

Measuring the integrated reporting quality in Europe: balanced scorecard perspectives

Balanced
scorecard
perspectives

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Abstract

Purpose – The aim of this study is to evaluate the adoption and quality of integrated reports in the European Union (EU).

Design/methodology/approach – The sample consists of 147 listed firms from the 18 EU countries during 2013–2020. This study creates a disclosure index – based on the balanced scorecard (BSC) that reflects the information content of integrated reports. The content analysis method is used to measure the integrated reporting quality (IRQ).

Findings – The findings demonstrate that the IRQ increased across the study's time frame, going from 49.3% in 2013 to 77% in 2020. Furthermore, financial disclosures still get the most attention in the integrated reporting (IR), followed by learning and growth perspective disclosures. In addition, businesses in the financial and industrial sectors rely more on integrated reports. However, the utility sector has the highest IRQ score. By country, Spain has the highest rate of IR adoption, followed by France. Other countries, such as Austria and Hungary, have only implemented IR by one company each.

Research limitations/implications – This study adds to the IR literature a new approach to measure IRQ by linking BSC with the IR framework. Empirically, businesses of any size can use this method to assess the degree of balance between the revealed financial and nonfinancial information in their reports.

Practical implications – Empirically, this study helps IR practitioners in determining how widely IR is used in Europe and in updating the database on the IR website. It helps them update and improve the IR framework by identifying the elements that have the least transparency and quality, investigating the causes and enhancing them.

Originality/value – To the best of the authors' knowledge, this study is the first to examine the IRQ in EU countries by linking the BSC with IR elements. This is to split the elements into their own pillars, making it easier to track disclosure and evaluate the corporations' interest in revealing these perspectives, on their own and collectively.

Keywords Integrated report, Integrated reporting quality (IRQ), IIRC, Balanced scorecard (BSC), European Union

Paper type Research paper

1. Introduction

Traditional corporate reporting has come under scrutiny because of the collapses of well-known companies in the early years of the 21st century, including Enron and WorldCom



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(Stone and Lodhia, 2019). Within this, a rising number of nations have passed special legal measures to promote nonfinancial reporting to address the deficiencies of traditional corporate reporting processes and improve the quality of reports (Ernst and Young, 2014a). For example, the Council of the European Union (EU) mandated that businesses provide nonfinancial data about matters including organizational policies, results and risk factors (de Villiers *et al.*, 2014; Haji and Anifowose, 2016). As a result, it can be claimed that recently, businesses have become more interested in publishing nonfinancial information, even in separate reports. However, the lack of links between these reports and the financial aspects of organizations has highlighted the need to combine these financial and nonfinancial data in a complete form (Soriya and Rastogi, 2021).

Therefore, the International Integrated Reporting Council (IIRC), which was founded in August 2010 and was formerly known as the International Committee on Integrated Reporting, has developed a framework for integrated reporting (IR) that is widely accepted. This framework aims to assist the business in making more environmentally friendly and sustainable decisions, enable all stakeholders to comprehend how the organization truly runs and gather data about value creation clearly and accurately throughout the short, medium and long term (Liu *et al.*, 2018).

Of these changes, businesses are using integrated reports, which has led to an increase in studies on IR adoption such as Vitolla and Raimo (2018) and Esch *et al.* (2019). Although the quality of the data disclosed is more crucial than its quantity (Songini *et al.*, 2020), only a handful of academic papers have a quality focus (Pistoni *et al.*, 2018). From a different angle, past IR literature was conducted on samples from many different countries, but a sizable fraction of these studies focused on South Africa, such as Haji and Anifowose (2017). Consequently, there is a noteworthy lack of research on the use of integrated reports, in particular in Europe, despite the region's increasing adoption of such reports.

Given this, the gaps in the literature highlight the need for additional research to investigate IR quality (IRQ), particularly in the European context. As a result, the study aims to address this research gap by answering the following research questions:

RQ1. How widely adopted is IR in the countries of the European Union?

RQ2. What is the level of IRQ in the European Union from 2013 to 2020?

RQ3. Is there a difference in the level of IRQ between nations?

RQ4. Does the level of IRQ vary depending on the sector?

RQ5. Does the level of IRQ vary over the years?

The study's goal is to assess the level of progress in the adoption and quality of integrated reports in the European context. The study used the balanced scorecard (BSC) as a reference to establish an indicator's reliance on the IR framework and previous studies. As the BSC provides an exhaustive evaluation of the organization's short- and long-term performance, financial and nonfinancial performance and internal and external performance (Hansen and Schaltegger, 2016; Ling Wei *et al.*, 2008). Moreover, this linking is an integrated, sustainability-related interpretation of value creation and the company's performance to help split the elements into their own pillars, making it easier to track the level of disclosure and evaluate the corporations' interest in revealing these perspectives, first on their own and subsequently collectively. In addition, even if the IR framework tried to create a basic structure for the combined financial and nonfinancial information (concepts, content elements and recommendations), it does not give businesses enough direction to create integrated reports. Therefore, this study aimed to reorganize this structure using the BSC's

perspectives, which were used as an impartial performance indicator to assess how well businesses used IR and its quality.

This study makes a significant contribution to the field. From a methodological perspective, the study introduces a novel method of evaluating IRQ into the body of literature by linking the BSC with the IR framework. Furthermore, applying this checklist “Integrated reporting quality based on balanced scorecard (IRQBSC),” which is based on the IIRC framework’s content elements, improves comprehension of IR practices. Therefore, the study enhances the existing body of research regarding the quality of IR and voluntary disclosure in general.

The results of this study show that the IRQ increased across the study’s time frame, going from 49.3% in 2013 to 77% in 2020. Furthermore, financial disclosures still get the most attention in the integrated reports, followed by disclosures related to learning and growth perspectives, and then the disclosure of the company’s internal information. In addition, businesses in the financial and industrial sectors rely more on integrated reports; however, the utility sector scored the highest IRQ.

Thus, the structure of this article is as follows: First, an overview of IR is provided. The relevant studies are examined with a special emphasis on the literature relating to IRQ measures in the third and fourth sections. Fifthly, the development of the IRQBSC to measure IRQ is then explained in the methodology section, along with the sample and content analyses that were used. The results are reviewed and evaluated at the end in the sixth and seventh sections. In the paper’s conclusion, we discuss the findings, limitations and suggestions for future investigations.

2. Integrated reporting overview

In line with the advancements in independent environmental and social disclosures, the IIRC was established in 2010 by the Global Reporting Initiative (GRI) and the Prince of Wales Accounting for Sustainability Project. On September 12, 2011, a discussion paper titled “Towards Integrated Reporting: Communicating Value in the 21st Century” was released, and the general public was encouraged to respond (IIRC, 2011). Almost one month later, the IIRC released a list of the inaugural companies taking part in the IIRC Pilot Program Business Network, which comprises more than 90 enterprises that have committed to adopting IR (Fasan and Mio, 2017) to share their expertise, skills and experiences with IR (IIRC, 2013). Following that, a draft of the IR framework was made available for discussion in April 2013 and was based on the answers to the 2011 Discussion Paper as well as comments from the company and investor networks that took part in the IIRC Pilot Program. Stakeholder comments on the consultation draught were considered when the IR framework was published in 2013.

Per the IIRC (2013, p. 7):

[...]an integrated report is a concise communication about how an organization’s strategy, governance, performance, and prospects, in the context of its external environment, lead to the creation of value in the short, medium, and long term.

By this, the integrated report focuses on the connections between the six capitals (financial, manufactured, natural, human, intellectual, social and relationship) and the short-, medium- and long-term performance of the companies to address financial performance and sustainability in an integrated manner (Churet and Eccles, 2014).

