.312***	.074	-.172***	-.197***	-.044	-.134***	-.455***	1	-
GDP	.036	.082	-.005	.151***	.089*	.118**	.178***	.138***	.245***	.135***	-.379***	1

BSIZE is the number of board members; BINDEP is the proportion of non-executive directors; GENDER is the proportion of women directors; BEXPER is the medium age of board members; VA is the voice & accountability; GE is the governance effectiveness; RQ is the regulatory quality; CC is the control of corruption; RL is the regulatory quality; PF is the press freedom; ECB is the efficacy of corporate boards; GDP is the gross domestic product.

***, ** and * indicate statistical significance at 0.01, 0.05 and 0.10, respectively.

In this way, to reduce the number of variables used in the regressions but without missing the various effects of country institutional variables, a principal component analysis was conducted. Following De Villiers & Marques (2016), a principal component analysis on the country-level variables to construct composite indexes is used. Then, the resulting factors are included into the regression models. Table 7 provides information about this analysis.

Table 7 - Principal component analysis

Panel A: Eigenvalues of the correlation matrix

Principal components	Eigenvalue	Variance explained (%)	Cumulative variance (%)
PC1	4.945	61.818	61.818
PC2	1.722	21.523	83.341
PC3	0.752	9.402	92.743
PC4	0.414	5.170	97.913
PC5	0.078	0.970	98.883
PC6	0.046	0.571	99.454
PC7	0.029	0.360	99.813
PC8	0.015	0.187	100.00

Panel B: Rotated component matrix

Variable	PC1	PC2
Voice & Accountability	0.906	-0.214
Governance effectiveness	0.955	0.122
Regulatory quality	0.964	0.162
Control of corruption	0.973	0.141
Rule of law	0.966	0.053
Press freedom	-0.611	0.641
Efficacy of corporate boards	-0.055	-0.874
Gross domestic product	0.165	0.662

Panel C: Component Score Coefficient Matrix

Variable	PC1	PC2
Voice & Accountability	0.184	-0.128
Governance effectiveness	0.193	0.067
Regulatory quality	0.194	0.090
Control of corruption	0.196	0.078
Rule of law	0.195	0.027
Press freedom	-0.126	0.374
Efficacy of corporate boards	-0.008	-0.507
Gross Domestic Product	0.031	0.384

As shown in Table 7, panel A, the first two components are used because they have eigenvalues greater than one, and account for approximately 83% of the total variance. Panel B shows the rotated component matrix after a varimax rotation, for the two components retained, and reveals that component 1 (PC1) is determined mostly by voice & accountability, governance effectiveness, regulatory quality, rule of law and control of corruption, while component 2 (PC2) is determined by press freedom, efficacy

of corporate boards and gross domestic product. Panel C reports the scoring coefficients of each variable. Thus, component 1 is labeled of Governance and Democracy and component 2 of Efficacy Boards. The factors loaded from these two components are introduced in the regressions of models (1) and (2), representing the country-level variables.

4.1.2. Regression results

Table 8 presents the regression results of Equation (1) after removing outliers by eliminating the observations whose standardized residuals were superior to 2 in absolute value.

Table 8 - Regression results (analysis 1)

Variables	Coefficient	p-value
Constant	-0.960	0.643
Main variables:		
BSIZE	0.061	0.053
BINDEP	2.121	0.002
GENDER	3.995	0.000
DUALITY	-1.227	0.027
BEXPER	-0.046	0.175
Control variables:		
STATUSLIST	0.842	0.052
PC1: GOVERNANCE/DEMOCRACY	0.223	0.084
PC2: EFFICACYBOARDS	0.379	0.004
LR Statistic	410.102	
Nagelkerke R^2	0.229	

BSIZE is the number of board members; BINDEP is the proportion of non-executive directors; GENDER is the proportion of women directors; DUALITY assumes 1 if the CEO is also the chairman of the board and 0 otherwise; BEXPER is the medium age of board members; STATUSLIST assumes 1 if the entity is listed on a stock exchange and 0 otherwise; GOVERNANCE/DEMOCRACY is PC1 calculated in table 7; EFFICACYBOARDS is PC2 calculated in table 7.

