BER www.berjournal.com ISSN: 2619-9491 BUSINESS AND ECONOMICS RESEARCH JOURNAL

Business and Economics Research Journal Vol. 16, No.2, 2025 pp. 137-158 doi: 10.20409/berj.2025.461

Integrated Reporting Quality: A Comparative Analysis of Private Sector Companies with TOPSIS

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Abstract: *The aim of this study is to assess the quality of the integrated reports of private sector companies for 2023 and to rank the companies included in the study according to the quality scores of their integrated reports. For this purpose, the 2023 integrated reports of 27 private sector companies operating in various fields were obtained from the Integrated Reporting Network Turkey page and subjected to content analysis and then analyzed using the integrated reporting quality measurement technique based on four main components: background, reliability and assurance, content, and format. A total of 23 sub-categories were analyzed under the four components and the results were ranked using the TOPSIS method. The findings show that companies operating in the same sector score quite close to each other. In particular, the scores of companies in the banking and manufacturing sectors are close to each other.*

Keywords: Integrated Reporting, Integrated Reporting Quality, Integrated Report, Non-Financial Reporting, TOPSIS

JEL: M41, M49

Received : 22 January 2025
Revised : 25 February 2025
Accepted : 07 April 2025

Type : Research

1. Introduction

By reporting financial information, companies ensure that their internal and external stakeholders can access the information they need, thereby reducing information asymmetry and agency conflicts. Academic and sectoral studies in accounting have revealed that conventional financial reporting is no longer sufficient to meet these information needs and measure corporate performance (Ball et al., 2012: 138). Hence, numerous institutions and policy regulators have advocated a new reporting process that highlights the connections between financial and non-financial information and includes more detailed disclosures for financial report users (Özçelik et al., 2023: 1729).

Recent global financial crises and accounting scandals have prompted the introduction of integrated reporting (IR), which enhances traditional corporate reporting by combining both financial and non-financial information. IR offers an exhaustive slant on how a company creates value over the short, medium, and long term by leveraging various types of capital (IIRC, 2021: 2). Companies must actively involve the elements of capital in actions and decision-making mechanisms, evaluate the relationships between capital elements, determine the extent to which the needs and expectations of relevant report users are met by the companies, set the strategy of companies according to the risks and opportunities that may arise outside the company, and analyze the financial and non-financial performance results for both the past and future periods as a whole. Thus, an effective connection between financial and non-financial information related to activities will be established in companies. This way of thinking is referred to as integrated thinking. The International

Cite this article as: Özcan, İ. (2025). Integrated reporting quality: a comparative analysis of private sector companies with TOPSIS. *Business and Economics Research Journal, 16*(2), 137-158. http://dx.doi.org/10.20409/berj.2025.461

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Integrated Reporting Council (IIRC) describes integrated thinking as "*an organization's active consideration of the relationships between its various operational and functional units and the capital that the organization uses or affects.*" With the increasing value of connections between financial and non-financial information through integrated thinking in companies, it is expected that integrated reporting will be used more actively in corporate reporting.

With the integrated thinking framework, the factors that affect a company's ability to create value will be mutually integrated, and communication and collaboration between the company's departments will be facilitated. As a result, there will be an improvement in the quality of integrated reports. The concept of integrated reporting quality (IRQ) refers to the ability of integrated reports to communicate the elements that define a company's performance and value creation. IRQ takes a broad perspective that assesses the quality of reporting on the current state of companies' financial and non-financial performance, besides its strategies for the future (Cooray et al., 2020: 1). However, the accounting literature recognizes that corporate reporting quality is complex and subjective. Hence, it is argued that reporting should include several dimensions to make reporting quality understandable. As with corporate reporting quality measurements, there are various definitions of IRQ, but no consensus on a single definition. Nevertheless, the Integrated Reporting Format (IRF), published by the IIRC in 2013, is currently used for quantitative measurement of IRQ. Reports that closely align with the IRF, which incorporates global guiding principles and content elements, are considered high quality. Conversely, reports with low alignment are regarded as low quality (Barth et al., 2017: 60).

It is clear that the combined disclosure of financial and non-financial information and the high quality of disclosure can have a value-enhancing effect for companies. Providing information on how environmental, social and governance (ESG) activities are embedded in a company's operations supports the interests of capital providers in making more efficient capital apportionment decisions. It also strengthens a company's communication with its internal and external stakeholders through IR. In this context, complementary and high-quality disclosure of financial and non-financial information enables capital providers to evaluate investment opportunities more effectively, which is one of the objectives that IR seeks to achieve. Therefore, studies on IR have evolved into IRQ measurement and its determinants over time. IRQ measurement is influenced by factors such as company size, industry structure, company performance, ownership structure, and corporate governance mechanisms.

In this study, the most appropriate IR score table in the literature for IRQ measurement is referred to, considering previous studies. According to the findings of the literature review, it is noteworthy that the number of studies on IRQ measurement in Turkiye is quite limited (Dereköy & Baytöre, 2024; Özçelik et al., 2023; Yücenurşen, 2022), the sector factor is ignored in the existing studies, and there is no ranking that provides a comparison opportunity for the quality scores obtained. In this context, this study aims to measure IRQ in the private sector in Turkiye, which includes companies operating in different fields, and to present a comparative ranking of the quality scores obtained. As far as is known, this study will be the first one conducted in the private sector in Turkiye that presents ranking results.

In the second section of the study, the measurement of IRQ is explained, and frequently used studies from the literature are highlighted among the models developed for this measurement. The third section provides a detailed literature review on the topic. The fourth section explains the dataset and method used in the study. In the fifth section, the analysis findings are presented in tables. Based on the obtained findings, the IRQ performance of 27 companies is ranked for comparison, and the effects on performance are examined along with the relevant literature. In the sixth section, the conclusions drawn from the entire study are presented, the limitations of the study are discussed, and recommendations for future research are provided.

2. Measurement of IRQ

The concept of quality is difficult to define and measure, but research on IRQ, the newest dimension of corporate reporting, is of great importance. Because IRQ encompasses the quality of sustainability

reporting, financial reporting, and corporate social responsibility (CSR) reporting. Reporting quality is also important in terms of ensuring the reliability of both financial and non-financial information and minimizing information asymmetry (Asmar et al., 2018: 414). Within the International Integrated Reporting Framework (IIRF) published by the IIRC in 2013, fundamental principles were established to provide a convenient balance between content alignment requirements, comparability and flexibility of reports, information trustworthiness, and the ability to accommodate to the certain structure of companies and their conditions. IIRF includes seven key principles. These principles are strategic focus and future orientation, interconnections of information, relationships with stakeholders, materiality, conciseness, reliability and completeness, consistency, and comparability. In addition, the IIRF includes eight content elements: corporate overview and external environment, corporate governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, and the basis of preparation and presentation.

Because IR combines financial reporting with sustainability reporting, it has both quantitative and qualitative characteristics. The techniques developed for measuring IRQ after IIRC, depend on the definitions of IR. For example, Pistoni et al. (2018) define IRQ as the ability of IR to tender the strategically various factors that define company's performance and value creation. Pistoni et al. (2018) used the CSR qualities recommended by Hammond and Miles (2004) to develop a framework for IRQ measurement and a scoring model. Hammond and Miles (2004) stated that high-quality CSR should have the following characteristics: measurable reporting, external validation, setting appropriate goals and reporting progress toward these goals, reporting with all flaws, adopting reporting criteria and standards, providing opportunities to assess performance accurately, presenting a clear vision statement for the company, addressing key issues, ensuring wide access, using normalized data, and rewards. Pistoni et al. (2018) acknowledged that these attributes apply not only to CSR data but also to the evaluation of financial and quantitative data, as well as all non-financial information. Based on these attributes, the authors developed a technique for IRQ measurement through four main variables and several sub-variables. The four main variables were defined as: background, assurance and reliability, content, and form. Each main variable was scored within the context of sub-variables that align with criteria frequently used in the literature for evaluating reporting quality. The scoring system was adjusted and applied to cover both CSR and sustainability areas.

