

The impact of integrated reporting quality on the cost of equity capital: evidence from Asia

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Soltan Ramadan Ali Radwan

Department of Accounting, Faculty of Commerce, Sohag University, Sohag, Egypt

Wang Xiongyuan

*School of Accounting, Zhongnan University of Economics and Law,
Wuhan, China, and*

Mohamed Attia Ali Abdelall and

Hesham Nagdy Mohammed Abdelgawad

Accounting Department, Faculty of Commerce, Assiut University, Assiut, Egypt

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Abstract

Purpose – This paper aims to examine the impact of the quality of integrated reporting (IR) on the cost of equity capital in the voluntary Asian context.

Design/methodology/approach – This study uses OLS regression to analyze the impact of IR quality on the cost of equity, using a sample of Asian firms that issued IR and are presented on the International Integrated Reporting Council website from 2015 to 2022. IR quality is evaluated through content analysis. To ensure the robustness of the findings, this study incorporates alternative cost of capital measures, propensity score matching and instrumental variable estimation.

Findings – IR quality negatively influences the cost of capital. Additional analysis shows that this negative impact is more pronounced in profitable firms and firms with a higher need for external financing. In addition, further analysis shows that the negative impact remains significant during the COVID-19 pandemic period. In addition, the findings reveal that earnings quality and analyst forecast accuracy serve as mediators in the relationship between IR quality and the cost of capital.

Practical implications – Understanding how IR quality influences the cost of capital is vital for investors, policymakers, regulators and companies.

Originality/value – This study is unique in concentrating on the effect of the quality of IR on the cost of capital in the voluntary Asian context. This region has received little attention in previous research. This study also adds to the literature by showing the mediating role of earnings quality and analyst forecast accuracy on the relationship between IR quality and cost of capital.

Keywords Integrated reporting, Cost of capital, Earnings quality, Asia

Paper type Research paper

1. Introduction

Corporate reporting plays a crucial role in the functioning of the capital market, facilitating the efficient allocation of limited investment resources (Healy and Palepu, 2001). It diminishes the extent of information asymmetries, enhancing a company's liquidity and



reducing the costs associated with financing (Diamond and Verrecchia, 1991). When investors have access to information, they can accept a lower cost of capital (COC). However, investors without access to such information remain exposed to information-related risks, valued through higher expected returns (Easley and O'Hara, 2004). As Francis *et al.* (2004) outlined, inadequate reporting hinders the coordination between companies and their investors concerning capital investment decisions, consequently elevating information risk. In response, investors request a higher risk premium, leading to a higher COC required to compensate for this uncertainty.

The necessity of releasing nonfinancial information alongside traditional financial reporting has arisen because financial reports alone are insufficient for addressing stakeholders' needs. They fail to offer a complete overview of a company's present and future performance and capacity to create value. This inadequacy has emphasized the significance of incorporating nonfinancial information (Maama and Marimuthu, 2022). However, the preparation of financial and nonfinancial reports separately, in addition to containing a large amount of information, makes them complex and challenging to understand and does not provide stakeholders with an understanding of the nature and extent of the relationship and interdependence between financial and nonfinancial information, which is necessary for an adequate evaluation of the companies' performance and their ability to create value (Zhou *et al.*, 2017; Raimo *et al.*, 2022).

To provide a comprehensive overview of a firm's value generation process, integrated reporting (IR) aims to combine pertinent quantitative and qualitative data, covering financial position and social and environmental activities into a concise and coherent document. The main goal of IR is to enhance the quality of information provided to financial capital providers, facilitating more efficient capital allocation and improved decision-making processes (Girella *et al.*, 2019; Tili *et al.*, 2019; Raimo *et al.*, 2022).

IR represents a novel approach to reporting, emphasizing the interrelations among a company's strategy, governance, financial status, social obligations, environmental influence and the broader economic context within which it functions. Its purpose is to provide a clear, concise and unified overview of the firm's performance, illustrating how its various resources collaboratively generate value. This comprehensive perspective aids the company's management develop a holistic understanding of its strategy, enabling well-informed decisions, careful risk management and strategic planning. By offering a transparent narrative, IR enhances investor and stakeholder confidence, fostering improved company performance [International Integrated Reporting Council (IIRC), 2013; Lee and Yeo, 2016].

The primary target audience for this innovative reporting approach comprises providers of financial capital (IIRC, 2013). If IR proves advantageous to these providers in assessing a company's potential, it is anticipated that reporting entities will accrue specific benefits within the capital market. These potential advantages include heightened transparency and reputation, which, in turn, could reduce capital costs (Zhou *et al.*, 2017; Maama and Marimuthu, 2022).