The variable BSIZE is statistically significant at a significance level of 10% (coefficient = 0.061; p-value = 0.053), so, the hypothesis H_{1a} is not rejected. The coefficient of the variable presents a positive value, concluding that larger boards contributes positively to the higher recognition of the integrated reports. In the previous literature, larger boards are generally positively associated with voluntary disclosures (Akhtaruddin et al., 2009; Allegrini & Greco, 2013; Samaha et al., 2015), sustainability disclosures (Janggu et al., 2016) and CSR disclosures (Jizi et al., 2014). This result confirms that this positive association also occurs in the relationship between larger

boards and the production of integrated reports, leading them to be considered as reference reports. This result is consistent with Frias-Aceituno et al. (2013a), who argued that larger boards contribute to better integrating corporate information into integrated reports, being one of the most important factors in integrated information dissemination, and with Hurghis (2017), who argued that board size have an influence on issuing an integrated report according to the <IR> framework.

The variable BINDEP is statistically significant at a significance level of 1% (coefficient = 2.121; p-value = 0.002), so, the hypothesis H_{1b} is not rejected. The coefficient shows a positive value and it can be concluded that a higher proportion of non-executive directors on the board positively contributes to the higher recognition of the integrated reports. This result is in line with most of the literature review, which suggested that a higher level of independence of the board of directors contributes positively to better disclosure of non-financial information (Lim et al., 2007). This finding supports the study of Pavlopoulos et al. (2017) that defended that a higher proportion of independent directors on board leads to a greater alignment of the integrated reports with the <IR> framework. However, this conclusion does not support the findings obtained by Frias-Aceituno et al. (2013a), who argued that greater independence of the board does not contribute to the integration of corporate information.

The variable GENDER is statistically significant at a significance level of 1% (coefficient = 3.995; p-value = 0.000), so, the hypothesis H_{1c} is not rejected. The coefficient of this variable presents a positive value, indicating that a higher proportion of women directors on the board have a positive influence of the higher recognition of the integrated reports. This conclusion supports the study of Frias-Aceituno et al. (2013a), who defended that gender diversity is one of the most important factors in the integrated dissemination of information. This conclusion is in agreement with different studies that supported the conclusion that a higher proportion of women on board of directors has a positive influence on the disclosure strategy by companies, in terms of sustainability and corporate social responsibility (Fernandez-Feijoo et al., 2014; Setó-Pamies, 2015; Al-Shaer & Zaman, 2016; dienes & Velte, 2016; Nadeem et al., 2017).

The variable DUALITY is statistically significant at a significance level of 5% (coefficient = -1.227; p-value = 0.027), so, the hypothesis H_{1d}, which suggests that there is an association between the CEO's duality and the recognition of integrated reports, is not rejected. The coefficient of this variable is negative, so it is concluded that entities

that have a CEO who is also the chairman of the board of directors tend to produce integrated reports of worst recognition, i.e. <IR> regular reports. This conclusion shows that the concentration of power on only one person compromises the effectiveness of the board (Haniffa & Cooke, 2002), which is reflected in the result of its integrated reports.

The variable BEXPER, related with hypothesis H_{1e}, is not statistically significant (coefficient = -0.046; p-value = 0.175), so, it is not possible to conclude on the cause-effect relationship (positive or negative), with the dependent variable.

Regarding the control variables, the variable STATUSLIST is statistically significant at a significance level of 10% and has a positive coefficient (coefficient = 0.842; p-value = 0.052), so it is possible to conclude that listed entities produce integrated reports with a higher recognition, i.e. <IR> reference reports, compared to entities that are not listed on a stock exchange. This conclusion lead to perform the second analysis, analyzing only the listed entities. When the components from the principal component analysis are used in the regression model, GOVERNANCE/DEMOCRACY is statistically significant at a significance level of 10% with a positive coefficient (coefficient = 0.223; p-value = 0.084), and EFFICACYBOARDS is also significant at a significance level of 1% (coefficient = 0.379; p-value = 0.004), and has a positive coefficient, which means that countries with a better governance and more efficacy boards of directors tend to produce integrated reports with higher recognition.