The IR framework uses three primary “dimensions” to assist corporations in generating integrated reports: the first is “the fundamental concepts,” which has two (the value creation process and six capitals); the second is “content elements,” which has eight; and the third is

“guiding principles,” which has seven (IIRC, 2013) fractions. These dimensions should be included in the integrated report, but in literal terms, it signifies an “open space” that must be addressed in a coherent and meaningful manner to explain the process of creating the company’s value (Busco *et al.*, 2014). These three dimensions are inextricably linked, and none can be discussed in isolation.

Furthermore, the value creation process is inextricably linked to various factors such as external impacts, stakeholder interactions and the interplay of multiple sources, which express not only the outcome of the company but also its inner creative power. To create value not only in the short term but also in the medium and long term, the integrated report must include information on the surrounding factors, the company’s resources (content elements) and how the organization interacts with stakeholders (guiding principles). In addition, this value-creation process is further developed through the business model, which is regarded as the center of the corporation by the IR framework (Marrone and Oliva, 2019; Liu *et al.*, 2018). Moreover, eight content elements are constructed as questions. As they are not meant to have a set structure, they are related to one another, are not strictly incompatible and are not specified in a particular order. Companies that use IR disclose these elements to describe the value creation process and show how these components are related through the business model, which is the first and most crucial component in assessing the company’s value creation narrative (IIRC, 2013). Seven guidelines were finally offered in the IR framework to support the integrity of integrated reports and ensure that they are transparent and comparable across various enterprises.

3. Theoretical background and literature review

Because IR in the EU is still a voluntary endeavor, this study draws on a mix of agency, signaling, stakeholder and legitimacy theories to illustrate the quality of IR as a voluntary disclosure. One of the critical issues with agency theory is the information asymmetry problem. Therefore, Soffiato (2020) has demonstrated that management uses voluntary disclosure practices as a tool to demonstrate that its actions are in the best interests of stakeholders. Furthermore, Girella *et al.* (2019) indicated that excellent IR contributes to lowering agency expenses and information asymmetry. Another theory for supporting the IRQ is the signaling theory, which is integrated with agency theory because it also addresses the issue of information asymmetry. Also, the signaling theory proposes that companies disclose more information voluntarily as an indication of their continued excellence to reduce litigation costs in the event of negative concerns (Mitchell, 2006). Moreover, considering that the organization’s long-term survival depends on the satisfaction of its stakeholders, the stakeholder theory also offers a solid basis for IR adoption and its quality (Gray *et al.*, 1995). Organizations, therefore, reveal all financial and nonfinancial data in response to internal and external pressure from stakeholders to comply with the transparency laws and expectations (Deegan, 2009). In the IR context, stakeholder engagement is one of the guiding principles adopted by the IR framework. Because the value creation process cannot be carried out by the organization alone but rather in conjunction with stakeholders, the integrated report must make clear the type and quality of the business’s interaction with those stakeholders (IIRC, 2021). Furthermore, the theory of legitimacy, which asserts that businesses must disclose their environmental and social activities to obtain legitimacy in the society in which they operate, is another argument in favor of IR. Therefore, according to Beck *et al.* (2017), businesses may lose their legitimacy if they use conventional reporting techniques. Therefore, it can be claimed that a company’s ability to deliver high-quality integrated reports is essential to establishing legitimacy and meeting the needs of stakeholders.

Even though IR is still in its infancy, it has recently received increased attention from both a scholarly and professional standpoint (Vitolla *et al.*, 2018). Previous research addressed integrated reports from a variety of angles, including the advantages of implementing IR and the challenges that come with it. As an illustration, some studies addressed integrated reports from a critical standpoint (Flower, 2015; Dumay *et al.*, 2017). Furthermore, different studies investigated how different stakeholders – such as business management, financial analysts, expert service providers and academics – perceive IR adoption (Perego *et al.*, 2016; Guthrie *et al.*, 2017; Lai *et al.*, 2018; McNally *et al.*, 2017). Also, some studies (García-Sánchez *et al.*, 2013; Gianfelici *et al.*, 2016; Rivera-Arrubla *et al.*, 2017) have focused on the factors that influence or motivate the adoption of IR. In addition, other studies (Lee and Yeo, 2016; Barth *et al.*, 2017; Vitolla and Raimo, 2018; Esch *et al.*, 2019) focused on the consequences of IR adoption.

From another perspective, a significant portion of prior studies concentrated on South Africa. Research in South Africa showed evidence of a legal framework for IR it is mandated there (Carels *et al.*, 2013; Clayton *et al.*, 2015; Haji and Anifowose, 2016; Haji and Anifowose, 2017). The number of businesses adopting IR has grown recently in Europe and Asia, notably in the UK, Australia and Japan, although IR is still adopted voluntarily in these countries. Likewise, another study on IR discovered that most integrated reporters come from Europe (Lopes and Coelho, 2018). Conversely, one study that examined a sample of 18 European nations in 2015 stated that there is limited interest in adopting integrated reports in general in Europe. However, compared with other countries, the UK, the Netherlands and Spain have the highest rate of IR (Simona *et al.*, 2017). There is a significant lack of research specifically focused on the adoption of integrated reports in Europe, despite the increased movement of integrated reports in that region.

Despite the foregoing and the rising interest in empirical studies on IR, there is a lack of studies on how to evaluate IR quality (Ruiz-Lozano and Tirado-Valencia, 2016; Pistoni *et al.*, 2018). Due to this, the IIRC itself produced a document in 2014 titled “Assurance on IR: An Exploration of Difficulties” to increase awareness of quality issues. Since then, there has been a gradual increase in interest in IRQ issues. Also, according to Eccles and Krzus (2014), the quality of adoption is the main point, not just the number of businesses that use IR. Especially given how many businesses claim to use IR or provide combined reports but do not adhere to IIRC recommendations (Pistoni *et al.*, 2018). Because of all this data, practitioners, managers and academics are now more interested in the IRQ than in the type and quantity of information they provide.

Regarding the literature on the IRQ, some research, such as that by Pistoni *et al.* (2018), simply measured the quality of integrated reports, whereas other researchers connected many elements to report quality. For example, some research examined the features of the board of directors as a factor in the IRQ (Songini *et al.*, 2022). Rivera-Arrubla *et al.* (2017) also look into the relationship between IR disclosure and the geography, sector, verification and publication on the IIRC website. Along the same lines, Vitolla *et al.* (2019b) note how the pressure that the organization faces from its stakeholders affects the IRQ. Both Vitolla *et al.* (2019a) and Raimo *et al.* (2019) discovered a connection between cultural identity and IR quality. Some research has correlated market responses, such as market liquidity and analyst forecast accuracy, with the quality of IR, such as Zúñiga *et al.* (2020). In addition, Barth *et al.* (2017) investigated the IRQ and stock volatility, total assets, future cash flows and capital costs. Given the purpose of this study, the next literature analysis primarily focuses on the IRQ metrics.

4. Integrated reporting quality measures

The IR framework does not provide specific indicators to measure the quality of reports. This, in turn, has led to a difference in the integrated reports and the usage of IR framework.

For example, [PWC \(2013\)](#) found that there is a major disparity in the information provided by the integrated reports for the top 40 companies on the JSE. Along the same lines, [Barth *et al.* \(2017\)](#) indicated that IRQ reflects the degree to which reports comply with the theoretical framework. Therefore, the starting point for most previous studies examining the IRQ was the IR framework. However, few studies considered the standards used to measure the disclosure quality in the literature in addition to the IR framework. Previous studies have used IRQ measures to evaluate either the entire report ([Pistoni *et al.*, 2018](#); [Stent and Dowler, 2015](#)) or specific portions of it ([Fasan and Mio, 2017](#); [Gerwanski *et al.*, 2019](#)).