In the IRQ measurement model developed by Malola and Maroun (2019), the disclosures in integrated reports are classified into financial data and ESG data. ESG disclosures are also classified according to their compliance with Global Reporting Initiative (GRI) standards. Each data category is then evaluated in terms of specific indicators, such as quantity, intensity, measurement, compliance, and ease of interpretation, on scales ranging from 0 to -1. To ensure validity and reliability, Malola and Maroun (2019) piloted the coding process with five companies before analyzing the full sample. To address inter-coder reliability concerns, the lead researcher independently coded all the data.

Cooray et al. (2020) argue that, given the subjectivity of quality measures, IRQ evaluation should include various proportions, to illustrate diversity of themes addressed, explanation criteria, time intervals, and reliability of disclosures. Accordingly, they developed a comprehensive IRQ index by integrating the descriptive attributes within the conceptual framework of the International Accounting Standards Board for financial reporting, the reporting quality definition principles proffered in the GRI 101 core standard, and the IIRC core principles. Their comprehensive index comprises 30 IRQ measurement items, categorized into relevance, faithful representation, understandability, comparability, and timeliness. Each factor is evaluated on a five-grading scale ranging from 0 to 4 while the overall index score is determined by aggregating the sub-scores for each descriptive attribute. Several assessors were employed to minimize personal judgment and enhance the righteousness of IRQ evaluations. Accordingly, a content analysis was conducted by a researcher and a research assistant using ten integrated reports over three years. The scores from the study were also reviewed by another researcher in the research team.

3. Literature Review

Upon reviewing the academic studies related to IRQ, it is evident that a significant portion of these studies analyze the correlation between IRQ and cost of capital, financial performance, and cost of debt. In addition to this, there are studies that comparatively analyze IRQ measurement results (Chouaibi et al., 2024; Raimo et al, 2022; Sharif et al. 2022; Vitolla et al. 2020) The literature in accounting, finance, and sustainability suggests a connection between IR and the cost of equity capital. Specifically, IR is expected to lower both the cost of debt and equity capital for organizations over the medium to long term. These effects are driven by two key factors: adopting a sustainable company and operating model through integrated thinking and minimizing information asymmetry through increased transparency. This enhanced clarity allows for more accurate forecasts, ultimately leading to positive long-term returns for investors and financiers (Carvalho & Murcia, 2016). Previous studies have examined the relationship between the quality of financial reporting disclosures and the cost of equity (Ahmed et al., 2021; Dakhlaoui et al., 2017; Eliwa et al., 2016; Fu et al., 2012; Kwakye & Ahmed, 2024). The findings suggest that financial disclosures reduce the cost of equity, while there is still no consensus on the impact of non-financial data on the cost of equity. Therefore, it is crucial to investigate the effects of a reporting framework that brings together various types of data.

According to point of view of voluntary disclosure theory, adding non-financial information to financial data is valuable for capital markets because it helps minimize information asymmetry and lowers uncertainty when evaluating corporate performance. This approach is in accordance with the objective of IR to improve "*the quality of information available to providers of financial capital to enable more effective and efficient allocation of capital*" (IIRC, 2021). Many studies analyzing the impacts of IRQ have reported an opposite relationship with the cost of equity capital (Chouaibi et al., 2022; Chouaibi et al., 2024; Sharif et al., 2021; Vitolla et al., 2020). There is no study in the literature that finds a positive relationship between IRQ and the cost of capital or no statistically significant relationship between them. Vitolla et al. (2020) used the model developed by Pistoni et al. (2018) for IRQ measurement in their study aiming to identify the effects of the cost of equity on IRQ. The authors conclude that high-quality IR serves as an innovative method to reduce the cost of equity and emphasize that administrators have to watch more out attention to disclosures and especially improve IRQ. Sharif and Johari (2022) obtained a negative correlation between IRQ and cost of capital in their study, where they analyzed 100 companies selected from Australia and New Zealand based on Standard & Poor's market value. Additionally, it was found that analyst coverage serves as a mediator in explaining the relationship between IRQ and cost of capital. Chouaibi et al. (2024) examined the relationship between the cost of equity, financial performance, and IRQ of Islamic banks in the Middle East and North Africa region. The analysis, which included data from 67 Islamic banks for 2015-2020, found a negative correlation between IRQ and the cost of equity, and a positive relationship between IRQ and financial performance. In a study conducted by Boujelben et al. (2024) to research the effect of IRQ on the capital market, further analysis revealed a negative relationship between IRQ and cost of capital, besides a positive relationship between IRQ and the accuracy of financial analysts' forecasts. This study uses scores derived from the IR Excellence Awards published annually by Ernst & Young to measure IRQ.

Moloi and Iredele (2020) searched the IRQ of 20 companies listed on the Johannesburg Stock Exchange between 2013 and 2017 to determine whether there were any differences in firm value (measured by Tobin's Q ratio) of companies with high and low IRQ. IRQ data is derived from the Ernst & Young annual quality rating of integrated reports of the top 100 firms listed on the Johannesburg Stock Exchange (JSE). The results showed that IRQ differences were associated with statistically significant differences in firm value. Makri and Kabra (2023) aimed to investigate the relationship between IRQ and firm value through a moderating variable, company size. In the analysis using a sample based on the market capitalization of the 100 largest companies listed on the Bombay Stock Exchange, the model of Pistoni et al. (2018) is used to measure IRQ and a significant and positive relationship is found between IRQ and firm value, thus confirming the stakeholder theory. Radwan and Xiongyuan (2024) investigated whether IRQ is important for firm value from an investor perspective. In the analysis part of the study, the least squares regression method was used. Data from Asian companies preparing IR were used and the data of these companies for the period 2015-2022 were presented from the IIRC website. Using the model of Pistoni et al. (2018) to measure IRQ, the

study reported that there is a positive correlation between IRQ and firm value and that companies with high IRQ receive positive market reactions.

Buallay et al. (2020), analyzed the connection between IRQ and the financial, operational, and trade productivity of banks in Gulf Cooperation Council member states. The results indicated that high IRQ negatively affected the operational and financial performance of conventional banks while it negatively impacted the trade productivity of Islamic banks. Lugt and Mans-Kemp (2020) assessed the utility of IR by investigation the relationship between IRQ, sustainability and financial performance of publicly listed companies in South Africa. In the study, Ernst & Young Excellence in IR Awards earmarked to JSE Top 100 companies are used as the IRQ measure for the period 2013-2018. It was found that a high level of IRQ is substantial related to high levels of ESG performance, high earnings per share, and substantial leverage. Soriya and Rastogi (2022) measured the impact of the trend and quality of IR practices on the financial performance and firm value of 93 compaines listed on India's stock exchange. The analysis findings showed that IRQ is positively and significantly relevant to financial performance, while it is nigglingly interested in firm value (Tobin's Q). In a study by Zennaro et al. (2024), which conducted a meta-analysis of 45 empirical articles published between 2013 and 2022, it was confirmed that IRQ positively affects companies' market valuation and financial performance, and by promoting transparency in company reducing information asymmetry, and promoting accountability, it prevents opportunistic managerial behaviors. The 45 empirical studies reviewed espoused the scoring model developed by Pistoni et al. (2018), which focuses on four key elements: background, assurance and reliability, content, and IRQ. Peker (2024) analyzed the impact of audit quality and IRQ on financial performance using data from 26 companies operating in Turkiye for the years 2021 and 2022. Pistoni et al. (2018)'s IR scoring system is used to measure IRQ. As a result, no relationship was found between audit quality and IRQ and firm financial performance. Moreover, audit quality is found to have a significant positive effect on IRQ.