Although numerous research studies have examined the factors driving the adoption of IR and its associated advantages (Hoque, 2017; Girella *et al.*, 2019; Lee and Yeo, 2016; Maama and Marimuthu, 2022), empirical studies indicating the benefits derived from integrated reporting quality (IRQ) are limited. The impact of IRQ on the market has not been comprehensively acknowledged. As high-quality IR dissemination comes at a significant expense to the company, management needs to weigh the benefits of such an investment. Therefore, the question becomes whether the market rewards IRQ. Therefore, this paper aims to answer whether IRQ impacts the COC in the Asian context. Focusing on the context of Asia holds paramount significance as Asian economies continue to rise in global prominence and understanding the influence of IRQ in this diverse and dynamic region

becomes essential. Asian markets encompass a wide array of industries, cultures and regulatory frameworks, making them a rich ground for exploring the effectiveness of IR practices.

The research sample contains 720 integrated reports from 90 Asian firms that prepare IR, presented on the IIRC website for 2015–2022. The findings indicate that the quality of IR has a negative impact on capital costs. Further investigation reveals that this negative influence is particularly significant for profitable companies and those requiring more external funding. In addition, further analysis shows that the negative impact remains significant during the COVID-19 pandemic period. In addition, our research demonstrates that earnings quality and the accuracy of analyst forecasts mediate the relationship between the quality of IR and the COC.

This study provides a valuable contribution to literature. First and foremost, Asian economies are experiencing rapid growth, making them significant players in the global market. Understanding how IRQ influences the COC in these diverse and expanding economies provides valuable insights. It enables us to determine how well-developed IR practices can enhance investor confidence, mitigate risks and ultimately reduce the cost of financing. Investigating IRQ in Asian corporations provides valuable insights into how these businesses communicate their strategies, governance structures and long-term value creation to stakeholders. In addition, it offers a unique perspective on how Asian investors interpret and respond to IR disclosures. Consequently, companies with superior IRQ might enjoy reduced costs of capital, indicating that investors are more likely willing to invest in these companies at a lower rate of return. Such insights are valuable for businesses aiming to optimize their financial strategies and investors seeking sustainable and financially sound opportunities in the dynamic Asian market. Furthermore, as Asian economies increasingly integrate into the global market, understanding the consequences of IRQ becomes vital for international investors, policymakers and regulatory bodies.

The subsequent sections of this article are structured as follows: In Section 2, a review of existing literature is presented. Section 3 offers a theoretical analysis and formulates hypotheses. Section 4 outlines the model and methodology employed. Section 5 presents and discusses the empirical findings comprehensively. Finally, Section 6 provides the study's conclusion.

2. Literature review

IR offers a more cohesive and extensive overview of a company's performance compared to conventional reporting by providing insights into its value creation process and its interconnectedness with various resources, often referred to as capital. This type of information meets stakeholders' demands, facilitates the evaluation of a company's performance and supports the effective allocation of resources (Nakajima and Inaba, 2022; Bellucci *et al.*, 2024; Raimo *et al.*, 2022). As a result, proponents suggest that IR reduces information asymmetry between management and stock market participants, leading to improved efficiency in capital allocation (Lee and Yeo, 2016; Zhou *et al.*, 2017).

For those involved in decision-making, unlinked information makes it harder to analyze, particularly in comprehending the existing data. Investors encounter challenges in interpreting the link between financial and nonfinancial performance and understanding the role of nonfinancial performance in shaping a company's value (Eccles and Krzus, 2014). IR has the potential to enhance transparency by presenting a comprehensive representation of the company's performance across various dimensions, aiding investors in making informed and rational decisions. In line with signal theory, a company might use IR to enhance its image, thereby influencing the choices made by market participants (Maama and Marimuthu, 2022; Muttakin *et al.*, 2020).

The COC is the rate of return required by the market, and it is closely tied to how the market perceives a firm's level of risk. IR can provide additional information that serves to decrease this perceived risk level. Consequently, IR can potentially lower the COC by diminishing information asymmetry and mitigating agency costs (Maama and Marimuthu, 2022; Zhou *et al.*, 2017). Conversely, investors may interpret IR as increasing acquisition costs rather than decreasing them if it raises the expense of filtering information, potentially leading to a negative response from investors (Landau *et al.*, 2020).

Over the past decade, there has been growing interest in IR across Asia, driven by increasing awareness of the need for greater transparency, accountability and sustainability in corporate reporting. Japan stands out as a leading nation in this regard. Japan was one of the first Asian countries to embrace and promote IR (Nakajima and Inaba, 2022). In Malaysia, IR is still in its early stages. The interest in IR among Malaysian companies grew notably following the issue of the Malaysian Code of Corporate Governance in 2017, which encouraged the adoption of IR (Qaderi *et al.*, 2023). In a similar vein, some major companies in India have also embraced IR. The Securities and Exchange Board of India (SEBI) called upon the top 500 listed companies to voluntarily embrace IR for the financial year 2017–2018. As a result of this directive, IR has been steadily gaining momentum in India (Bal, 2018). The adoption of IR is rising in Sri Lanka. This shift is being encouraged and actively supported by numerous accounting firms and professional accounting bodies (Cooray *et al.*, 2022). To sum up, IR practices across Asian companies are currently voluntary and in the early development stage. There are still variations in adoption rates across the region, with some countries being more advanced in their IR journey than others.