Since 2011, EY has been evaluating integrated reports for the top 100 companies listed on the JSE. The quality of the integrated reports for this sample is evaluated by three expert arbitrators based on the IR framework of the integrated reports, that is, the degree to which content elements are incorporated into the integrated reports according to the guidelines and considers the fundamental concepts. However, the three EY coders' exact rating criteria are not published ([du Toit *et al.*, 2014](#)), but the IRQ shows "Top 10," "Excellent," "Good," "Average" and "Progress to be made" ([EY, 2017, 2016](#)). This method was adopted in measuring the IRQ in previous studies, whether the analyzed sample was from South Africa or abroad such as [Barth *et al.* \(2017\)](#) and [Maroun \(2019\)](#).

Furthermore, to measure the IRQ, the study of [Eccles *et al.* \(2019\)](#) also concentrated on materiality and the four content elements (risks and opportunities, strategy and resource allocation, performance and outlook) as they are presented in the IR framework. In addition, [Pavlopoulos *et al.* \(2019\)](#) created a disclosure index to quantify the IRQ, which includes all nine content analysis components included in the King III report and the King III that are supported by the IR framework. The authors discovered that there are significant differences in the quantity, degree of specificity and accuracy of the data given in the IR during the duration of the study.

Another measure of IR is the integrated reporting disclosure index, which was created by [Liu *et al.* \(2018\)](#). The capitals, content elements and guiding principles were initially divided into first- and second-level subcategories. The IR framework contains six subcategories under the Guiding Principles area, nine under the Content Elements category and six under the Capitals category. There are 123 second-level subcategories in total. The primary source of inspiration for creating second-level subgroups and disclosure elements for each secondary subcategory is the GRI G4 (2013) Guidelines, which meet the specifications for creating disclosure items. Also, [Malola and Maroun \(2019\)](#) studied the 40 biggest firms in 2015 and 2016 to evaluate the quality of IR. They used five indicators to assess the quality: a quantity indicator; a density indicator; a measurement indicator. A relevance index an interpretation indicator. A study conducted by [Marrone and Oliva \(2019\)](#) to evaluate IRQ also focused on the alignment of two fundamental concepts and eight content elements with the IR framework [integrated reporting alignment level (IRAL)]. For the absence of any element, the IRAL assigns a score of 0 and for the presence of qualitative, quantitative and financial information, it assigns a value of 3. The findings reveal an average level of alignment between the IIRC and the analyzed IR. One more investigation into IRQ was done by [Simona *et al.* \(2018\)](#), who used awards given to IRs that have been published, such as the EY Excellence Awards, PwC's Building Public Trust Excellence Awards, CSSA Awards and Nikonki Top 100 Firms Awards, to assess the IRQ.

From a different perspective, to gauge the IRQ, some studies used a narrow focus, such as capitals, content elements, readability and materiality. Regarding the usage of capital as a proxy for IRQ, [Dilling and Caykoylu \(2019\)](#) concentrated on calculating IRQ using the six capital disclosures, using a sample of 110 overseas companies in 2017. By grouping particular words or concepts associated with each capital, the study focused on evaluating

the quality of integrated reports. Another study by [Velte \(2018\)](#) was dedicated to the readability of integrated reports in European public interest companies between 2014 and 2016. The Gunning Fog and Flesch Reading Ease indices are used to assess how readable IR is. The results showed that, despite a minor improvement in IR quality, reading IR is still difficult.

Furthermore, about guiding principles, [Haji and Anifowose \(2016\)](#) used a sample of the top 100 South African companies to measure the IRQ by relying on the seven guiding principles disclosures according to the IR framework in addition to the King Code III to form eight main categories and a total of 52 specific items under the eight categories. Concerning materiality, [Gerwanski et al. \(2019\)](#) restricted their attention to determining the materiality of 359 IR from 117 firms listed on the IIRC between 2013 and 2016. The materiality section, identification process, description of material aspects, time horizon, materiality matrix, risks and opportunities and mitigation actions were the seven components that the study was dependent upon as listed in the IR framework. The authors used a weighted and unweighted scoring system to evaluate the effectiveness of materiality disclosure in integrated reports.

One of the studies that evaluated the quality of integrated reports was [Zhou et al. \(2017\)](#), which looked at the IRQ in South Africa from 2009 to 2012 based on how closely the report adhered to the IR framework. The level of alignment was calculated by constructing an encoding framework using the prototype IR framework released by IIRC in October 2012 and encoding each integrated report against the encoding framework through an index made up of eight dimensions (31 items). Moreover, [Pistoni et al. \(2018\)](#) developed one of the most comprehensive IRQ metrics. In this study, the integrated report was evaluated in terms of four main factors: background, content, form, assurance and reliability.

To conclude, although the academic study of the IRQ has grown, it is still not sufficiently studied ([Songini et al., 2022](#)), especially in the European context ([Simona et al., 2017](#)). Furthermore, even though most measurement techniques rely on the IR framework, it can be claimed that there is not a unified method for measuring the IRQ. As a result, this study is intended to fill these research gaps by answering research questions about identifying IR adoption and quality in EU countries.

5. Methodology

To answer the research questions and fill the research gap, the study first develops the index to measure the IRQ using balanced scorecard perspectives (IRQBSC). Then the authors adopted content analysis to assess the integrated reports.

5.1 Balanced scorecard for measuring integrated reporting quality

This study differs from others in the literature as it uses the BSC to assess IRQ in a European context. [Kaplan and Norton \(1992\)](#) developed the BSC as an aggregate of measures that assist management in evaluating firm performance. The BSC includes four main perspectives, which are the financial, the customer, the internal and the learning and growth perspectives. Therefore, the word “balanced” was launched because it balances financial and nonfinancial measures, short- and long-term goals and reflective and predictive indicators ([Hepworth, 1998](#)). According to [Kaplan and Norton \(1992\)](#), the BSC is fundamentally a strategic measurement framework. It is regarded as one of the key frameworks that can assist management in producing and assessing disclosures, whether internally or externally ([Nielsen et al., 2017](#)). Furthermore, BSC has the chance of improving transparency and responsibility because it not only offers information to management but also more in-depth and meaningful information to stakeholders ([Gambles, 1999](#); [Shergold, 1997](#)). Because the BSC offers a thorough assessment of the organization’s short- and long-

term performance, both financial and nonfinancial performance and both internal and external performance, it is claimed that the BSC can be used as a framework for developing a corporate disclosure index (Hansen and Schaltegger, 2016; Ling Wei *et al.*, 2008). So, the BSC was used in the literature to measure the level of disclosure, such as by Ling Wei *et al.* (2008). In addition, Massingham *et al.* (2019) used the learning and growth perspective in the BSC to improve integrated thinking and the value-creation process in IR.

Based on these antecedents as well as the integrated thinking, the value-creating logic of IR, this study designed a framework for evaluating the quality of IR using the four key aspects of the balanced scorecard (IRQBSC). To prepare this (IRQBSC), the entire research was focused on the IR framework’s eight content elements, guiding principles, six capitals and value creation process (IIRC, 2021). Also, we consider Pistoni *et al.*’s (2018) scoreboard, as it is one of the comprehensive indices that was designed to measure IRQ. Therefore, the IRQBSC is articulated into 31 variables after deleting duplicate elements from these two sources, as shown in Table 1.