4.2. Results for analysis 2

4.2.1. Descriptive analysis and correlations

Table 9 provides the descriptive statistics of the variables used in the empirical analysis of Equation (2), for the entire sample and for the two subgroups of reporters analyzed: <IR> reference reporters and <IR> regular reporters. On average, 35% of the <IR> reporters are <IR> reference reporters.

When considering the entire sample, on average, boards are composed of about 11 directors, with the smallest board only with 2 members, and the largest with 27 members. There is also a high percentage of independence of the board (67%) on the selected entities and a weak presence of women as directors (18%). The proportion of entities in which the CEO is also the chairman of the board is also very small (about 11%).

Regarding board experience, the conclusions are in line with Kang et al. (2007), who stated that most of the boards are mature and middle-aged. The boards of directors in the sample have, on average, 58 years, with the youngest board having an average age of 42 years, and the oldest being approximately 73 years. Regarding the control variables, analyzing the country-level variables, the component of governance and democracy presents a positive mean value (0.03), while the component of efficacy boards presents a negative mean value (-0.002). Regarding the firm-level variables, leverage has a mean of 0.97, market-to-book value has a mean of 2.05 and the return on equity as a mean of 0.11, equal to its median, which means that half of the entities have a ROE of 0.11. The majority of the entities are audited by a Big 4 (91%). Around half of the sample belongs to the manufacturing (SIC 2 and 3) and financial (SIC 6) sectors, specifically, 32% and 22%, respectively. The remaining are split into 14% of the entities in the mining and construction sector (SIC 1) and 14% in the utilities sector (SIC 4). For the variables corporate governance performance (CGPERF) and corporate social responsibility performance (CSRPERF), it is possible to conclude that it is the CSRPERF that presents a higher mean value (77.71). These findings show that entities place greater emphasis on the environmental and social impacts of their business, seeking to use best management practices to avoid environmental risks and capitalize on environmental opportunities.

Through the comparison of the <IR> reference reporters and <IR> regular reporters, it is possible to conclude that the majority of the variables have higher mean values in the first group. This is suitable for all the variables except for DUALITY, BEXPER, SIC 2 and 3 and CSRPERF, in which the mean value is higher in the <IR> regular reporters.

Table 9 - Descriptive statistics (analysis 2)

Variable	Mean	Std. Dev.	Median	Min	Max
<IR> Reporters (n=344)					
RECOGN	0.35	0.48	-	-	-
BSIZE	11.03	3.78	11.00	2.00	27.00
BINDEP	0.67	0.21	0.71	0.00	1.00
GENDER	0.18	0.13	0.18	0.00	0.56
DUALITY[a]	0.11	0.32	-	-	-
BEXPER	58.39	4.08	58.08	41.88	72.67
GOVERNANCE/DEMOCRACY	0.03	0.97	0.38	-3.85	1.38
EFFICACYBOARDS	-0.002	1.00	0.01	-1.08	3.69
LEV	0.97	1.20	0.54	0.00	6.20
MTB	2.05	1.98	1.41	0.10	11.30
ROE	0.11	0.13	0.11	-0.28	0.59
AUD[a]	0.91	0.29	-	-	-

(Cont.)

(Cont.)