Regarding empirical evidence, previous studies suggest that the COC is affected by many factors, such as corporate governance mechanisms, ownership structure, credit constraints, firm size, profitability, liquidity, growth and systematic risk (Alipour *et al.*, 2015; Cao *et al.*, 2015; Rjiba *et al.*, 2021; Sassi *et al.*, 2019). Numerous studies have focused on the association between capital costs and financial reporting (Lambert *et al.*, 2007; Francis *et al.*, 2004; Ahmed *et al.*, 2021; Healy and Palepu, 2001). Some studies have examined the relationship between nonfinancial information and the COC (Chen and Zhang, 2021; Dhaliwal *et al.*, 2011; Yang *et al.*, 2023). Although some studies examined the influence of adopting IR on the COC (Maama and Marimuthu, 2022; Zhou *et al.*, 2017; Hsiao *et al.*, 2022; Salvi *et al.*, 2020), they have concluded conflicting results. In addition, the quality of the report is an essential aspect of IR that needs to be investigated (Pistoni *et al.*, 2018). It is not just the number of organizations adopting IR that matters but also the quality of their adoption (Eccles and Krzus, 2014).

Regarding previous studies in the Asian context, Nakajima and Inaba (2022) investigated the influence of voluntary IR adoption by Japanese companies on their stock prices. The study indicates a positive reaction in the stock market to voluntary IR. Islam (2021) explored the impact of voluntary IR adoption in Bangladesh on firms' financial, market and operational performance. The study reveals that IR and firm performance are positively related. Qaderi *et al.* (2023) conducted an analysis of the prevailing regulations, and the patterns observed in the practice of IR in Malaysia. The study indicates that both the regulations and the implementation of IR in Malaysia are in the initial phases of development. Cooray *et al.* (2022) explored the inclusion and patterns of reporting content elements in the IR framework by Sri Lankan firms. The study revealed increased scope and trends of incorporating content elements aligned with the IR framework. Radwan and Xiongyuan (2024) examined whether the quality of IR is value-relevant to investors in the context of Asia. The findings indicate that higher IRQ is indeed value-relevant, leading to positive market reactions. Fayad *et al.* (2024) examined the impact of ownership structure on

IRQ in Malaysia. The findings reveal that government and foreign ownership positively influence IRQ, whereas family ownership shows no significant effect on IRQ.

While previous studies have explored the benefits of IR, few have specifically examined the direct and indirect impact of IRQ on the COC, especially in the voluntary Asian context. Our research sets itself apart by focusing on this underexplored area, offering empirical evidence on whether high-quality IR can indeed reduce the COC for companies. Unlike most prior work, which often addresses the broader implications of IR, this study narrows in on its financial value, particularly in the voluntary reporting context, providing new insights that have been largely overlooked in the existing literature.

3. Theoretical analysis and hypotheses development

The connection between IRQ and COC is rooted in a theoretical framework that posits that information risk is priced due to the inherent information gap between uninformed and informed investors (Bhattacharya *et al.*, 2012; Easley and O'Hara, 2004) or variance in the level of information precision that firm's issue (Lambert *et al.*, 2007). This theoretical foundation suggests that the accuracy and comprehensiveness of IR play a pivotal role in mitigating information asymmetries. In essence, high-quality IR acts as a mechanism to bridge the gap between investors possessing varying levels of information, ensuring that pertinent information is accessible and transparent to all stakeholders. This, in turn, influences the perceived risk associated with investments and future cash flows. Simultaneously, it enhances market liquidity, reducing capital costs (Hsiao *et al.*, 2022).

IR can reduce the COC through several means. First, it diminishes information asymmetry, resulting in an enhanced information environment (Zhou *et al.*, 2017). Second, it improves forecast accuracy, thus reducing estimation risk for investors (Zúñiga *et al.*, 2020). Third, it decreases monitoring costs, making stakeholders more accepting of a lower rate of return.

IR is crucial in diminishing information asymmetry between a company's management and investors. It achieves this by broadening the scope of disclosed information to encompass all factors contributing to the value creation within the company, including financial, environmental, social and human aspects. This expanded disclosure reduces uncertainty when assessing the company's performance. Consequently, it enhances liquidity by lowering the costs associated with users searching for information. Moreover, IR introduces new information content not typically found in current company reporting, potentially decreasing capital costs (Zhou *et al.*, 2017).

Differently from standalone reports, such as sustainability reports or corporate social responsibility, which are issued separately from financial reports, IR combines financial information, operational metrics and sustainability performance. This integration allows organizations to focus primarily on material issues influencing their ability to generate value over time (Maama and Marimuthu, 2022). By doing so, IR increases reporting transparency, decreases information risk and improves the information environment, resulting in investors requiring a lower cost of financing (García-Sánchez and Noguera-Gámez, 2017).