Raimo et al. (2022) used a panel data analysis to examine the impact of IRQ on the cost of debt using 399 observations (the period from 2017 to 2019 for 133 companies selected from the European stock exchange). IRQ was measured according to a scoreboard developed by Pistoni et al. (2018) and frequently used in the literature. The results revealed a negative connection between IRQ and the cost of debt, demonstrating that firms providing higher quality integrated reports have the advantage of accessing financial resources under better conditions. One of the studies on the relationship between IRQ and cost of debt belongs to Chouaibi et al. (2024). Through their panel data analysis of 540 companies listed on the European stock exchanges between 2013 and 2022, Chouaibi et al. (2024) identified a negative correlation between IRQ and the cost of debt. They also found that IRQ serves as an indirect mediator in the relationship between CSR, corporate ethical behavior, and the cost of capital.

Eccles et al. (2019) conducted a comparative analysis of the content and quality of the integrated reports of five companies selected from each of Brazil, France, Germany, Italy, Japan, the Netherlands, South Africa, South Korea, the United Kingdom, and the United States. A 0-3 scale was used to evaluate integrated reports assessed in terms of materiality, risks and opportunities, strategy and resource allocation, performance and outlook. According to the results, countries were divided into three categories: high quality (Germany, the Netherlands, and South Africa), medium quality (France, Italy, South Korea, and the United Kingdom), and low quality (Brazil, Japan, and the United States).

Dereköy and Baytöre (2024) conducted a study comparing the IRQ of private and state-owned banks operating in Turkiye. In the study, the IRQ index developed by Cooray et al. (2020) was used. In the study, data from five privately-owned banks and four state-owned banks were used. The IR scores of the analyzed banks were compared using the Mann-Whitney U test. As a result of the study, it is stated that private capital banks have a higher IRQ score than public capital banks.

According to the reviewed studies, the scoring table developed by Pistoni et al. (2018) has been most frequently used among IRQ measurement models. The majority of the studies focused on measuring the relationship between various micro factors of the company under investigation and IRQ. It is notable that there are very few studies where IRQ scores have been comparatively analyzed. Additionally, there has been

no study in Turkiye that compares the IRQ scores of cpmpanies operating in different sectors. Therefore, in this study, the IRQ scores of companies from various sectors in Turkiye have been analyzed using the model by Pistoni et al. (2018), and the resulting scores are presented in a comparative manner.

4. Data and Methodology

This study aims to measure the IRQ of private sector enterprises operating in different fields in Turkiye and to present a comparative ranking of the quality scores obtained. The companies to include in the study were selected based on the information available on the website of the Integrated Reporting Network Turkiye (ERTA). There are also companies in Turkiye that published integrated reports in 2023 and are not listed on the ERTA website. However, due to the broad scope of the private sector, it was not possible to reach each of these companies. To narrow down the analysis part of the study, only the companies announced by ERTA were examined. ERTA categorizes the companies preparing integrated reports into regulatory and supervisory institutions, public institutions, private sector companies, non-governmental organizations, and local governments. In this study, private sector companies were choosed due to the high number of companies and the diversity of companies sectors. The year chosen for the reports was 2023 because it provided the most recent integrated report data during the study period. Table 1 lists the selected private sector companies that published reports in 2023 and sector information.

Table 1. Names and Sectors of Selected Companies

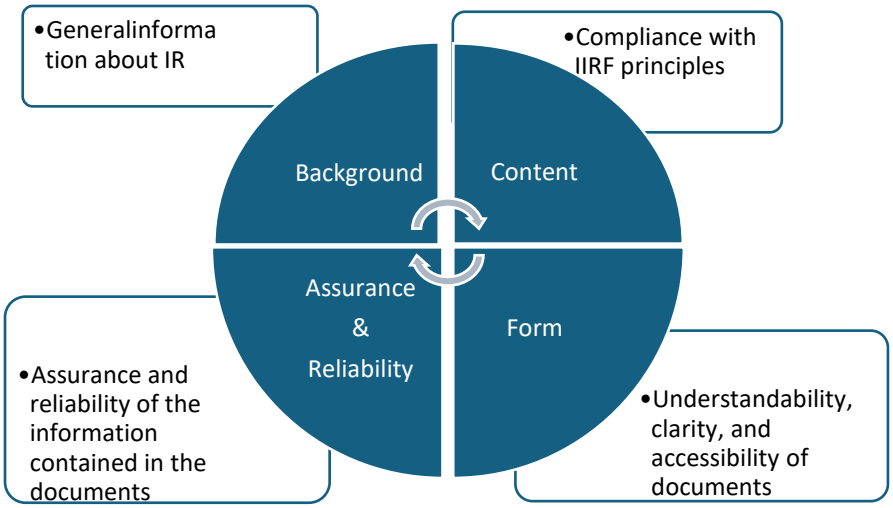
Companies	Sector	Companies	Sector
Garanti BBVA	Banking	Turkcell	Telecommunications
Türkiye İş Bankası	Banking	Coca Cola İçecek	Fast Moving Consumer Goods
Türkiye Sınai Kalkınma Bankası	Banking	BİM	Fast Moving Consumer Goods
Yapı Kredi	Banking	Teknosa	Fast Moving Consumer Goods
Akbank	Banking	Aydem Yenilebilir Enerji	Energy
Şekerbank	Banking	Zorlu Enerji	Energy
Albaraka Türk Katılım Bankası	Banking	Borusan Holding	Holding
Denizbank	Banking	Logo Yazılım	Technology/IT
QNB Finansbank	Banking	Kimteks Poliüretan	Manufacturing
Oyak Çimento	Cement	Anadolu Efes	Manufacturing
Akçansa	Cement	Türkiye Petrol Rafinerileri	Oil
Aksa Akrilik	Chemical	Ford Otosan	Automotive
Türkiye Sigorta	Insurance	Defacto	Textile
Anadolu Sigorta	Insurance		

Source: Integrated Reporting Türkiye, http://www.entegreraporlamatr.org/tr/entegre-raporlama/turkiyede-yayimlanan-entegre-raporlar.aspx

As shown in Table 1, the number of companies included in the study is 27, representing 13 different sectors. Due to the large number of companies and the diversity of sectors, the private sector category has been preferred for the analysis. In addition to presenting current data, 2023 is one of the rare years in which each of the 27 companies published an integrated report.

The method developed by Pistoni et al. (2018) has been used to measure the IRQ of private sector companies in Turkiye that publish integrated reports in Turkiye. This method was chosen because its measurement components and subcategories are clearer and more understandable than those of other methods while its quantification of the obtained data is less subjective. The scoring system comprises four main parts and 23 sub-variables (see Figure 1).