For a *financial perspective*, it includes all financial items that must be disclosed in the IR, such as performance indicators, but here the focus is only on financial performance indicators. Performance (as one of the content elements in the IR framework) contains financial performance indicators (e.g. profitability and revenues) and nonfinancial performance indicators, which are measured from other perspectives. Moreover, the financial perspective measures the disclosure quality of financial and manufactured capital. “Manufactured capital” includes all the material objects that the organization uses in the production of a good or service, such as buildings, equipment and infrastructure (IIRC, 2021). According to the tabulation plan shown in Table 2, the scoring system for these three items is based on the IR framework and assigns a score between 0 (if the item is absent) and 5 (very high quality).

Financial perspective	Stakeholders’ perspective	Internal perspective	Learning and growth perspective
1. Financial performance	4. Title of report	16. Responsibility for an integrated report	29. Human capital
2. Financial capital	5. Beneficiaries of the document	17. Motivation to apply IR	30. Intellectual capital
3. Manufacturing capital	6. Acknowledgments and awards for IR	18. Objectives pursued by IR	31. Value creation process
	7. Third-party verification	19. CEO’s commitment	
	8. Readability and clarity	20. Consistency of IR with generally applied disclosure standards	
	9. Conciseness	21. Internal audit	
	10. Accessibility	22. Outlook	
	11. Comparability	23. Organizational overview and external environment	
	12. Social and relationship capital	24. Basis of preparation and presentation	
	13. Natural capital	25. Business model	
	14. Stakeholder engagement	26. Risks and opportunities	
	15. Materiality	27. Governance	
		28. Strategy and resource allocation	
Maximum score = 15	Maximum score = 44	Maximum score = 41	Maximum score = 15

Table 1. Balanced scorecard to measure integrated reporting quality (IRQBSC)

Source: Authors’ own framing

For a *stakeholder perspective*, the term “customers” has been replaced with “stakeholders” because it is more inclusive. This perspective is designed to evaluate 12 elements based on the stakeholders’ top priorities or is at least conducted by them. Consequently, it begins with the report’s title and beneficiaries because it identifies the stakeholders to whom the report is addressed. The title of the report serves as the first point of contact with stakeholders because the integrated report is addressed to all relevant parties. Then, third-party verification and report awards are external factors that are carried out by third parties and are crucial to all stakeholders; therefore, they are regarded as crucial components in reporting quality, just like in literature such as Pistoni *et al.* (2018). Regarding scoring, these first four items are evaluated based on their presence or absence in the IR; they receive a score of 0 if they are not disclosed and a score of 1 if they are.

Consistent with IR framework, items such as readability and clarity, conciseness, accessibility and comparability are included because of their importance to all stakeholders, also noted in works that look at disclosure quality, like Botosan (1997) and Garegnani *et al.* (2015). Furthermore, these elements were taken from the stakeholder’s perspective because following these guidelines in preparing the IR makes it easier to understand the disclosed information and evaluate the company’s performance. We considered the earlier studies to assess these variables. For example, readability is assessed based on the clarity of the report’s index, graphs and tables, as well as their connection to the literary flow of information, as shown in Table 3. Conciseness is judged based on the number of report pages, as shown in Table 4. We also refer to Pistoni *et al.* (2018), who evaluated the report’s accessibility based on its availability on the company website and the extent to which they used an interactive digital platform, as shown in Table 5. Based on comparisons with previous years and competitors, we assessed its comparability (Table 6). Numerous earlier

Score Evaluation

0	Not disclosed
1	Poor disclosure: titles with little reference to the IR guiding principles
2	Insufficient disclosure: too little information depending on a few IR guiding principles
3	Moderate disclosure: the average amount of information depending on some IR principles
4	Very good disclosure: detailed information depending on many IR guiding principles
5	Excellent disclosure: comprehensive and detailed information depending on all IR guiding principles

Source: Authors’ own framing

Table 2.
Scoring system for
items from the IR
framework

Score Evaluation

0	Not clear (only text)
1	Poor presentation: (text, no figures, e.g. graphs, photos or tables, and no document index)
2	Primarily qualitative presentation: (text and one to two figures, e.g. graphs and tables and document index with few details)
3	Balanced presentation: The use of graphs, tables and the narrative flow is balanced. In addition, eliminate information duplication by making references to other parts of the report
4	Very good presentation: very good use of graphs and tables, a thorough index with hypertext links and references to outside sources
5	Excellent presentation: The narrative flow is connected to the charts, graphs and index

Source: Authors’ own framing

Table 3.
Scoring system for
readability and
clarity of item

JFRA

researchers, including [Pistoni *et al.* \(2018\)](#) and [Alotaibi and Hussainey \(2016\)](#), used this grading to assess the quality of disclosure.

The stakeholder perspective also evaluates social and relational capital, as well as natural capital, as these variables pertain to the interactions between businesses and their stakeholders and the community. For measuring performance related to the environment, natural capital, we could use the sustainable BMC ([Rabbani *et al.*, 2014](#); [Kalender and Vayvay, 2016](#)), but we had the aim to integrate the six capitals of IIRC and nonfinancial reports' information within the traditional BSC model for demonstrating that the mainstream value measurement is not so far from the sustainable, integrated value creation model. In addition, the IR approach relies on stakeholder engagement, so the stakeholder perspective looks at the nature and quality of the relationships between the organization and its stakeholders, as well as how and to what extent it recognizes, considers and addresses those interested parties' legitimate necessities and desires. Finally, materiality is one of the elements that is the most challenging to include in this context because it is regarded as an

Table 4.
Scoring system for conciseness

Score	Evaluation
0	Not applicable
1	More than 200 pages
2	From 151 to 200 pages
3	From 101 to 150 pages
4	From 51 to 100 pages
5	Up to 50 pages

Source: Authors' own framing

Table 5.
Scoring system for accessibility

Score	Evaluation
0	Not applicable
1	Hard copy document
2	The pdf version on the website
3	Pdf version and summary of the report on the website
4	Web report: The report can be viewed online using the firm's website's pdf version and highly interactive HTML platform
5	Highly accessible report contents via multiple channels: pdf version, HTML report and access via LinkedIn, Twitter and Facebook

Source: Authors' own framing

Table 6.
Scoring system for comparability

Score	Evaluation
0	No comparison
1	Poor comparison: compare with only previous year (only by numbers)
2	Insufficient comparison: compare with 2–10 previous years (only by numbers)
3	Moderate comparison: compare with 2–10 previous years and give an explanation
4	Very good comparison: compare with 2–10 previous years and compare with different companies in the same sector and give an explanation
5	Comprehensive comparison: compare with 2–10 previous years; compare with different companies in the same and different sectors and give an explanation

Source: Authors' own framing

internal matter. However, it is also closely related to the stakeholders because it defines the critical information that must be disclosed and that influences the value-creation process. In addition, stakeholder engagement and materiality disclosure are frequently integrated. These last four elements – social capital, natural capital, stakeholder engagement and materiality – are assessed using the IR framework, with each factor receiving a score between 0 and 5 (extremely high quality), as shown in [Table 2](#).

From the *internal perspective*, first, it includes responsibility for IR adoption, its objectives and motivations, the CEO's commitment, IR consistency with international disclosure standards and internal audit. Because IR is not a decision that is taken at random, it depends on the company's objectives and the executive team's decisions; therefore, it must be thoroughly explored. Knowing who is in charge of releasing the integrated reports as well as the purposes and driving forces behind this action is therefore very crucial when assessing the IRQ. Furthermore, the CEO's commitment shows the organization's understanding of the significance of nonfinancial information, as well as the level of dedication of the organization's executives to the integrated disclosure of financial and nonfinancial information. In addition, the IR approach does not infringe on international disclosure standards, hence creating integrated reports in accordance with the IR framework while adhering to other standards like GRI promotes the IRQ. Moreover, auditing the report internally adds to the report's credibility partially and is a crucial component in determining the quality of disclosure. Using binary scoring, these six things are scored according to whether they are included in the IR or not; they receive a score of 0 if they are not disclosed and a score of 1 if they are.