In accordance with signal theory, businesses provide IR as a good signal to the market participants, signaling their higher reporting quality. This is achieved by presenting comprehensive and well-structured information on various performance dimensions, thereby reshaping investor expectations and diminishing information asymmetry, ultimately resulting in a decreased COC (Falatifah and Hermawan, 2021).

Supporting these assertions, prior research provides evidence highlighting the role of IR in reducing the COC. For example, Maama and Marimuthu (2022) conducted a study in sub-Saharan Africa, revealing that IR adoption lowers capital costs. Similarly, Salvi *et al.* (2020)

delved into the association between the extent of intellectual capital disclosures within IR and the cost of financing, finding a notable negative association. In addition, [García-Sánchez and Noguera-Gómez \(2017\)](#) explored the impact of IR disclosure on the COC, affirming the negative relationship.

[Falatifah and Hermawan \(2021\)](#) conducted a study using a sample from OECD countries from 2015 to 2017. They investigated the influence of the extent of IR disclosures on the cost of equity. Their findings indicated that the extent of IR disclosure plays a pivotal role in diminishing a firm's cost of equity. These findings collectively underscore the innovative potential of enhancing IRQ as a means to reduce the cost of equity. Building upon this foundation, it is reasonable to assert that improving IRQ enhances transparency and enriches the company's information environment, thereby decreasing the overall COC. Based on this line of reasoning, we posit the following hypothesis:

H1. The quality of IR has a negative effect on the cost of equity capital.

4. Model and methodology

4.1 Sample

Our research relies on IR prepared by Asian companies presented on the official IIRC website, ensuring adherence to the IIRC framework. The initial list of Asian companies embracing IR comprises 128 entities. Subsequently, filtering out financial institutions and firms with unavailable data, our final data set encompasses 720 integrated reports from 90 companies for the 2015–2022 period. Data for variables such as accounting and market metrics are sourced from the Refinitiv database. The composition of the selected firms is illustrated in [Table 1](#), showing the sample distribution across industries and countries.

4.2 Variables measurement

4.2.1 Cost of equity capital. The study uses the price to earnings growth (PEG) model ([Easton, 2004](#)) as a proxy for the cost of equity capital. This choice is grounded in the model's widespread usage in prior research, adding to its credibility and reliability ([Salvi et al., 2020](#); [Maama and Marimuthu, 2022](#); [Dhaliwal et al., 2011](#)). The PEG model's popularity in these earlier studies underscores its effectiveness and relevance in capturing the nuances of equity costs. [Li et al. \(2019\)](#) showed that the PEG model findings outperform the other measurements. Calculating the PEG ratio involves dividing the price-to-earnings ratio by the earnings growth rate, typically over a designated period. Adhering to this methodology, the cost of equity capital can be computed as the square root of the inverse of the PEG ratio, as indicated by the following equation:

$$COC_PEG_{it} = \sqrt{\frac{EPS_2 - EPS_1}{P_0}} \quad (1)$$

where COC_PEG_{it} is the COC using the PEG model, EPS_2 and EPS_1 are the mean analysts' forecast of a company's earnings per share for two years and one year ahead, respectively and P_0 is the year-end stock price.

4.2.2 Integrated reporting quality. The research develops a scoring model to estimate IRQ based on [Pistoni et al. \(2018\)](#) and is based on content analysis. It is derived from [Hammond and Miles \(2004\)](#) quality assessment attributes and IIRC principles ([IIRC, 2013](#)). The study develops a scoreboard that evaluates IRQ based on four primary factors:

Table 1. Sample distribution

	No.	%
<i>Panel A. Sample distribution by industry</i>		
Basic materials	72	10.00
Consumer discretionary	104	14.44
Consumer staples	48	6.67
Energy	16	2.22
Health care	48	6.67
Industrials	216	30.00
Real estate	48	6.67
Technology	112	15.56
Telecommunications	40	5.56
Utilities	16	2.22
Total	720	100%
<i>Panel B. Sample distribution by country</i>		
Japan	608	84.44
China	24	3.33
India	8	1.11
Qatar	8	1.11
United Arab Emirates	8	1.11
Philippines	8	1.11
Singapore	8	1.11
South Korea	32	4.44
Thailand	8	1.11
Malaysia	8	1.11
Total	720	100%

Note(s): This table presents the distribution of the sample. Panel (A) presents the sample classification by industry, whereas Panel (B) presents the sample classification by country

Source(s): Authors' own work

- (1) background;
- (2) assurance and reliability;
- (3) form; and
- (4) content as follows:

- The background section assesses whether the report includes an introduction covering topics like the motivations for adopting IR, the aims sought by IR, the document's beneficiaries, the IR process's in-charge manager, the commitment of CEO, the report's title and the report's adherence to generally accepted disclosure guidelines. Each of these variables is assessed for its existence or absence. If the item is present, a score of 1 is given; otherwise, a score of 0 is provided. The highest possible score is 7.
- The assurance and reliability section evaluates if an internal audit, verification by a third party was done and the corporation has achieved IR honors and recognition. The absence of any element receives a value of 0, whereas its presence gets a score of 1. The highest possible score is 3.
- The form area evaluates the document's readability and clarity, its conciseness (the number of pages it contains) and accessibility. The items are graded on a scale of 0–2.