Figure 1. IRQ Scoring Components



Source: Pistoni et al., 2018: 493.

Table 2 presents the 11 quality assessment attributes developed by Pistoni et al. (2018) in relation to the four IRQ scoring system components and 23 subcategories of the IRQ scoring system, as outlined in Figure 1.

Table 2. Subcategories of IRQ Scoreboard Components

IR Scorecard Components	Sub-Variables of the IR Scorecard	Quality Assessment Attributes
Background	1. Motivations for companies' adoption of IR 2. IR objectives 3. Integrated report users 4. Manager in charge of reporting 5. Statements and commitments of the CEO or other senior executives on IR 6. Title of the report 7. Alignment of the report with the IIRF	1. Adoption of reporting rules and standards 2. Distinct expression of the CEO's vision for the companies
Assurance & Reliability	1. Internal audit 2. Independent audit 3. Achievements and awards for IR	3. Independent audit 4. Achievements and awards
Content	1. Corporate overview and external environment of the company 2. Company's business model 3. Risks and opportunities 4. Strategy and resource allocation 5. Corporate governance 6. Performance 7. Outlook 8. Presentation principles 9. Capital items 10. Value creation process	5. Quantitative description 6. Setting appropriate targets and reporting in line with these targets 7. Detailed reporting 8. Ability to accurately assess the positive impact from reporting 9. Good interpretation of important issues 10. Reporting of normalized data
Form	1. Understandability and clarity 2. Conciseness 3. Accessibility	11.Wide reach of the document

Source: Pistoni et al., 2018: 493.

For the background component of the reports, each of the seven subcategories was scored for presence (1) or absence (0) for a maximum score of 7. Information regarding the motivation of the company's top management for preparing the report and their objectives were obtained from the section "*about the report*" section. The section on membership and regulatory information was checked to determine if its statements and commitments indicated that the report had been prepared in accordance with the IIRF. The scoring scale for the subcategories of the background component is shown in Table 3.

Table 3. Score Scale for Background Component Subcategories

Score	Description
	Motivations for company adoption of IR
0	The integrated report does not provide sufficient explanation regarding the tendencies and motivations of top management and individuals or departments responsible for reporting in adopting the IR.
1	The integrated report has motivations to explain how the needs and wants of stakeholders are understood, considered, and addressed through decisions, actions, performance, and ongoing communication, playing a crucial role in strengthening transparency and accountability, which are essential in building trust and flexibility. These motivations are reported in alignment with the top management's voluntary reporting tendencies.
	IR objectives
0	The objectives of compliance with GRI standards and IIRC in IR have not been explained or the explanations provided are insufficient.
1	The IR objectives are explained within the framework of the current outcomes of the activities carried out by the company, future plans, and the sustainability approach. Full compliance with GRI standards and IIRC is targeted in IR. In this context, the presence of the following IR goals has been examined: • Activities aimed at improving the quality of information provided to financial capital providers for more effective and efficient distribution of capital, • Explanation of a more holistic and effective approach covering all the factors that materially affect the organization's ability to create value over time, • Efforts to strengthen accountability and manageability elements and ensure a better understanding of their interdependencies, • Trends supporting decision-making processes and actions with integrated thinking focused on creating value in the short, medium, and long term.
	Integrated report users
0	In preparing the integrated report, stakeholders that impact the company's ability to create value over time have not been referred to as IR users.
1	In preparing the integrated report, stakeholders that impact the company's ability to create value over time have been referred to as IR users. These users may include employees, customers, suppliers, company partners, local communities, lawmakers, regulators, and policymakers.
	Manager in charge of reporting
0	The manager responsible for IR has not been stated, and there is no statement indicating that those responsible from senior management have acknowledged their responsibility for IR.
1	The manager responsible for IR has been stated, or the statement includes that those responsible from the senior management have acknowledged their responsibility for IR.
	Statements and commitments of the CEO or other senior executives on IR
0	There is no statement regarding the declarations and commitments of the CEO or other senior executives on the topic of IR.
1	The responsibility of the CEO or other senior executives for ensuring the integrity of the integrated report, as well as the statement and commitment regarding whether the integrated report is presented in accordance with the IIRF or to what extent it is presented accordingly, has been disclosed.

Table 3. Score Scale for Background Component Subcategories (Continue)

Score	Description
	Title of the report
0	The report does not include a title for the Integrated Report or Integrated Activity Report.
1	There is a title for the Integrated Report or Integrated Activity Report.
	Alignment of the report with the IRF
0	The integrated report does not contain sufficient references to indicate its alignment with the IRF.
1	The integrated report has been examined in terms of whether its sections include references to compliance with the IRF. In this context, the integrated report incorporates the guiding principles under the IRF framework, including strategic focus and forward-looking orientation, interconnections between information, stakeholder relationships, materiality, conciseness, reliability and completeness, consistency, and comparability.

Source: International Integrated Reporting Council, 2021.

A similar scoring system was adopted for the assurance and reliability component. The three subcategories were scored for presence (1) or absence (0) for a maximum score of 3. For the internal audit subcategory, information on internal audit and internal control activities conducted by the company's audit committee was evaluated. For the independent audit subcategory, the report was assessed for an independent audit of financial information conducted by an independent audit firm and a limited assurance report on information selected from non-financial data. For the achievement and awards subcategory, the awards won by the company for achievements within its field were evaluated. For instance, banking sector companies might list awards like "*best private banking*," "*best corporate banking practice*," or "*best digital banking*"; cement sector companies might list "*low carbon heroes*" or "*sustainable product movement*"; fast-moving consumer goods companies might list "*superior taste*," "*best use of technology*," or "*digital transformation in e-commerce*"; energy sector companies might list "*best technical support solutions*" or "*ISO green transformation*"; IT sector companies might list "*applications supporting quality of life*" or "*companies adding value to sustainable development goals*." The detailed evaluation criteria for the scores ranging from 0 to 1 used for the subcategories of internal audit, independent audit, and achievements and awards are shown in Table 4.

Table 4. Score Scale for Assurance and Reliability Component Subcategories

Score	Description
	Internal audit
0	Information regarding the internal audit and internal control activities carried out by the company's audit committee has been evaluated for the internal audit subcategory. The integrated report does not provide sufficient information regarding the company's internal audit and internal control activities. Adequate and transparent information about the existence, roles, and responsibilities of the internal audit department and the audit committee has not been provided.
1	The company has an internal audit department. The existence, structure, and independence of the audit committee, its activities, the number of members, and their other roles and responsibilities within the organization have been explained. There is a statement indicating that internal auditing in the company is conducted in accordance with the standards published by the International Internal Audit Institute.

Table 4. Score Scale for Assurance and Reliability Component Subcategories (Continue)

Score	Description
	Independent audit
0	For the independent audit subcategory, the report was assessed for an independent audit of financial information conducted by an independent audit firm and a limited assurance report on information selected from non-financial data. Although the integrated report contains the independent auditor's report, it does not include a limited assurance report. There is insufficient information regarding the independent audit firm, its responsibilities, and the responsibilities related to the independent audit of the company.
1	The integrated report provides sufficient information about the company conducting the independent audit and the responsibilities related to the independent audit. In the sustainability performance indicators section, a limited assurance report is included. The limited assurance report states that the company's board of directors has fulfilled its responsibilities regarding selected information, such as environmental indicators.
	Achievements and awards for IR
0	The integrated report does not include any information regarding the achievements or awards obtained by the company in the past or the current year.
1	The integrated report explains the corporate memberships, awards, and achievements obtained for both the previous and current years. Additionally, goals for future achievements and awards have been set.