Second, the eight content elements of the IR framework are also articulated within the internal perspective. These components express the internal and external elements that have an impact on the firm's value-generating process. For instance, the corporation must provide information about the purpose, vision, culture and core policies, as well as the organizational structure, key activities carried out target markets and competitors under the organizational overview and external environmental elements. In addition, the business model, which [IIRC \(2013\)](#) refers to as "the core of the organization," can be viewed as the first and most important factor in evaluating how well a company communicates its value-creation story. As a result, given the importance of these components to the company's internal operations, they were considered in this context and scored using the IR framework, with a range of 0–5 (very high quality) for each factor, as shown in [Table 2](#).

Finally, the *learning and growth perspective* evaluates the level of disclosure of human and intellectual capital. Intellectual capital has been included in this perspective because it largely depends on knowledge, such as patents, software, trademarks and licenses, as well as systems, methods and protocols ([IIRC, 2021](#)). The same is true for human capital, which depends on individuals' abilities, experiences, and motivations for creativity. In addition, this perspective examines the value creation process, which reflects the changes in the six capitals that come about as a result of interactions between the organization's operations and generates value for all stockholders throughout the short, medium and long term. ([IIRC, 2021](#)). As indicated in [Table 2](#), these items are assessed and scored using the IR framework, with a range of 0 (not revealed) to 5 (extremely high quality) for each factor. It is worth noting that all these variables are not evaluated independently but rather in the context of how they interact with the other elements and how they affect capital over the process of generating value over the short, medium and long term.

5.2 Sample and data collection

First, due to the recent rise in interest in adopting integrated reports in Europe ([Lopes and Coelho, 2018](#)), the study's initial focus was on the European context. It should be noted that

while most earlier studies relied on businesses adopting the IRS that are posted on the IIRC website, this study stood out because it looked at every listed company on stock exchanges in the EU to determine which of them had adopted the IR and in what year it had begun publishing its first integrated report. Table 7 lists the 27 countries that make up the EU as the ones that were reviewed; there are 4,122 listed companies in these nations. In total, 656 companies were excluded due to data availability and 3,319 companies are also excluded as these companies do not adopt IR. This leaves 147 usable firms that use the IR framework in their reports. The sample period covers eight years, from 2013 (the year the IR framework was launched) to 2020 (the most recent year at the time of the analysis). As shown in Table 8, the final observations from the IR within the sample are 662 reports from 147 companies; however, 7 of those reports, despite having implemented IR, were not published in English. For example, one of the companies adopted the IR in 2017 and has been considered since that date within the sample, but only the 2020 report is available in English, so 2017, 2018 and 2019 reports were again excluded. (Table 9)

Mainly, the study relies on the official corporate websites as the main source for compiling IR, particularly for those reports that are only available in interactive form on the website. Furthermore, it is hard to determine whether a company has implemented IR

Country	No. of listed companies	Not available	Final examined sample	companies do not adopt IR	Companies adopt IR per country (analyzed IR)
1. Austria	69	18	51	50	1
2. Belgium	140	20	120	113	7
3. Bulgaria	188	58	130	130	0
4. Cyprus	108	30	78	78	0
5. Czechia	54	8	46	45	1
6. Denmark	125	23	102	100	2
<i>Baltic countries</i>	56	0	56	55	1
7. Estonia					
8. Latvia					
9. Lithuania					
10. Finland	135	10	125	122	3
11. France	439	57	382	350	32
12. Germany	481	89	392	386	6
13. Greece	165	20	145	141	4
14. Hungary	133	30	103	102	1
15. Ireland	43	2	41	40	1
16. Italy	212	15	197	186	11
17. Luxembourg	120	15	105	100	5
18. Malta	30	0	30	30	0
19. The Netherlands	171	13	158	135	23
20. Portugal	39	4	35	32	3
21. Slovakia	51	15	36	36	0
22. Slovenia	31	5	26	26	0
23. Spain	277	32	245	208	37
24. Sweden	362	36	326	325	1
25. Croatia	103	20	83	83	0
26. Romania	82	21	61	61	0
27. Poland	508	115	393	385	8
Total	4,122	656	3,466	3,319	147

Table 7.
Final sample per country

Source: Authors' own framing

Country	2013	2014	2015	2016	2017	2018	2019	2020	Total reports	Balanced scorecard perspectives
Austria	1	1	1	1	1	1	1	1	8	
Belgium	0	0	1	3	3	3	4	7	21	
Czechia	0	0	0	0	0	0	1	1	2	
Denmark	1	1	1	1	1	1	1	2	9	
Estonia	0	0	0	1	1	1	1	1	5	
Finland	0	1	1	2	2	2	3	2	13	
France	2	3	10	14	20	27	27	29	132	
Germany	2	2	2	3	3	4	5	6	27	
Greece	2	2	2	2	2	3	4	4	21	
Hungary	0	0	0	0	0	0	0	1	1	
Ireland	0	1	1	1	1	1	1	1	7	
Italy	2	4	6	7	8	9	10	11	57	
Luxembourg	0	0	2	2	4	5	4	4	21	
The Netherlands	2	8	12	15	17	18	21	23	116	
Portugal	0	0	0	1	1	2	2	3	9	
Spain	7	12	17	23	27	29	30	35	180	
Sweden	0	0	0	0	1	1	1	1	4	
Poland	0	2	2	3	5	5	5	7	29	
Total reports	19	37	58	79	97	112	121	139	662	
The report adopts IR but not in the English language	1	1	0	1	1	1	2	0	7	
Final analyzed reports	18	36	58	78	96	111	119	139	655	

Source: Authors' own framing

Table 8.
Sample classified per year

Sectors	No. of firms adopt IR
Industrials	33
Financials	27
Consumer discretionary	16
Energy	11
Technology	9
Telecommunications	9
Consumer staples	9
Basic materials	9
Utilities	9
Real estate	8
Health care	7

Source: Authors' own framing

Table 9.
Sample per sector

because some organizations are not using the IR framework but are still calling their reports IR, whereas other companies may prepare IR and refer to it as sustainability or an annual report. To ensure that the reports were prepared using the IIRC framework, the researcher looked at the basic preparation of the reports. So, even though they are referred to as “integrated reports,” if they were not prepared using the IR framework, they are not included in the sample. All 655 integrated reports from the 147 sample companies were subjected to manual content analysis (Weber, 1990) to collect and codify the data. All reports

have been carefully examined, and then they have all been categorized according to the suggested scoring scheme. One of the most extensively used research methods in social science is content analysis (Prasad, 2008). Many pieces of literature relating to IR and disclosure have embraced this strategy (Rivera-Arrubla *et al.*, 2017; Abeywardana, 2016).

The authors chose not to use content analysis software (such as WordStat 7, Sustainability 2020, Nvivo or TLab) because much of the information about the IRQBCS is intertwined and may not be expressed clearly in the report, which these tools cannot always handle (Cosma *et al.*, 2020). To enhance its validity, the coding scheme needs to be reviewed by several subject-matter specialists (Bryman and Bell, 2003). Thus, another independent researcher, who has experience with IR and is an expert in both financial and nonfinancial reporting, conducted this review of IRQBCS. Moreover, “test–retest stability” was used to examine the validity of the index. A random sample was drawn from the study sample after the results had been completed for some time, and they were tested once more, with the same results. Reliability is more concerned with the credibility of the study’s results (Collis and Hussey, 2013). To enhance reliability, the researchers analyzed the results independently and then matched the results. There were a few slight discrepancies in the results that were realized with more specificity in the grading system.