The maximum number is 6. This categorization assesses the manner in which the subject matter is articulated, evaluating the comprehensiveness of its depiction and its direct reference to the guiding principles of IR.

- The report's content is assessed according to the IIRC framework's eight elements and two fundamental concepts. The following are the eight elements:
 - the organizational overview and external environment;
 - risks and opportunities;
 - strategy and resource allocation;
 - governance;
 - performance;
 - outlook;
 - business model; and
 - the basis of presentation.

The two fundamental concepts are capital and value creation. The 10 variables contain 42 components ([Appendix](#)), which give a score ranging from 0 (absence) to 2 (very high quality) for each element. The highest possible score is 84.

The overall quality score is determined by adding the ratings for all four assessment areas. The maximum possible quality score is 100.

4.2.3 Control variables. To ensure the reliability of our model, we incorporate a set of control variables. We control company size, leverage, market-to-book value, dividend, board independence and beta. These control variables are selected based on their prevalence in existing literature concerning this subject ([Zhou et al., 2017](#); [Salvi et al., 2020](#); [Maama and Marimuthu, 2022](#); [Ahmed et al., 2021](#)). We anticipate that company size reduces COC because larger companies typically exhibit a lower level of risk ([Botosan and Plumlee, 2005](#)). Higher market-to-book value could lower COC because investors underprice firms with a low ratio of market-to-book ([Fama and French, 1995](#)). Firms with higher leverage encounter higher COC as leverage and firm risk are positively related ([Ahmed et al., 2021](#)). It is expected that dividend has a negative relationship with COC. As an essential corporate governance mechanism, board independence is expected to influence COC negatively. Beta, as a measure of volatility, is expected to increase COC ([Ng and Rezaee, 2015](#)). We also control the industry, country and year effects. [Table 2](#) illustrates variables measurement.

4.3 Model specification

To test the impact of IRQ on the cost of equity capital, the study uses the following model similar to prior research in this strand of literature ([Maama and Marimuthu, 2022](#); [Salvi et al., 2020](#); [Dhaliwal et al., 2011](#)); as follows:

$$\begin{aligned}
 COC_PEG_{it} = & \beta_0 + \beta_1 IRQ_{it} + \beta_2 SIZE_{it} + \beta_3 MTBV_{it} \\
 & + \beta_4 LEV_{it} + \beta_5 DIVIDEND_{it} + \beta_6 INDEP_{it} + \beta_7 BETA_{it} \\
 & + \sum INDUSTRY_i + \sum COUNTRY_i + \sum YEAR_i + \varepsilon_{it}
 \end{aligned} \tag{2}$$

where COC_PEG_{it} is the implied COC, measured by the PEG model. IRQ_{it} is the IRQ score measured by the scoring model using content analysis. To answer the hypothesis, the

coefficient β_1 is the focus of the test. If this coefficient is negative and significant, it may be stated that IRQ reduces the COC.

5. Empirical results

5.1 Descriptive statistics

The descriptive statistics of the sample are displayed in Table 3. The COC, dependent variable, has a mean of 10.9%, with a minimum and maximum value of 2.4% and 48.2%, respectively, and a standard deviation of 0.062, which means variation between firms regarding the cost of financing. The independent variable represented by IRQ has a mean of 51.831, with a minimum and maximum value of 21 and 73, respectively, and a standard deviation of 9.189, suggesting a variation among the firms' IRQ. Regarding the control variables, Table 3 also shows that SIZE, LEV, MTBV, DIVIDEND, INDEP and BETA have a mean of 16.092, 0.506, 1.612, 0.517, 46.148 and 0.889 respectively.

The outcomes of Pearson's correlation analysis are presented in Table 4. The findings show a negative correlation between IRQ and COC, which is significant at a 99% confidence level. This implies that as the quality of IR increases, there is a decrease in COC. Regarding control variables, COC positively correlates with BETA and LEV and negatively correlates with DIVIDEND and MTBV at a 99% confidence level. Nevertheless, no significant correlation exists between COC and board independence (INDEP) or firm size. Moreover, our model does not suffer from multicollinearity concerns, as the correlation coefficients between independent variables remain below 0.80.