SIC 1 [a]	0.14	0.29	-	-	-
SIC 2 AND 3 [a]	0.32	0.47	-	-	-
SIC 4 [a]	0.14	0.34	-	-	-
SIC 6 [a]	0.22	0.42	-	-	-
CGPERF	62.76	26.43	62.82	3.74	97.61
CSRPERF	77.71	15.87	77.65	25.24	96.18
<IR> Reference Reporters (n=119)					
BSIZE	11.89	4.13	11.00	3.00	26.00
BINDEP	0.72	0.19	0.78	0.00	1.00
GENDER	0.22	0.13	0.22	0.00	0.50
DUALITY[a]	0.08	0.28	-	-	-
BEXPER	58.15	3.25	58.14	50.33	66.80
GOVERNANCE/DEMOCRACY	0.14	1.08	0.66	-3.85	1.36
EFFICACYBOARDS	0.12	0.94	0.17	-1.08	3.69
LEV	1.23	1.45	0.65	0.00	6.21
MTB	2.41	2.51	1.56	0.10	11.30
ROE	0.12	0.16	0.11	-0.28	0.59
AUD [a]	0.96	0.20	-	-	-
SIC 1 [a]	0.20	0.40	-	-	-
SIC 2 AND 3 [a]	0.23	0.42	-	-	-
SIC 4 [a]	0.15	0.36	-	-	-
SIC 6 [a]	0.24	0.43	-	-	-
CGPERF	71.14	26.05	80.84	4.86	97.52
CSRPERF	77.70	16.54	81.75	34.73	95.92
<IR> Regular Reporters (n=225)					
BSIZE	10.58	3.50	10.00	2.00	27.00
BINDEP	0.65	0.22	0.67	0.00	1.00
GENDER	0.16	0.12	0.16	0.00	0.56
DUALITY[a]	0.13	0.34	-	-	-
BEXPER	58.51	4.46	58.00	41.88	72.67
GOVERNANCE/DEMOCRACY	-0.03	0.91	0.18	-2.14	1.38
EFFICACYBOARDS	-0.06	1.02	0.01	-1.08	3.08
LEV	0.83	1.02	0.47	0.00	6.21
MTB	1.85	1.60	1.38	0.10	11.30
ROE	0.11	0.11	0.11	-0.28	0.59
AUD [a]	0.88	0.32	-	-	-
SIC 1 [a]	0.11	0.31	-	-	-
SIC 2 AND 3 [a]	0.37	0.48	-	-	-
SIC 4 [a]	0.13	0.34	-	-	-
SIC 6[a]	0.21	0.41	-	-	-
CGPERF	58.33	25.59	62.82	3.74	97.61
CSRPERF	77.71	15.54	77.65	25.24	96.18

RECOGN is the recognition of the integrated reports; BSIZE is the number of board members; BINDEP is the proportion of non-executive directors; GENDER is the proportion of women directors; DUALITY assumes 1 if the CEO is also the chairman of the board and 0 otherwise; BEXPER is the medium age of board members; GOVERNANCE/DEMOCRACY is PC1 calculated in table 7; EFFICACYBOARDS is PC2 calculated in table 7; LEV is the debt-to-equity ratio; MTB is the market to book value ratio; ROE is the return on equity; AUD assumes 1 if the entity is audited by one of the Big 4 audit companies and 0 otherwise; SIC 1 is the sector of Mining and Construction; SIC 2 AND 3 is the sector of Manufacturing; SIC 4 is the sector of Utilities; SIC 6 is the sector of Finance, Insurance and Real Estate; CGPERF is the corporate governance score; CSRPERF is the corporate social responsibility performance score. The variables LEV, MTB and ROE are winsorized at the 1 and 99 percentiles.
[a] These variables, because they are binary, present minimum and maximum values of 0 and 1, respectively.

Table 10 presents the correlations for the continuous variables included in the regression Equation (2). Due to its discrete nature and limited range, the dummy variables were not included in the Pearson correlation analysis.

Regarding the main variables, BSIZE is statistically and positively correlated with GENDER (0.119), LEV (0.125) and CGPERF (0.239), and negatively with BEXPER (-0.158). The variable BINDEP, is statistically and positively correlated with the variables GENDER (0.335), MTB (0.092) and CGPERF (0.286), but negatively with BEXPER (-0.140) and GOVER/DEM (-0.206). GENDER is statistically and positively correlated with MTB (0.120), ROE (0.092), GOVER/DEM (0.149) and CGPERF (0.352), and negatively with BEXPER (-0.225) and EFFBOARDS (-0.108). BEXPER is statistically and positively correlated with LEV (0.107), GOVER/DEM (0.230), EFFBOARDS (0.297) and CSRPERF (0.109), and negatively with CGPERF (-0.290).