6. Descriptive analysis

Table 10 reveals the descriptive statistics of IRQ, including the average of IRQ, the median of IRQ and the standard deviations from 2013 to 2020 for the European institutions for each of the index’s items grouped under four main categories. As noted in Table 10, the IRQ has been rising steadily over time, increasing from 49.03% in 2013 to more than 77% in 2020. To give an illustration, the two years that recorded the highest averages (more than 70%) are 2020 (77.17%) and 2019 (74.15%). These years have such high scores because they have the largest number of integrated reports adopted by the European institutions (139 in 2020 and 120 in 2019), as shown in Figure 1.

Furthermore, Table 10 shows that 2018 has the second highest mean (70%) because only 111 out of the 656 IRs were adopted by the European institutions. While 20 out of 656 IRs were adopted in 2013, which achieved the lowest average of only 49.03% because it was the year in which the IIRC announced the framework for IR. Furthermore, the average disclosures for each perspective have altered over time, according to empirical results. For instance, between 2013 and 2020, the average quality of financial item disclosure increased from 7.5 (50%) to 12.85 (85%). In addition, from 50% to 70% in 2020, the quality of disclosure of stakeholder perspective items increased during the study period. Furthermore, the disclosure quality of internal items has improved from 49.4% to 75% by 2020. Finally, the same is true for learning and growth perspectives, which increased to 85% in 2020 from 41% in 2013.

According to Table 11, the quality of financial item disclosure scored 11.19 out of 15, or around 74.46%. Despite this, there are considerable differences in the level of financial item disclosure between nations. For instance, the highest mean for disclosure quality was attained in Italy (13) as opposed to 8 in Hungary, Sweden, Estonia and Austria. It is worth noting that these countries contain only one company that adopts IR, and the reason for the low level of quality may be due to the low number of reports examined compared with other countries. Turning to the quality of disclosure from the stakeholder perspective, we find that the average disclosure quality from this perspective is 63.6%. We also found that Italy, followed by Portugal, had the highest disclosure rate, with an average of 30 out of 44. Furthermore, the quality of internal item disclosure, such as business model and corporate governance, was average, scoring 28 out of 41, or 63%. The Netherlands, Portugal, Italy and

Years Perspectives	2013			2014			2015			2016		
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median
Financial perspectives	7.5556	2.52569	7	7.7778	2.28174	8	9.4828	2.0625	9	9.9487	2.16763	9.5
Stakeholder perspectives	22.1111	3.8023	23	22.8333	6.97956	22	25.466	4.5314	26	26.744	4.60501	27
Internal perspectives	20.4444	5.30507	20	22.4167	7.02801	22.5	24.535	4.4296	24.5	25.359	4.71795	26
Learning and growth perspectives	6.2778	2.84513	6	6.9722	2.77217	7	8.8103	3.0976	9	9.6154	3.26425	9
Total average	56.3889	—	—	60	—	—	68.2941	—	—	71.6671	—	—
Percentage	49.03%	—	—	52.17%	—	—	59.38%	—	—	62.31%	—	—

Source: Authors' own framing

(continued)

Balanced
scorecard
perspectives

Table 10.
Descriptive results
for the total scores
per year from 2013 to
2020

Table 10.

Years Perspectives	2017			2018			2019			2020		
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median
Financial perspectives	10.979	2.2617	11	11.523	2.40396	12	12.2667	2.39303	13	12.856	2.24435	13
Stakeholder perspectives	28.094	4.4298	28.5	28.856	4.37108	29	30.1917	4.31003	31	31.281	3.9819	32
Internal perspectives	26.833	4.7188	27.5	28.469	4.70362	28	30.5167	4.48898	30	31.82	4.90674	33
Learning and growth perspectives	10.823	3.1322	10.5	11.64	3.14149	12	12.3083	3.00083	13	12.791	2.78317	14
Total average	76.729	-	-	80.488	-	-	85.2834	-	-	88.748	-	-
Percentage	66.72%	-	-	70%	-	-	74.15%	-	-	77.17%	-	-

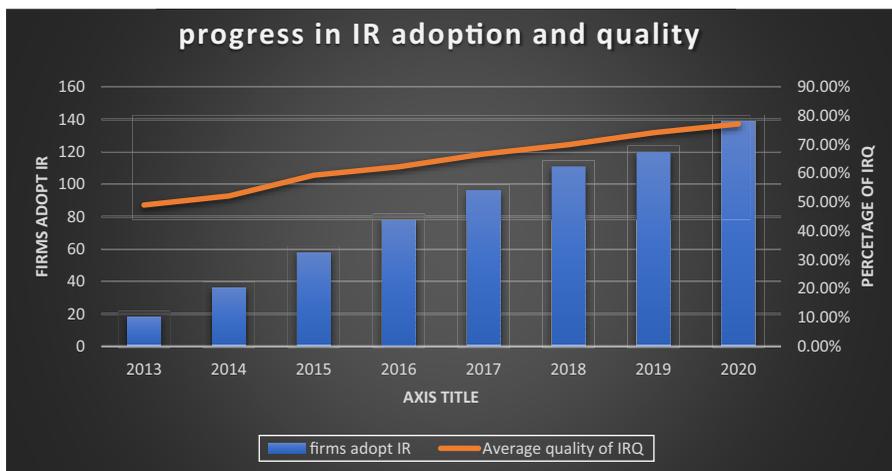


Figure 1.
Progress in IR adoption and quality between 2013 and 2020

Source: Authors' own elaboration

Luxembourg had the highest average quality of internal disclosure. In the context of learning and growth perspectives, the Netherlands achieved the highest mean (12.362), while Hungary, on the contrary, had the lowest averages of financial perspectives (12.362), while Estonia and Austria had the lowest averages of stakeholder perspectives and internal perspectives (16.8 and 20.375, respectively). Thus, it can be said that the highest average quality was achieved by the financial perspective (74.46%), followed by the learning and growth perspective (73.2%), the internal perspective (68.29%) and finally the stakeholder perspective (63.6%).

Regarding sectors analysis, Table 12 provides statistical data about the averages of the four major categories – financial, stakeholder, internal and learning and growth perspectives – per sector for the European listed institutions. Table 12 shows that, even though only nine companies have adopted an IR framework with 48 observations, the utility sector has the highest averages for financial perspective (11.9375), stakeholder perspective (30.667) and internal perspective (29.8542). On the contrary, the lowest averages in such categories were documented by technology (10.6216), basic materials (26.8) and real states (23.9286), respectively. In terms of learning and growth, the financial sector had the highest average (11.98), whereas the health-care sector had the second-lowest average.

In general, the industrial sector is thought to have the greatest number of businesses embracing IR and observations. However, the utility sector has the highest average quality from each perspective. Furthermore, the financial industry is ranked second in terms of the number of companies that release integrated reports and the number of observations, and it is also in the middle of the pack in terms of the average quality of integrated reports. The real estate sector and the basic materials sector come at the bottom in terms of the quality averages of the four perspectives.