5.2 Regression results

The outcomes of the OLS regression analysis are presented in Table 5. The results indicate that the quality of IR exerts a significant negative impact on COC (-0.0005 , $p < 0.05$). This signifies that higher IRQ enhances the information environment within firms, leading to a reduction in their COC. This finding aligns with the signaling theory, providing evidence that high-quality IR acts as a positive signal to the market, indicating that the company is well-managed, transparent and committed to long-term value creation. Companies with strong IR

Table 2. Variables definition

Variable	Acronym	Measurement
<i>Dependent variable</i>		
Cost of equity capital	COC_PEG	It is measured by the PEG model (Easton, 2004)
<i>Independent variable</i>		
IR quality	IRQ	The scoring model using content analysis
<i>Control variables</i>		
Firm size	SIZE	The natural logarithm of total assets
Market-to-book value	MTBV	The market-to-book ratio at fiscal year-end
Leverage	LEV	The ratio of debt-to-total assets
Dividend	DIVIDEND	Dividend per share
Board independence	INDEP	The percentage of independent nonexecutive members
Beta	BETA	The market beta of the firm

Source(s): Authors' own work

Table 3. Descriptive statistics

Variable	Obs.	Mean	SD	Min	Max
COC_PEG	720	0.109	0.062	0.024	0.482
IRQ	720	51.831	9.189	21	73
SIZE	720	16.092	1.271	12.061	18.902
LEV	720	0.506	0.168	0.130	0.838
MTBV	720	1.612	1.016	0.416	5
DIVIDEND	720	0.517	0.613	0	5.949
INDEP	720	46.148	17.064	10	86.670
BETA	720	0.889	0.462	-0.080	2.050

Note(s): COC_PEG = the implied cost of equity capital; IRQ = IR quality score; SIZE = firm size; MTBV = market-to-book ratio; LEV = leverage; DIVIDEND = dividend per share; INDEP = board independence; BETA = firm's market beta. [Table 2](#) provides measurements

Source(s): Authors' own work

Table 4. Pearson's correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) COC_PEG	1.000							
(2) IRQ	-0.220***	1.000						
(3) SIZE	0.047	0.127***	1.000					
(4) LEV	0.358***	-0.125***	0.424***	1.000				
(5) MTBV	-0.375***	0.163***	-0.209***	-0.267***	1.000			
(6) DIVIDEND	-0.140***	0.193***	0.171***	-0.004	0.084**	1.000		
(7) INDEP	0.056	-0.116***	-0.004	-0.073*	0.119***	0.008	1.000	
(8) BETA	0.330***	-0.094**	0.131***	0.319***	-0.354***	-0.072*	-0.044	1.000

Note(s): COC_PEG = the implied cost of equity capital; IRQ = IR quality score; SIZE = firm size; MTBV = market-to-book ratio; LEV = leverage; DIVIDEND = dividend per share; INDEP = board independence; BETA = firm's market beta; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source(s): Authors' own work

are perceived as lower risk because they reduce information asymmetry by providing clear, reliable and comprehensive disclosures. This signal of transparency and reliability reassures investors, thereby lowering the company's perceived risk and, consequently, its COC. The negative relationship between IRQ and the COC can be also explained by stakeholder theory. High-quality IR reflects a company's effort to maintain strong stakeholder relationships, which minimizes operational, legal and reputational risks, thereby reducing the company's overall risk profile and contributing to a lower COC. These results support the hypothesis that IRQ decreases COC, confirming the research hypothesis. Our findings are consistent with previous research in this domain ([Zhou et al., 2017](#); [Salvi et al., 2020](#); [Vitolla et al., 2020](#)).

The findings concerning the control variables in our study align with previous research outcomes. Specifically, we observed a positive and significant relationship between COC and financial leverage (LEV) and beta, corroborating earlier studies by [Francis et al. \(2004\)](#) and [Sharpe \(1964\)](#). Additionally, our results revealed a negative and significant association between COC and SIZE, MTBV and DIVIDEND, consistent with the research findings of [Fama and French \(1995\)](#) and [Berk \(1995\)](#). Nevertheless, no significant relationship is observed between COC and board independence (INDEP).

Table 5. OLS regression

Variables	COC_PEG
IRQ	-0.0005** (-2.21)
SIZE	-0.006*** (-2.85)
LEV	0.100*** (6.31)
MTBV	-0.012*** (-5.24)
DIVIDEND	-0.009*** (-2.78)
INDEP	0.0001 (0.64)
BETA	0.020*** (3.25)
Constant	0.169*** (5.39)
Country effects	Yes
Industry effects	Yes
Year effects	Yes
Observations	720
Adj R-squared	0.352

Note(s): *T*-statistics in parentheses, ****p* < 0.01, ***p* < 0.05, **p* < 0.1. COC_PEG = the implied cost of equity capital; IRQ = IR quality score; SIZE = firm size; MTBV = market-to-book ratio; LEV = leverage; DIVIDEND = dividend per share; INDEP = board independence; BETA = firm's market beta