In general, the correlations are low, except the one between ROE and MTB, which is 0.638. However, it is still lesser than 0.80, which indicates that multicollinearity problems are minimal.

Table 10 - Correlation matrix (analysis 2)

	BSIZE	BINDEP	GENDER	BEXPER	LEV	MTB	ROE	GOVER/DEM	EFFBOARDS	CGPERF	CSRPERF
BSIZE	1	-	-	-	-	-	-	-	-	-	-
BINDEP	-.014	1	-	-	-	-	-	-	-	-	-
GENDER	.119**	.335***	1	-	-	-	-	-	-	-	-
BEXPER	-.158***	-.140***	-.225***	1	-	-	-	-	-	-	-
LEV	.125**	.089	.001	.107**	1	-	-	-	-	-	-
MTB	.058	.092*	.120**	-.070	.189***	1	-	-	-	-	-
ROE	-.014	.019	.092*	-.138**	-.048	.638***	1	-	-	-	-
GOVER/DEM	.065	-.206***	.149***	.230***	.020	.015	-.138***	1	-	-	-
EFFBOARDS	-.032	-.031	-.108**	.297***	.245***	-.065	-.075	.027	1	-	-
CGPERF	.239***	.286***	.352***	-.290***	.039	.172***	.118**	-.047	-.087	1	-
CSRPERF	.070	-.017	.075	.109**	.091*	-.012	-.038	.083	.241***	.136**	1

BSIZE is the number of board members; BINDEP is the proportion of non-executive directors; GENDER is the proportion of women directors; BEXPER is the medium age of board members; LEV is the debt-to-equity ratio; MTB is the market to book value ratio; ROE is the return on equity; GOVER/DEM is PC1 calculated in table 7; EFFBOARDS is PC2 calculated in table 7; CGPERF is the corporate governance score; CSRPERF is the corporate social responsibility performance score.

4.2.2. Regression results

Table 11 presents the regression results of Equation (2) after removing outliers by eliminating the observations whose standardized residuals are superior to 2 in absolute value.

Table 11 - Regression results (analysis 2)

Variables	Coefficient	p-value
Constant	-4.024	0.128
Main variables:		
BSIZE	0.108	0.007
BINDEP	1.524	0.054
GENDER	3.444	0.008
DUALITY	-0.535	0.357
BEXPER	-0.023	0.583
Control variables:		
PC1: GOVERNANCE/DEMOCRACY	0.330	0.040
PC2: EFFICACYBOARDS	0.241	0.162
LEV	0.310	0.017
MTB	0.166	0.075
ROE	-0.756	0.592
AUD	1.084	0.080
SIC 1	1.030	0.035
SIC 2 AND 3	-0.608	0.153
SIC 4	-0.149	0.766
SIC 6	-0.074	0.873
CGPERF	0.016	0.013
CSRPERF	-0.013	0.148
LR Statistic	323.326	
Nagelkerke R^2	0.339	

BSIZE is the number of board members; BINDEP is the proportion of non-executive directors; GENDER is the proportion of women directors; DUALITY assumes 1 if the CEO is also the chairman of the board and 0 otherwise; BEXPER is the medium age of board members; GOVERNANCE/DEMOCRACY is PC1 calculated in table 7; EFFICACYBOARDS is PC2 calculated in table 7; LEV is the debt-to-equity ratio; MTB is the market to book value ratio; ROE is the return on equity; AUD assumes 1 if the entity is audited by one of the Big 4 audit companies and 0 otherwise; SIC 1 is the sector of Mining and Construction; SIC 2 AND 3 is the sector of Manufacturing; SIC 4 is the sector of Utilities; SIC 6 is the sector of Finance, Insurance and Real Estate; CGPERF is the corporate governance score; CSRPERF is the corporate social responsibility performance score.

The variable BSIZE is statistically significant at a significance level of 1% (coefficient = 0.108; p-value = 0.007), which means that, as in analysis 1, the hypothesis H_{1a} is not rejected. The coefficient of the variable presents a positive value, allowing to conclude that the larger the size of the board of directors, the greater the recognition of the integrated reports.