Finally, the empirical analysis revealed that there is a positive relationship between the financial perspective and other perspectives, particularly the learning and growth perspectives (correlation is 0.813), as shown in Table 13. What is more, the results reported that the disclosure of items related to stakeholders affected positively the financial perspectives, internal perspectives and learning and growth perspectives. Overall, Table 14,

Table 11.
Descriptive results
for the total scores
per European Union
countries (147 firms
and 655 observations
from 2013 to 2020)

Perspectives Countries	Financial perspective			Stakeholder perspectives			Internal perspectives			Learning and growth perspectives		
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median
Poland	10,7586	2,37028	11	29,2069	2,93232	29	27	5,0639	27	10,552	3,00697	11
Sweden	9,5	1	9	27	1,41421	27,5	21,25	2,0616	21	6,75	1,25831	7
Spain	11,2825	2,65205	11	29,2825	4,59735	30	28,565	5,3255	29	10,209	3,61442	10
Portugal	8,8889	1,76383	9	30,4444	2,18581	30	29,667	2,8723	30	12,333	1,87083	13
The Netherlands	11,8362	2,76608	12	29,1121	5,0213	29	30,276	5,403	31	12,362	3,14407	14
Luxembourg	11,619	2,39742	11	26,5238	5,76731	29	28,191	6,0879	28	12,143	3,24478	14
Italy	13,0702	2,28238	14	30,9123	4,81545	32	31,474	4,6984	32	12,333	2,95401	14
Ireland	10,8571	2,0354	11	23,4286	3,59894	24	26,571	3,1015	28	9,4286	3,20713	10
Hungary	8	—	8	24	—	24	25	—	25	4	—	4
Greece	12,45	2,74293	13	29,65	3,26505	30,5	30,1	3,7543	30	12,6	3,51538	15
Germany	10,444	2,22457	10	25,5185	5,98954	25	27,815	4,6825	27	9,2963	3,78067	9
France	10,4341	2,69213	11	28,6512	4,25303	29	25,07	5,513	25	11,209	3,54585	12
Finland	11,3846	2,10311	11	25,4615	3,17845	25	25,923	4,3868	27	10,923	1,84669	12
Estonia	8,8	0,44721	9	16,8	0,44721	17	24,2	0,8367	24	6,2	0,44721	6
Denmark	10,8889	2,26078	10	23,2222	3,83333	23	27,333	7,8422	26	9,5556	3,64387	9
Czechia	12,5	2,12132	12,5	35	2,82843	35	32	4,2426	32	14	1,41421	14
Belgium	9,3333	1,93218	9	23	3,94968	24	25,381	5,0048	26	8,5714	2,08738	9
Austria	8,625	1,40789	8,5	23,75	2,12132	24,5	20,375	2,5036	21	8,375	0,74402	8,5
Total	11,1908	2,68964	11	28,4595	4,95155	29	28,017	5,6358	28	10,986	3,50205	12

Source: Authors' own framing

Sector	Financial perspective			Stakeholder perspective			Internal perspective			Learning and growth perspective						
	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	n				
Industrials	11.0195	154	2,658	11	27.7468	154	5.53605	27.5	10.6039	154	3.3498	10	28.4351	154	4.57605	29
Financials	11.5182	137	2,76826	12	28.1825	137	6.02229	29	11.9854	137	3.39763	14	28.9343	137	5.78945	30
Consumer discretionary	10.6349	63	2,56088	10	28.2063	63	4.59017	28	10.4603	63	3.1969	10	27.9365	63	4.32872	28
Utilities	11.9375	48	2,77838	12	29.8542	48	5.57345	30.5	11.125	48	3.72242	12.5	30.6667	48	3.95901	31.5
Energy	10.9773	44	2,82422	11	29.4773	44	5.24067	29.5	10.3864	44	3.79851	10.5	29.4545	44	4.75666	29.5
Consumer staples	11.7619	42	2,16186	12	29.1429	42	4.07593	29	11.5476	42	3.32179	12	27.0952	42	4.19529	26.5
Telecommunications	11.4474	38	2,89172	11	27.4211	38	6.7569	29	10.2368	38	3.94855	10	28.4474	38	5.451	29.5
Technology	10.6216	37	2,50944	11	27.3784	37	5.55953	28	10.7568	37	3.81084	12	27.4324	37	5.66441	29
Basic materials	10.8286	35	2,73846	10	27.3714	35	5.59457	27	10.2	35	3.47089	9	26.8	35	4.75766	25
Health care	11.3793	29	2,75699	12	27.6897	29	6.01251	27	11.2759	29	3.14979	12	27.2069	29	4.48314	28
Real estate	10.6429	28	2,65573	10	23.9286	28	5.45642	24.5	11.25	28	3.5132	12	28.8929	28	4.31483	28.5
Total	11.1908	655	2,68964	11	28.0168	655	5.63584	28	10.9863	655	3.50205	12	28.4595	655	4.95155	29

Source: Authors' own framing

Table 12.
Descriptive results
for the total
scores per sector
(147 firms and
655 observations
from 2013 to 2020)

Perspectives		Correlations			
		Financial perspectives	Stakeholder perspectives	Internal perspectives	Learning and growth perspective
Financial perspectives	Pearson correlation	1	0.677**	0.682**	0.813**
	Sig. (two-tailed)	–	0	0	0
	N	655	655	655	655
Stakeholder perspectives	Pearson correlation	0.677**	1	0.640**	0.741**
	Sig. (two-tailed)	0	0	0	0
	N	655	655	655	655
Internal perspectives	Pearson correlation	0.682**	0.640**	1	0.648**
	Sig. (two-tailed)	0	0	–	0
Learning and growth perspective	Pearson correlation	0.813**	0.741**	0.648**	1
	Sig. (two-tailed)	0	0	0	–

Table 13.

Correlations between four perspectives

Note: **Indicate significance 0.01, 0.05 and 0.10 level
Source: Authors' own framing

	Financial perspectives	Stakeholder perspectives	Internal perspectives	Learning and growth perspective
Mean	11.1908	28.4595	28.0168	10.9863
N	655	655	655	655
Std. deviation	2.68964	4.95155	5.63584	3.50205
First	13.00	32.00	26.00	15.00
Median	11.0000	29.0000	28.0000	12.0000
Last	10.00	25.00	23.00	9.00
Minimum	4.00	12.00	11.00	2.00
Maximum	15.00	39.00	40.00	15.00
Skewness	–0.229	–0.579	–0.312	–0.399

Table 14.

Descriptive for total scores (147 firms, 655 firm-year observations between 2013 and 2014, unbalanced panel)

Source: Authors' own framing

based on 655 firm-year observations (unbalanced) between 2013 and 2020, summarizes the total averages of IRQ for each category for 147 European-listed firms from 11 different industries. The findings indicate that financial and learning and growth perspectives scored the highest quality of disclosure, with total averages of 11.19 out of 15 (74.6%) and 10.98 out of 15 (73.2%) and standard deviations of 2.6 and 3.5, respectively. Moreover, the analysis revealed that the third highest category is an internal perspective, with a value of 28 out of 41 (68.3%) and a standard deviation of 4.9. On the other side, the stakeholder perspective was the lowest recorded category, scoring 64.68%. Generally, these averages suggest an average level of IRQ for all sampled firms.

7. Discussion

The study has tried to fill the research gap about IRQ through developing a new tool for measuring IRQ, based on IR framework and using the four perspectives of the BSC: IRQBSC. The findings of our study are supported theoretically by the theories that have been presented, including agency theory, signaling, stakeholders and legitimacy. The

analysis revealed an improvement, whether it be in the organization's adoption of integrated reports or the quality of these reports. This outcome exemplifies businesses' efforts to use IR (voluntary disclosure) as a strategy to address agency issues including information asymmetry. In addition, this outcome shows that businesses are continually working to raise disclosure quality, particularly concerning the process of value generation through time. The study's findings are also consistent with the stakeholder theory and legitimacy theory, according to which businesses attempt to implement integrated reports and seek stakeholder involvement to gradually increase and strengthen their legitimacy.