Source(s): Authors' own work

5.3 Robustness checks

5.3.1 Alternative measures of the cost of equity capital. We apply alternative measures for calculating COC to ensure the reliability and robustness of the findings concerning the impact of IRQ on COC. We adopt the Ohlson–Juettner (COC_OJ) model, proposed by [Ohlson and Juettner-Nauroth \(2005\)](#). In addition, the modified price earnings growth model (COC_MPEG) ([Easton, 2004](#)) is also used to assess COC using the following formulas:

$$COC_{OJ_{it}} = A + \sqrt{A^2 + \frac{EPS_1}{P_0} \left[\frac{EPS_2 - EPS_1}{EPS_1} - (\gamma - 1) \right]} \quad (3)$$

$$A = \frac{1}{2} \left(\gamma - 1 + \frac{DPS_1}{P_0} \right) \quad (4)$$

$$COC_{MPEG_{it}} = A + \sqrt{A^2 + \frac{EPS_2 - EPS_1}{P_0}} \quad (5)$$

$$A = DPS_1 / 2P_0 \quad (6)$$

where $COC_{OJ_{it}}$ is the COC using the Ohlson–Juettner (OJ) model, $COC_{MPEG_{it}}$ is the COC using the modified price earnings growth model, EPS_2 and EPS_1 are the mean analysts' forecast of a company's earnings per share for two years and one year ahead, respectively, and P_0 is the year-end stock price, DPS_1 is analysts' forecasts of dividend per share for one year ahead, $(\gamma - 1)$ is the long-term earnings growth rate. The outcomes are displayed in [Table 6](#). The findings indicate that IRQ significantly negatively influences COC at a significant level of 5% each. Consequently, the robustness analysis confirms the primary analysis's findings.

Table 6. Alternative measures of COC

Variables	COC_OJ	COC_MPEG
IRQ	-0.0005** (-1.98)	-0.0004** (-1.97)
SIZE	-0.006*** (-2.82)	-0.004** (-2.14)
LEV	0.098*** (5.33)	0.081*** (5.41)
MTBV	-0.012*** (-4.61)	-0.016*** (-7.65)
DIVIDEND	-0.006 (-1.54)	-0.001 (-0.41)
INDEP	0.0001 (0.80)	0.0001 (0.23)
BETA	0.023*** (3.22)	0.022*** (3.73)
Constant	0.195*** (5.41)	0.157*** (5.31)
Country effects	Yes	Yes
Industry effects	Yes	Yes
Year effects	Yes	Yes
Observations	720	720
Adj R-squared	0.281	0.377

Note(s): T-statistics in parentheses, *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Source(s): Authors' own work

5.3.2 Instrumental variable estimation. The empirical examinations concerning IRQ and its impact on COC may face endogeneity challenges. These challenges encompass factors like self-selection bias and omitted variables, which can affect the reliability and strength of the results. We implement an instrumental variable (IV) technique to address this potential issue. In line with previous research conducted by [Yang et al. \(2023\)](#), industry-level averages can serve as IVs for firm-level explanatory factors when endogeneity concerns arise. The primary model is estimated using 2SLS regression. In this case, the mean IRQ within the industry was used as the IV to run the 2SLS analysis.

[Table 7](#) presents the outcomes of the 2SLS regression analysis, Model (1) presents the findings of the first stage, demonstrating a positive association between the quality of IR and

Table 7. Instrumental variable 2SLS

Variables	IRQ	COC_PEG
AVE_IRQ	0.418*** (3.91)	
IRQ		-0.004*** (-2.69)
SIZE	2.073*** (6.65)	0.002 (0.59)
LEV	-12.714*** (-5.05)	0.050* (1.90)
MTBV	1.255*** (3.43)	-0.007** (-2.30)
DIVIDEND	1.336** (2.35)	-0.004 (-0.95)
INDEP	-0.035 (-1.41)	-0.0001 (-0.20)
BETA	-1.448 (-1.45)	0.015** (2.22)
Constant	4.354 (0.60)	0.263*** (5.24)
Country effects	Yes	Yes
Industry effects	Yes	Yes
Year effects	Yes	Yes
Observations	720	720
Adj R-squared	0.243	0.354

Note(s): T-statistics in parentheses, *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Source(s): Authors' own work

the industry average of IRQ (AVE_IRQ) (0.418, $p < 0.01$). This outcome establishes the validity of the selected IV. Subsequently, the fitted value of IRQ from the first model is used as an independent variable, evaluating its impact on COC. Within Table 7, Model 2 shows that the relationship between the fitted value of the quality of IR and COC is negative and significant (-0.004 , $p < 0.01$). The results are like the primary and alternative models, reinforcing our argument that IRQ decreases COC.

5.3.3 Propensity score matching (PSM). To address concerns related to endogeneity, propensity score matching (PSM) is used as a technique to alleviate self-selection bias. We adopt the procedure outlined by Shipman *et al.* (2017) for implementing PSM. Initially, a dummy variable, IRQ_DUMMY, is created, taking a value of 1 if IRQ exceeds the sample median and 0 otherwise. This categorizes observations into two groups: treatment (IRQ_DUMMY = 1) and control (IRQ_DUMMY = 0). Subsequently, we employ a logistic model, regressing IRQ_DUMMY on the same control variables used in Table 5 to estimate propensity scores. The subsequent step involves a one-to-one matching procedure without replacement of observations. Finally, we estimate the average treatment impact within the matched sample.