The variable BINDEP is statistically significant at a significance level of 10% (coefficient = 1.524; p-value = 0.054), so, as in analysis 1, the hypothesis H_{1b} is not rejected. The coefficient shows a positive value, suggesting that boards of directors with

a higher proportion of non-executive directors tend to produce integrated reports of higher recognition.

The variable GENDER is statistically significant at a significance level of 1% (coefficient = 3.444; p-value = 0.008), which indicates that, as in analysis 1, the hypothesis H_{1c} is not rejected. The coefficient of this variable presents a positive value, which means that a higher proportion of women directors on the board have a positive influence of the higher recognition of the integrated reports.

The conclusions for the variables BSIZE, BINDEP and GENDER are the same in analysis 1 and 2, which lead to the conclusion that the influence of the size of the board, the independence of the board and the proportion of women as directors in the higher recognition of the integrated reports is always positive, regardless of whether we consider listed and unlisted companies, or only listed companies.

Contrary to analysis 1, where it was found that the variable DUALITY is statistically significant with a negative coefficient, in analysis 2, the variable is not statistically significant (coefficient = -0.535; p-value = 0.357). This conclusion shows that when unlisted companies are removed from the sample, this variable loses its significance. Regarding the variable BEXPER, as in the previous analysis, this variable is not statistically significant (coefficient = -0.023; p-value = 0.583).

Regarding the control variables, contrary to analysis 1, the component of GOVERNANCE/DEMOCRACY is statistically significant at a significance level of 5% and has a positive coefficient (coefficient = 0.330; p-value = 0.040), and EFFICACYBOARDS is not statistically significant (coefficient = 0.241; p-value = 0.162). The variable LEV is statistically significant at a significance level of 5% and its coefficient is positive (coefficient = 0.310; p-value = 0.017), which suggests that entities with a higher leverage tend to produce integrated reports of higher recognition, i.e. <IR> reference reports. The variable MTB is statistically significant at a significance level of 10% and has a positive coefficient (coefficient = 0.166; p-value = 0.075), which means that more opportunities for business to growth contribute to the higher recognition of the integrated reports. The variable AUD is statistically significant at a significance level of 10% (coefficient = 1.084; p-value = 0.080), which, together with its positive coefficient, leads to the conclusion that entities that are audited by one of the Big 4 auditors produce integrated reports of higher recognition. The variable SIC 1 is statistically significant at a

significance level of 5% with a positive coefficient (coefficient = 1.030; p-value = 0.035). The variable CGPERF is statistically significant at a significance level of 1% and presents a positive coefficient (coefficient = 0.016; p-value = 0.013), which leads to the conclusion that entities with higher corporate governance performance produce integrated reports of higher recognition.

4.3. Additional analysis

The study was extended, performing an analysis on the influence of different board diversity characteristics on integrated reporting practices. To do this, was used a subsample of analysis 2, consisting only in the <IR> reporters that are considered as <IR> reference reporters. Were selected then only those whose information about the followed items of <IR> framework (guiding principles, content elements and fundamental concepts) are available in the IIRC database, thereby eliminating reporters whose information on the items followed is not disclosed. The sample is an unbalanced panel of 150 observations from 100 entities, that comprises the period between 2013 and 2017. Then, was constructed a linear regression model in which the dependent variable is a disclosure index based on the structure of the integrated reports. The disclosure index measures whether the <IR> Reference reporter disclosed the seven guiding principles, the eight content elements and the two fundamental concepts, proposed by the <IR> Framework. The index was computed assuming 1 if the item is presented in the integrated report and 0 otherwise. Thus, the total items disclosed are divided by the total items that can be obtained (maximum of 17 items). The five main independent variables are identical to the previous models and the control variables, namely, the country-level characteristics, firm-level characteristics and corporate governance and CSR performance, are the same as model (2). First, was performed a second principal components analysis for the country-level variables, to include the several years in which the entities repeat themselves. Then, the resulting factors was employed in the country-level measure, to perform the linear regression. Was obtained some preliminary results from this analysis (not tabulated), which indicates that the proportion of non-executive directors on a board is positively and statistically significant at a significance level of 5%, while the proportion of women directors is negatively and statistically significant at a significance level of 5%. These results suggest that boards with a higher proportion of non-executive directors have a higher disclosure index, so they prepare their integrated

reports following more items proposed by the <IR> framework. On the contrary, boards with a higher proportion of women tend to follow less the principles proposed by the <IR> framework, presenting lower disclosure index.