Source: International Integrated Reporting Council, 2021.

For the content and form components, each subcategory was rated on scale ranging from 0 to 5, as detailed in Table 5 (content) and Table 6 (form). In this case, the maximum score for the content and form variables is 15 each.

Table 5. Scale for Scoring the Content Component Subcategories

Score	Description
0	No content item was found.
1	There is a content element, but it is poorly defined and has few references to IIRF principles.
2	There is a content element; some quantitative information and a few statements based on IIRF principles.
3	There is a content element; the amount of information referring to the IIRF principles is average.
4	There is a content element; the definition of content is good and detailed; many IIRF principles are taken into account.
5	There is a content element; the description of the content is excellent; all of the IIRF principles are used.

Source: Pistoni et al., 2018: 494.

For the content component, the first subcategory—corporate view and assessment of the external environment of the company—was assessed in terms of the report sections about micro and macro perspectives, operating environment, and corporate profile. The subcategory of the company model was examined in terms of the goals and values addressed under the "Business Model" heading in integrated reports. For the risks and opportunities subcategory, the report's account of environmental and social risk assessment, and credit, market, and operational risks and opportunities were evaluated. For the strategy and resource allocation subcategory, the company's strategic priorities and objectives were evaluated. For the corporate management subcategory, the declaration and reporting of compliance with corporate governance and sustainability principles were evaluated. The performance subcategory was evaluated from both financial and non-financial perspectives by assessing the following types of company performance:

environmental, occupational health and safety, sustainability, social, governance, operational, and economic. For the general outlook subcategory, the company's competitive advantages and position in its company fields were analyzed. Subcategories related to the preparation and presentation foundation include the report's content and boundaries, the materiality determination process, and the frameworks and methods used for reporting financial matters. Capital was examined under six separate categories in terms of the reported data and disclosures: financial, intellectual, human, natural, manufactured, and social and relational. The value creation category was assessed in terms of the double materiality analysis. All evaluations were conducted based on the priorities that the companies identified using the GRI Standards.

The details of the score scale used for the subcategories of understandability and clarity, conciseness and accessibility in the form component are presented in Table 6.

Table 6. Score Scale for Form Component Subcategories

Score	Description
	Understandability and Clarity
0	The report is not very clear; there are no elements to facilitate the reading and understanding of the document (graphs, tables, etc.).
1	Description is predominantly qualitative; there is little use of unconnected graphs and tables; there is no document index or table of abbreviations.
2	The number of graphs and tables is adequate, but the index only includes a few details.
3	Graphs and tables make the document easier to understand; there is a balance between narrative flow and graphs/tables; references to other parts of the document avoid redundancy of information.
4	Use of graphs and tables is quite adequate; knowledge of access to external resources, website or other documents is available.
5	There is very good organization; the index, graphs, and tables are clearly linked to the qualitative flow of the narrative.
	Conciseness
0	Not applicable
1	More than 200 pages
2	Number of pages between 151 and 200
3	Number of pages between 101 and 150
4	Number of pages between 51 and 100
5	Up to 50 pages
	Accessibility
0	Not applicable
1	Only the printed document is available.
2	The report is only available as a pdf file on the company's website.
3	The report is available on the company website, but not only as a pdf file; it is also possible to access the content directly from the company website.
4	Thanks to a highly interactive platform, the report can be browsed online by accessing the company's website.
5	Report content is highly accessible; users can select topics and create a personalized report; the web platform is interactive; the report can be accessed via LinkedIn, Twitter, Facebook, etc.

Source: Pistoni et al., 2018: 494-495.

The subcategories of understandability and clarity and conciseness were scored according to the scale in Table 6. The accessibility subcategory was assessed in terms of access to the company's website, integrated reports from previous years, sustainability reports, independent auditor reports, etc. through the integrated report.

In the study, after determining the IRQ scores of the companies, the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) algorithm (Hwang & Yoon, 1981), a multi-criteria decision-making

method, was used to present a comparative ranking based on company and sector. Multi-criteria decision-making methods, which allow for the selection, classification, or ranking of alternatives with multiple evaluation criteria, have a wide range of applications (Kandemir & Özarı, 2019: 457).

In multi-criteria decision-making methods, the first step is to identify the criteria, followed by determining their importance levels, and finally ranking them based on the performance scores for all criteria (Müftüoğlu & Gerekan, 2022: 2275). TOPSIS, which focuses on positive and negative ideal solutions, is based on the proximity of decision points to the ideal solution. Due to its rationality, ease of application, and ability to weight evaluation criteria, TOPSIS is one of the most frequently used algorithms in this field. In this study, the use of the TOPSIS algorithm was preferred due to its ease of understanding and application, its ability to determine the most suitable option for each criterion through simple mathematical calculations, its generation of a highly reliable preference ranking, and the ease with which its results can be interpreted.

The TOPSIS algorithm calculates the values via the following six steps:

- Formation of decision matrices
- Formation of normalized decision matrices
- Formation of weighted standard decision matrices
- Identification of positive ideal (A^+) and negative ideal (A^-) solutions
- Calculation of distance measures (S^+ and S^-) between alternatives
- Calculation of the relative closeness to the ideal solution (C^+) and ranking

In the first step, a decision matrix is constructed for data with m alternatives (i) and n attributes (j), as follows:

$$A_{ij} = \begin{bmatrix} a_{11} & a_{12} & a_{13} & \dots & a_{1n} \\ a_{21} & a_{22} & a_{23} & \dots & a_{2n} \\ . & . & . & . & . \\ . & . & . & . & . \\ a_{m1} & a_{m2} & a_{m3} & \dots & a_{mn} \end{bmatrix} \quad (1)$$

The matrix shown in equation (1) shows the real value of alternative i according to criterion j. The row values represent the options while the column values represent the criteria. Here, m represents the number of alternatives and n represents the number of evaluation criteria (Hwang & Yoon, 1981: 38).

In the second step, the decision matrix is normalized. The normalized values of alternative i in attribute j are shown as r_{ij} while the normalized matrix is shown as R_{ij}.

Normalization is typically performed using the following equation (Dumanoğlu & Ergül, 2010: 105):

$$r_{ij} = \frac{a_{ij}}{\sqrt{\sum_{i=1}^{m} a^2{}_{ij}}}$$

$$R_{ij} = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ . & . & . & . \\ . & . & . & . \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{bmatrix} \quad (2)$$

In the third step, the weighted standardized decision matrix is created. To do this, the first step is to determine the weight values (w_i) for each component based on the sum of the normalized totals for each

component. The numbers in each column of the Rij matrix are then multiplied by the w_i value to create the weighted standard decision matrix (V), as shown in equation (3) (Mahmoodzadeh et al., 2007: 305).

$$V_{ij} = \begin{bmatrix} w_1 r_{11} & w_2 r_{12} & w_3 r_{13} & w_4 r_{14} & \dots & w_n r_{1n} \\ w_1 r_{21} & w_2 r_{22} & w_3 r_{23} & w_4 r_{24} & \dots & w_n r_{2n} \\ . & . & . & . & . & . \\ . & . & . & . & . & . \\ w_1 r_{m1} & w_2 r_{m2} & w_3 r_{m3} & w_3 r_{m4} & \dots & w_n r_{mn} \end{bmatrix} \quad (3)$$

In the fourth step, the positive ideal and negative ideal solutions are determined by determining the largest and smallest values among the column values in the weighted standard decision matrix (Mahmoodzadeh et al., 2007: 305).