Empirically, the study showed that the issuance of IRs in the EU generally improved from 2013 to 2020, even though the proportion of listed companies that do so does not reach 5% of all listed companies. In addition, the quality of these reports has improved and changed over the years of investigation, although their IRQ is still in the middle range. This can be explained by the fact that integrated reports are now widely used throughout the world, not just in the EU. This result can also be explained by European cultural and legal considerations, such as Directive 2014/05/EU of the European Parliament and of the Council, which led to increased interest in disclosure transparency in Europe. The study's finding is in line with certain findings from earlier research, such as [Pistoni *et al.*'s \(2018\)](#) claim that the integrated reports from 2013 and 2014 are still of poor quality. However, [Eccles *et al.* \(2019\)](#) claimed that the EU's member states maintained an average level of integrated report quality in 2017 and 2018. This consistency, therefore, backs up the results of our investigation. Moreover, the results showed that firms are (though marginally) more interested in providing financial information and information regarding learning and growth than internal data or stakeholder data. This may be explained by the continued greater interest of stakeholders in financial reporting and business development (especially the value creation process) than in other types of information. This, however, is not persuasive enough given the recent rise in stakeholder understanding of the significance of nonfinancial disclosure. From another point of view, considering the sample's representation of all EU member states, there are significant regional differences in the proportion of listed businesses that have adopted integrated reports. For instance, Spain is regarded as the nation with the highest adoption rate of integrated reports, followed by France, the Netherlands, Italy and Poland. Other nations, like Austria, Estonia and the Czech Republic, adopted a single corporation with integrated reports. Other nations, like Bulgaria, Romania and Cyprus, did not contain any listed businesses that publish integrated reports. With a minor variation, this result is comparable to [Simona *et al.*'s \(2017\)](#) ranking of countries that adopted integrated reports in 2015, which ranked the countries by Spain, the Netherlands, Italy and France.

Furthermore, despite the EU's growing interest in nonfinancial disclosure over the past few years, financial disclosure still commands the greatest attention. This explains the finding that the financial perspective's average level of disclosure is higher than that of other perspectives. The second perspective of disclosure quality is the learning and growth perspective, in which the value creation process and human capital have acquired great importance during the past few years, as mentioned by [Anifowose *et al.* \(2020\)](#) and [Massingham *et al.* \(2019\)](#).

Moreover, the industrial sector, followed by the financial sector, is among the most avid users of integrated reports. Then it is followed by consumer discretionary, the utilities and then the energy sectors, which rank second in terms of adoption. However, the real estate and health sectors are among those that did not mostly adopt an IR approach. This study partially agrees with [Songini *et al.*'s \(2022\)](#) and [Pistoni *et al.*'s \(2018\)](#) studies, as the sectors that adopted the most integrated reports were the financial sector, then the consumer

services sector and the real estate sector at the bottom. The results of the research agreed with previous studies, which also demonstrated the interest of the financial and industrial sectors in adopting nonfinancial disclosure in general and integrated reports in particular, such as the study [Rivera-Arrubla et al. \(2017\)](#). However, there is no clear explanation about the adoption and quality of integrated reports by some sectors more than other sectors, and therefore this point needs to be studied.

8. Conclusion and final remarks

Because integrated reports offer a novel method of creating financial and nonfinancial reports, the debate around them has grown over the past few years. As a result of professionals' increased discussion of IR and increased IR adoption by firms, academic studies and empirical research have grown in number. The adoption of the IR framework, especially in South Africa, was a prominent issue in much of the earlier research. But because disclosure quality is more significant than its type and quantity, our research has investigated IR quality.

Because Europe is known for being one of the early adopters of the nonfinancial disclosure strategy in general, the study's objective was to assess the degree of change in the adoption of integrated reports and measure their quality over time in the EU from 2013 to 2020. Based on the content elements, fundamental concepts and guidelines in the theoretical framework of integrated reports, as well as some elements used in prior studies as indicators of disclosure quality, the study developed an index to measure the IRQ.

The findings of the current study highlight that the IRQ has been rising steadily over the frame time of the study. In terms of the level of IRQ for the four main categories across nations, the investigation revealed that Italy has the highest average of financial perspectives disclosure quality and Hungary has the lowest. Furthermore, in terms of the quality of internal item disclosure, the Netherlands, Portugal, Italy and Luxembourg had the highest average quality of internal disclosure. In the context of learning and growth perspectives, the Netherlands achieved the highest mean and Hungary had the lowest averages of financial perspectives (12.362) and learning and growth perspectives (12.362), whereas Estonia and Austria had the lowest averages of stakeholder perspectives and internal perspectives (16.8 and 20.375, respectively). Thus, it can be said that the highest average quality was achieved by the financial perspective, followed by the learning and growth perspective, the internal perspective and finally the stakeholder perspective. In general, the industrial sector is thought to have the greatest number of businesses embracing IR and observations. However, the utility sector has the highest average quality from each perspective. Furthermore, the financial industry is ranked second in terms of the number of companies that release integrated reports and the number of observations, and it is also in the middle of the pack in terms of the average quality of integrated reports. The real estate sector and the basic materials sector come at the bottom in terms of the quality averages of the four perspectives. Overall, the findings confirm that financial and learning, and growth perspectives scored the highest quality of disclosure. Moreover, the analysis revealed that the third highest category is internal perspective. On the other side, the stakeholder perspective was the lowest recorded category, scoring 64.68%.

The findings of this study have numerous implications. The study provided a methodology for assessing the IRQ based on BSC perspectives that is consistent with the IIRC framework and methods for evaluating the quality of disclosure adopted by some earlier studies. As a result, it becomes an integrated method that can aid academics in the future when evaluating integrated reports or any other reports that link financial and nonfinancial information objectively. In practice, businesses of any size can use this method

to assess the degree of balance and linkage between the revealed financial and nonfinancial information in their reports. This study also has important implications for European countries because, despite the broad usage of the IR approach, some countries, including Slovenia, Slovakia and Cyprus, do not have any enterprises that use it. The study calls for these countries to make efforts to promote the use of IR by enterprises. Besides that, the study calls on businesses, experts, organizations and authorities to discuss the main reasons why companies do not have IR or have low-quality IR, why they concentrate on the financial aspects of disclosure.

The major limitations of the current study can be summarized as follows: first, the sample includes only listed firms in Europe which limit the generalizability of the findings to other regions or other unlisted European firms. Furthermore, there is a significant disparity in how many businesses use IR across different countries. In some countries, like Hungary, there was just one firm that used IR for a year; in other countries, like Spain, there were 37 enterprises using IR (180 observations). Due to this significant difference, comparing the average IRQ across countries over the study period is challenging and imprecise. Second, to evaluate the IRQ based on the IRs of the sampled firms, the current study adopted manual content analysis, which has some shortcuts and weak points. Third, the current work aims basically to assess the quality of IR with the listed European institutions; therefore, scholars have focused only on the IRs that adhere to the IIRC framework. Therefore, there may be several areas for future research, such as exploring the IRQ for the unlisted European firms; furthermore, examining the IRQ in other developing economies or regions, such as the Middle East, and comparing the results with those done in developed economies; Furthermore, future studies may evaluate the IRQ in the periods before and after the pandemic and compare the results. Future studies should also concentrate on examining the factors that influence the adoption/quality of integrated reports, as well as the consequences of doing so. Finally, the analysis relies on traditional BSC perspectives, which does not include the environmental aspect, one of the pillars of sustainability. To understand the organization's environmental impact and how to report its environmental hazards, this environmental perspective might be incorporated in future research.

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