5. Conclusion, limitations and future research

This study examined the influence of some boards' diversity characteristics – board size, board independence, gender diversity, role duality and board experience - on the recognition of the integrated reports, distinguishing between <IR> reference reports and <IR> regular reports, based on a sample of <IR> reporters extracted from the IIRC Examples Database.

The analysis was divided into two phases, consisting in two analyses. In the first one, the sample consisted in all the entities considered as <IR> reporters, listed and unlisted on a stock exchange, and was composed of 377 <IR> reporters, 140 of which were classified as <IR> reference reporters and 237 of which was classified as <IR> regular reporters. In the second one, was only included the <IR> reporters that are listed on a stock exchange, and the sample consisted of 344 <IR> reporters, where 119 were classified as <IR> reference reporters and 225 were classified as <IR> regular reporters.

The results showed that entities producing higher recognized integrated reports - <IR> reference reporters – have, on average, a larger dimension, a larger proportion of non-executive directors and a higher proportion of women as directors on the board. These findings are found both when analyzing listed and unlisted entities and when excluding unlisted entities from the sample. When analyzing the entire sample, the duality of functions of the CEO negatively influences the recognition of the integrated reports, which means that the entities in which the CEO and the chairman of the board are the same person tend to produce integrated reports of lower recognition (<IR> regular reporter). On the contrary, when the CEO and the chairman of the board are different persons, the probability of producing an integrated report of higher recognition (<IR> reference reporter) is greater. However, this relationship only occurs in the first analysis, which includes listed and unlisted entities. When the unlisted entities are removed, the variable loses its significance for the model. The board experience is never related to the recognition of the integrated reports.

This study contributed to the literature on the integrated reporting, a new concept that has been growing over the years, requesting new studies to add to the existing literature. This study contributes to the debate about the relationship between the board's characteristics and the recognition of the integrated reports, analyzing if these certain

characteristics on the company's board have an influence to produce integrated reports in a way that they are classified a <IR> reference reports.

This research suffers from some limitations. First, the IIRC Examples Database only includes the companies that voluntarily send their integrated reports to the database, so it does not include all entities that report according to the <IR> framework, not allowing access to all the integrated reports produced. Second, the lack of information available in some entities was also a limitation. In some entities it was difficult to obtain certain information about the characteristics of diversity because the entities did not disclose them in its reports. Were excluded 155 entities from the initial sample due to insufficiency in obtain the information about the characteristics of the boards, unavailability of the reports on the websites, websites that were unavailable and the reports were not in english. Third, the choice of the board's diversity characteristics for the study was also limited by the availability of information, having been chosen the variables that allowed to get the maximum of information possible.

Future research that seeks to study the relationship between the characteristics of the board of directors and the recognition of integrated reports may increase the sample, as the IIRC Examples Database is constantly updated, and new reports are frequently added. Other diversity characteristics of boards may also be analyzed, for example, nationality (Frias-Aceituno et al., 2013a), the presence of specifically committees (Allegrini & Greco, 2013), CEO age and years of experience (Rambe & Mangara, 2016), board activity (Frias-Aceituno et al., 2013a), proportion of family members on the board (Haniffa & Cooke, 2002), ethnic diversity (Hafsi & Turgut, 2013) and directors tenure (Hafsi & Turgut, 2013).

The additional analysis mentioned in the previous section can also be extended. Future research may study the influence of the board's diversity characteristics on the disclosure index of the integrated reports, which is based on the <IR> Framework, and measures whether the <IR> Reference reporter disclosed the seven guiding principles, the eight content elements and the two fundamental concepts.

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