After determining the positive ideal and negative ideal solution points, the fifth step is to calculate the distance to the maximum and minimum ideal points using equation (4). The left-hand and right-hand versions are for calculating the maximum and minimum ideal points, respectively (Wang & Lee, 2007: 1766-1767).

$$S^+{}_i = \sqrt{\sum_{j=1}^{n} \left(v_{ij} - v^+{}_j\right)^2} \qquad S^-{}_i = \sqrt{\sum_{j=1}^{n} \left(v_{ij} - v^-{}_j\right)^2} \quad (4)$$

The last step involves ranking the data by calculating the relative closeness values (C^+) to the ideal solution, using equation (5) (Wang & Lee, 2007: 1766-1767):

$$C^+{}_i = \frac{S^-{}_i}{S^-{}_i + S^+{}_i} \quad (5)$$

5. Findings

The integrated reports of 27 companies from 13 different sectors have been analyzed within the framework of the method developed by Pistoni et al. (2018), and the obtained IRQ scores have been ranked in a comparative manner. To minimize subjectivity in the IRQ assessment, the arithmetic average of the scores were calculated for the subcategories of the four components. This also enabled the included companies to be ranked.

Table 7 summarizes the decision matrix created for this study. The values in the table represent the arithmetic average of the scores given to the subcategories of the four components.

Table 7. Decision Matrix Table Values for Each Company for the Four IRQ Components

Companies	Background	Assurance & Reliability	Content	Form
Garanti BBVA	0.86	1	2.80	3.33
Türkiye İş Bankası	0.86	1	3.00	3
Türkiye Sınai Kalkınma Bankası	0.57	1	2.90	3
Yapı Kredi	0.86	1	2.90	3
Akbank	0.71	1	3.20	3
Şekerbank	0.71	1	3.20	3
Albaraka Türk Katılım Bankası	0.86	1	3.10	3
Denizbank	0.71	1	3.20	3

Table 7. Decision Matrix Table Values for Each Company for the Four IRQ Components (Continue)

Companies	Background	Assurance & Reliability	Content	Form
QNB Finansbank	0.71	1	3.50	3
Oyak Çimento	0.71	0.33	2.30	3.67
Akçansa	0.29	1	3.00	3.33
Aksa Akrilik	0.29	1	3.10	3.33
Türkiye Sigorta	0.71	1	3.00	3
Anadolu Sigorta	0.71	1	3.10	3
Turkcell	0.71	0.67	3.10	3.33
Coca Cola İçecek	0.86	1	3.30	3.33
BİM	0.71	1	3.30	3.67
Teknosa	0.71	1	3.00	2.67
Aydem Yenilebilir Enerji	0.43	1	3.20	2.67
Zorlu Enerji	0.86	1	3.40	3
Borusan Holding	0.86	1	3.20	3
Logo Yazılım	0.86	1	2.90	3
Kimteks Poliüretan	0.86	0.67	2.80	3.67
Anadolu Efes	0.86	0.67	3.10	2.67
Türkiye Petrol Rafinerileri	0.43	1	3.50	3
Ford Otosan	0.86	1	3.20	3
Defacto	0.71	0.67	2.80	2.67
	3.81	**4.89**	**16.04**	**16.10**

The values in the last row are the square roots of the sum of squares of the values in each column.

Table 8 shows the normalized decision matrix created by equation (2).

Table 8. Normalized Decision Matrix Values for Each Company for the Four IRQ Components

Companies	Background	Assurance & Reliability	Content	Form
Garanti BBVA	0.225	0.205	0.175	0.207
Türkiye İş Bankası	0.225	0.205	0.187	0.186
Türkiye Sınai Kalkınma Bankası	0.150	0.205	0.181	0.186
Yapı Kredi	0.225	0.205	0.181	0.186
Akbank	0.187	0.205	0.199	0.186
Şekerbank	0.187	0.205	0.199	0.186
Albaraka Türk Katılım Bankası	0.225	0.205	0.193	0.186
Denizbank	0.187	0.205	0.199	0.186
QNB Finansbank	0.187	0.205	0.218	0.186
Oyak Çimento	0.187	0.068	0.143	0.228
Akçansa	0.075	0.205	0.187	0.207
Aksa Akrilik	0.075	0.205	0.193	0.207
Türkiye Sigorta	0.187	0.205	0.187	0.186
Anadolu Sigorta	0.187	0.205	0.193	0.186

Table 8. Normalized Decision Matrix Values for Each Company for the Four IRQ Components (Continue)

Companies	Background	Assurance & Reliability	Content	Form
Turkcell	0.187	0.136	0.193	0.207
Coca Cola İçecek	0.225	0.205	0.206	0.207
BİM	0.187	0.205	0.206	0.228
Teknosa	0.187	0.205	0.187	0.166
Aydem Yenilebilir Enerji	0.112	0.205	0.199	0.166
Zorlu Enerji	0.225	0.205	0.212	0.186
Borusan Holding	0.225	0.205	0.199	0.186
Logo Yazılım	0.225	0.205	0.181	0.186
Kimteks Poliüretan	0.225	0.136	0.175	0.228
Anadolu Efes	0.225	0.136	0.193	0.166
Türkiye Petrol Rafinerileri	0.112	0.205	0.218	0.186
Ford Otosan	0.225	0.205	0.199	0.186
Defacto	0,187	0.136	0.175	0.166
TOTAL	**5.056**	**5.115**	**5.180**	**5.175**

Tables 9 and 10 present, respectively, the wi values and the weighted standard decision matrix created using equation (3). The total of the normalized values for the components background, assurance and reliability, content, and form was 20.525 (Table 8).

Table 9. Criteria Weights Table

wi	0.246	0.249	0.252	0.252

Table 10. Weighted Standardized Decision Matrix Table Values for Each Company for the Four IRQ Components

Companies	Background	Assurance & Reliability	Content	Form
Garanti BBVA	0.055	0.051	0.044	0.052
Türkiye İş Bankası	0.055	0.051	0.047	0.047
Türkiye Sınai Kalkınma Bankası	0.037	0.051	0.046	0.047
Yapı Kredi	0.055	0.051	0.046	0.047
Akbank	0.046	0.051	0.050	0.047
Şekerbank	0.046	0.051	0.050	0.047
Albaraka Türk Katılım Bankası	0.055	0.051	0.049	0.047
Denizbank	0.046	0.051	0.050	0.047
QNB Finansbank	0.046	0.051	0.055	0.047
Oyak Çimento	0.046	0.017	0.036	0.057
Akçansa	0.018	0.051	0.047	0.052
Aksa Akrilik	0.018	0.051	0.049	0.052
Türkiye Sigorta	0.046	0.051	0.047	0.047
Anadolu Sigorta	0.046	0.051	0.049	0.047
Turkcell	0.046	0.034	0.049	0.052

Table 10. Weighted Standardized Decision Matrix Table Values for Each Company for the Four IRQ Components (Continue)

Companies	Background	Assurance & Reliability	Content	Form
Coca Cola İçecek	0.055	0.051	0.052	0.052
BİM	0.046	0.051	0.052	0.057
Teknosa	0.046	0.051	0.047	0.042
Aydem Yenilebilir Enerji	0.028	0.051	0.050	0.042
Zorlu Enerji	0.055	0.051	0.053	0.047
Borusan Holding	0.055	0.051	0.050	0.047
Logo Yazılım	0.055	0.051	0.046	0.047
Kimteks Poliüretan	0.055	0.034	0.044	0.057
Anadolu Efes	0.055	0.034	0.049	0.042
Türkiye Petrol Rafinerileri	0.028	0.051	0.055	0.047
Ford Otosan	0.055	0.051	0.050	0.047
Defacto	0.046	0.034	0.044	0.042

Positive ideal and negative ideal solutions were determined by determining the largest and smallest values among the column values in the weighted standard decision matrix in Table 10, and these values are shown in Table 11.

Table 11. Positive Ideal and Negative Ideal Solutions Table

A^+	0.055	0.051	0.055	0.057
A^-	0.018	0.017	0.036	0.042

The calculations made using equations (4) and (5) and the resulting ranking are shown in Table 12.

Table 12. Distance Values to Positive Ideal and Negative Ideal Solutions, Ideal Solution Value, and Ranking

Companies	S^+	S^-	C^+	Ranking
Garanti BBVA	0.012	0.052	0.810	7
Türkiye İş Bankası	0.013	0.052	0.798	8
Türkiye Sınai Kalkınma Bankası	0.023	0.040	0.634	21
Yapı Kredi	0.014	0.051	0.785	9
Akbank	0.015	0.046	0.759	12
Şekerbank	0.015	0.046	0.759	12
Albaraka Türk Katılım Bankası	0.012	0.052	0.811	6
Denizbank	0.015	0.046	0.759	12
QNB Finansbank	0.014	0.048	0.775	11
Oyak Çimento	0.040	0.032	0.443	27
Akçansa	0.038	0.037	0.494	26
Aksa Akrilik	0.038	0.038	0.500	25
Türkiye Sigorta	0.016	0.045	0.740	16
Anadolu Sigorta	0.015	0.046	0.750	15
Turkcell	0.021	0.036	0.634	20
Coca Cola İçecek	0.006	0.054	0.898	1
BİM	0.010	0.049	0.834	3

Table 12. Distance Values to Positive Ideal and Negative Ideal Solutions, Ideal Solution Value, and Ranking (Continue)

Companies	S^+	S^-	C^+	Ranking
Teknosa	0.020	0.045	0.695	17
Aydem Yenilebilir Enerji	0.032	0.038	0.541	24
Zorlu Enerji	0.011	0.053	0.835	2
Borusan Holding	0.011	0.052	0.821	4
Logo Yazılım	0.014	0.051	0.785	9
Kimteks Poliüretan	0.020	0.044	0.686	18
Anadolu Efes	0.024	0.043	0.640	19
Türkiye Petrol Rafinerileri	0.030	0.040	0.577	22
Ford Otosan	0.011	0.052	0.821	4
Defacto	0.027	0.033	0.551	23

As shown in Table 12, the companies with the highest and lowest IRQ scores are Coca-Cola İçecek and Oyak Çimento, respectively. In this case, the company with the highest IRQ score operates in the fast-moving consumer goods sector, while the company with the lowest IRQ score operates in the cement sector. Table 12 indicates that companies operating in the same sector generally have rankings that are close to each other. Accordingly, the sectoral similarities in the rankings are as follows:

- Among the three companies in the fast-moving consumer goods sector, Coca-Cola İçecek ranks first, while BİM ranks third. This indicates that two out of the three companies in the fast-moving consumer goods sector, or approximately 67%, have the highest IRQ scores. However, Teknosa, which also operates in the same sector, ranks 17th.
- Out of the 27 companies listed, 9 are banks (approximately 35%). According to Table 12, between the 6th and 12th positions, the following banks are ranked: Albaraka Türk Katılım Bankası, Garanti BBVA, Türkiye İş Bankası, Yapı Kredi, QNB Finansbank, Akbank, Şekerbank, and Denizbank. This finding shows that 8 out of the 9 banks are ranked consecutively with similar scores. In fact, Akbank, Şekerbank, and Denizbank share the same component score. Only Türkiye Sınai Kalkınma Bankası is ranked much lower, at the 21st position.
- There are only two companies operating in the insurance sector on the list. The findings show that Anadolu Sigorta and Türkiye Sigorta have very similar IRQ scores and are ranked 15th and 16th, respectively.
- Similar to the insurance sector, only two companies in the manufacturing sector have been analyzed. It is noteworthy that the IRQ scores of the manufacturing sector companies are also very close to each other. Kimteks Poliüretan and Anadolu Efes are ranked 18th and 19th, respectively.
- The last two positions on the list are occupied by Akçansa and Oyak Çimento, which operate in the cement sector. According to the IRQ scores, Akçansa is ranked 26th, and Oyak Çimento is ranked 27th.

6. Conclusion

Bringing together financial and non-financial data in one report, IR offers an innovative tool for corporate reporting. It highlights how a company's management strategy, financial and sustainable performance, and future expectations contribute to creating and sustaining value in the short, medium, and long term. IR allows for a holistic presentation of a company's value creation potential, encompassing its financial, manufactured, natural, intellectual, human, social, and relational capital. The IR process helps managers develop innovative strategies and enhance decision-making through integrated thinking. Additionally, IR provides researchers with a framework to focus on the factors influencing companies' value creation.

However, as IR practices have spread, the quality of these reports has also come into question while research on IRQ has grown recently despite the difficulties of defining and measuring quality. The IIRC has created principles-based IIRF to achieve a balanced approach between compliance requirements, comparability, and flexibility. This framework addresses the content of reports, ensures information reliability, and allows organizations to tailor their reports to fit their operational conditions and areas of activity. IRQ complies with this framework. Because of its principles-based structure, the IIRF also provides managers with the flexibility to interpret the guidelines when preparing an integrated report. In other words, IRQ is not just about applying a rigid framework; rather, it involves effectively and clearly reporting a company's ability to create value by considering both the capital it uses and the capital it impacts.

The literature review conducted reveals a significant increase in studies related to IRQ, especially in the 2020s. When examining the distribution of these studies in terms of content, it is observed that the relationship between IRQ and factors such as financial performance, firm value, cost of capital, and debt cost has been frequently investigated. In a very small number of studies, however, a comparative analysis of IRQ scoring has been presented. In the related studies, IRQ has either been measured by the authors themselves or based on reward scores announced by various companies. As in most studies where manual calculations were made, the scoring table developed by Pistoni et al. (2018) has been used in this study as well. This study is similar to the works of Vitolla et al. (2020), Raimo et al. (2022), Makri and Kabra (2023), and Radwan and Xiongyuan (2024) in terms of the IRQ measurement technique. However, the studies reviewed in the literature mainly measure the relationship between IRQ and firm value, cost of debt, cost of capital, and financial performance, so the results of this study cannot be directly compared with them. The only study that ranks based on IRQ is the one conducted by Dereköy and Baytöre (2024), which compares private and public capital banks. Dereköy and Baytöre (2024) found that private capital banks have higher IRQ than public capital banks. The banks analyzed in this study, however, are private and foreign capital banks, with no public capital banks included in the analysis. The result of this study shows that the top two banks among the nine analyzed are foreign capital banks. However, private capital banks Akbank and Şekerbank, along with the foreign capital bank Denizbank, have the same IRQ score. Therefore, the results of this study do not allow for a comparison of banks based on their capital structure.

The findings of the study indicate that the highest IRQ score is nearly twice as high as the lowest IRQ score. Accordingly, Coca Cola İçecek, ranked 1st on the list, has a score of approximately 0.90, while Oyak Çimento, ranked 27th, has a score of around 0.45. One of the most striking results of the TOPSIS ranking is that companies in the same industry tend to have similar scores. As interpreted in Table 12, companies in the fast-moving consumer goods, banking, insurance, manufacturing, and cement sectors have IRQ scores that are very close to each other and are consecutively ranked. The only sector that does not fit this finding is the energy sector, in which Zorlu Enerji and Aydem Yenilebilir Enerji operate. These two companies have significantly different IRQ scores, with Zorlu Enerji ranking high on the list and Aydem Yenilebilir Enerji ranking at the bottom. This discrepancy is due to the fact that the score calculated for Zorlu Enerji's background variable is almost twice as high as the score calculated for Aydem Yenilebilir Enerji's background variable. However, based on the findings, it is possible to say that, except for the energy sector, companies in the same sector have similar IRQ scores and, therefore, similar rankings. This result cannot be compared with the literature, as no comparative analysis has been conducted on the IRQs of multiple companies from various sectors of a single country. This makes the current study unique in the IRQ literature.

Literature comparison is not possible, however, the findings of this study can be compared sector-wise. The 2023 data in the study covers 27 companies and the 13 different private sectors in which these companies operate. According to the TOPSIS ranking based on IRQ scores, the sectors are ranked as follows: fast-moving consumer goods, energy, automotive, holding, banking, technology, insurance, manufacturing, telecommunications, oil, textile, chemicals, and cement. Within this ranking, Teknosa from the fast-moving consumer goods sector, Aydem Yenilebilir Enerji from the energy sector, and Türkiye Sınai Kalkınma Bankası from the banking sector show deviations from their respective sectors. Apart from these three companies, there are no other companies that deviate from the ranking. When comparing the sectoral average IRQ scores, it is observed that there is a difference of approximately 0.40 points between the fast-moving

consumer goods sector, which ranks first, and the cement sector, which ranks last. The sectors that are closest to each other according to the average IRQ score are ranked as follows: Energy, automotive, and holding; banking, technology, and insurance; manufacturing and telecommunications; oil, textiles, and chemicals.

In the energy, automotive, and holding sectors, it is observed that the background and assurance & reliability variables have the same score. This situation results from a similar level of disclosure regarding integrated report users, IR goals, report headings, and independent audit report information across all three sectors. Companies in the banking, technology, and insurance sectors show similarities in the scores given to the assurance & reliability and form variables. In this context, information about the independent audit firm, responsibilities related to independent auditing, limited assurance reports and their content, clarity and comprehensibility of the report, adequacy of the graphics and tables, and ease of access to websites and other documents share similar scores. Similarly, companies in the manufacturing and telecommunications sectors, as well as those in the oil, textile, and chemical sectors, are similar in terms of the assurance & reliability and form variables. Sectoral differences between the components should also be addressed. In this regard, the greatest difference in terms of the background variable is observed between the energy, automotive, and manufacturing sectors and the chemical sector. It can be said that companies in the energy, automotive, and manufacturing sectors perform strongly in reporting IR goals, objectives, motivations, and users, as well as in aligning IR with IIRF, whereas companies in the chemical sector are weaker in these areas. This may be due to the chemical sector's emphasis on non-financial reporting related to CSR performance disclosures, while explanations for other subcomponents of the background component are insufficient. In terms of the content component, the greatest difference is seen between the oil, energy, and automotive sectors and the textile and manufacturing sectors. In the oil, energy, and automotive sectors, companies report their corporate appearance, performance, value creation processes, as well as risks and opportunities, in a more transparent way in terms of attracting investors. The number of companies operating in the textile and manufacturing sectors in Turkiye is quite high, but the number of companies included in the analysis from these sectors is low. While this makes it difficult to draw a general conclusion about the content component, it can be interpreted as a tendency for reporting on production safety and quality in these sectors. However, there are no significant differences between sectors for the assurance & reliability and form variables.

In the sectoral comparison of average IRQ scores, it is observed that the variables influencing the ranking are the background and content. The average scores for assurance & reliability and form variables do not create significant differences between companies and sectors. The sectors with the highest average scores for the background variable are energy, automotive, holding, technology, and manufacturing, while the sectors with the lowest scores are oil, chemicals, and cement. The subcategories of the background variable that have the most explanation within the scope of IR are identified as IR objectives, integrated report users, and title of the report. The subcategories of the background variable with the least explanation within the scope of IR are motivations for companies adoption of IR, manager in charge of reporting, and statements and commitments of the CEO or other senior executives on IR. In this context, for sectors and companies with low IRQ scores under the background variable, it is recommended to identify motivations for understanding and considering the needs and wants of stakeholders and how these needs are addressed through decisions, actions, performance, and continuous communication. These motivations should be reported in line with voluntary reporting tendencies. Moreover, the responsibilities of the designated manager in charge of IR or senior executives should be transparently explained. Presenting the integrated report in accordance with IIRF and making statements and commitments about the level of compliance will increase the effectiveness of the background variable, thus improving the IRQ score.

The sectors with the highest average score for the content variable are oil, energy, and fast-moving consumer goods, while the sectors with the lowest scores are cement, textiles, technology, and manufacturing. It has been found that the subcategories with the most explanation within the scope of content are the independent audit report and the limited assurance report, along with the explanations provided in this context. For the internal audit subcategory, information related to internal audit and internal

control activities, the existence of the internal audit department, and the audit committee's roles and responsibilities have been observed to lower the average score of the content variable. In this context, it can be said that more transparent explanations should be made within the IR regarding the existence, structure, independence, activities, number of members, and other roles and responsibilities of the audit committee. Since the explanations related to the internal audit sub-variable have the lowest average score, it is particularly recommended to improve these explanations for the textile sector. Additionally, for companies in the cement, textile, technology, and manufacturing sectors, it is suggested to include an explanation in the IR content stating that internal audits are conducted in compliance with the standards published by the Institute of Internal Auditors.

The findings of this study are especially informative for non-financial report preparers, as they allow for sectoral comparison. This is because the study provides insights into the characteristics and aspects of high-quality reporting. Through the components and subcategories in the IRQ scoring table used, the study highlights ways to publish high-quality IR. A high IRQ level can increase the transparency of companies, reducing information asymmetry for investors and other stakeholders. Additionally, companies can improve their value-creation processes and enhance their corporate performance through high-quality IR. Being aware of the ways to produce high-quality IR and the key considerations in this regard will help shape the corporate vision and ensure the integration of this mindset into all company processes.

Regarding limitations, the study only drew on IR data for 2023, which may affect the objectivity of the findings. As the number of companies engaged in IR increases, and if they continue to publish IRs over a number of years, future studies could obtain more objective results. In particular, there is a need to enrich the literature in Turkiye with more studies of IRQ measurement. In future studies, especially for Turkiye, it is recommended to increase the number of sectors and companies included in the analysis and to expand the range of years examined.

Declarations and Disclosures

Ethical Responsibilities of Authors: The author of this article confirms that her work complies with the principles of research and publication ethics.

Conflicts of Interest: No potential conflict of interest was reported by the author.

Funding: The author received no financial support for the preparation and/or publication of this article.

Author Contributions: The author confirms sole responsibility for conceptualization and design, data collection, analysis of data and interpretation of results, writing the first draft of the manuscript, and review and editing.

Plagiarism Checking: This article was screened for potential plagiarism using a plagiarism screening program.

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