Table 8 illustrates the results obtained by applying the PSM technique. Within Panel (A), a summary statistics overview of the postmatched sample underscores the absence of significant variations in observable characteristics between the treated and control groups. Moving to Panel (B), the regression outcomes conducted using the PSM-derived sample are presented. The findings are similar to the baseline regression; IRQ negatively affects COC (-0.0005 , $p < 0.05$).

Table 8. Propensity score matching

<i>Panel A. Summary statistics for the postmatched sample</i>				
Variables	Treated	Control	Difference	T-stat
SIZE	16.111	16.104	0.007	0.07
LEV	0.5231	0.5234	-0.0003	-0.02
MTBV	1.515	1.587	-0.072	-0.87
DIVIDEND	0.544	0.497	0.047	1.02
INDEP	45.001	45.057	-0.056	-0.04
BETA	0.882	0.892	-0.010	-0.23
<i>Panel B. Regression results using PSM sample</i>				
Variables	COC_PEG			
IRQ	-0.0005** (-2.03)			
SIZE	-0.002 (-0.85)			
LEV	0.084*** (4.35)			
MTBV	-0.012*** (-4.02)			
DIVIDEND	-0.014*** (-2.85)			
INDEP	0.0001 (0.25)			
BETA	0.011 (1.64)			
Constant	0.132*** (3.41)			
Country effects	Yes			
Industry effects	Yes			
Year effects	Yes			
Observations	500			
Adj R-squared	0.332			

Note(s): T-statistics in parentheses, *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Source(s): Authors' own work

5.3.4 Firm fixed effect. We reestimate our model using fixed-effect estimation to mitigate potential problems arising from omitted variables. Table 9 displays the results for both the primary and alternative measures of COC, showing that the relationship between IRQ and COC is negative and significant at a 5% significance level each.

5.4 Mediation effects

5.4.1 The mediation effect of earnings quality. IR enhances transparency and earnings quality by presenting financial information and sustainability performance in an integrated and concise format (Cortesi and Vena, 2019). Because earnings quality is essential for the effective functioning of the capital market, higher earnings quality can reduce COC by diminishing information asymmetry, increasing firm liquidity and enhancing investor oversight of managerial activities (Francis et al., 2004; Ahmed et al., 2021). Thus, we investigate whether earnings quality mediates the relationship between IRQ and COC. We use discretionary accruals (DA) as a measure of earnings quality and we estimate DA using the modified Jones Model 1991 developed by Dechow et al. (1995), as expressed in the following equation:

$$\frac{TA_{it}}{A_{it-1}} = \beta_1 \left(\frac{1}{A_{it-1}} \right) + \beta_2 \left(\frac{\Delta REV - \Delta REC}{A_{it-1}} \right) + \beta_3 \left(\frac{PPE}{A_{it-1}} \right) + \varepsilon_{it} \quad (7)$$

where TA_{it} is the total accruals (earnings before extraordinary items minus cash follows from operations), A_{it-1} is lagged total assets, ΔREV is the change in revenue, ΔREC is the change in receivables and PPE is property, plant and equipment. Table 10 displays the outcomes of the mediation effect. Column (1) presents the primary regression outcomes. Column (2) reveals that IRQ has a negative and significant effect on DA (-0.0003 , $p < 0.05$), indicating that IRQ enhances earnings quality. In Column (3), we add DAs into the regression, and the findings suggest that the quality of IR is negatively related to COC (-0.0005 , $p < 0.05$). In contrast, DAs exhibit a positive relationship with COC (0.139 , $p < 0.05$), suggesting that improved earnings quality reduces COC and signals the presence of a mediating effect. In general, IRQ enhances earnings quality, subsequently leading to reduced COC.

Table 9. Firm fixed-effect regression

Variables	FE COC_PEG	FE COC_OJ	FE COC_MPEG
IRQ	-0.0001** (-2.43)	-0.0001** (-2.21)	-0.0005** (-2.20)
SIZE	-0.052*** (-5.15)	-0.061*** (-5.23)	-0.043*** (-4.63)
LEV	0.140*** (4.44)	0.164*** (4.48)	0.082*** (2.77)
MTBV	-0.017*** (-4.54)	-0.016*** (-3.62)	-0.023*** (-6.44)
DIVIDEND	-0.024*** (-3.65)	-0.024*** (-3.12)	-0.013** (-2.12)
INDEP	-0.0003* (-1.71)	-0.0004* (-1.78)	-0.0001 (-0.62)
BETA	0.304 (0.42)	0.391 (0.46)	0.165 (0.24)
Constant	0.638 (0.97)	0.712 (0.93)	0.662 (0.08)
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Observations	720	720	720
R-squared	0.228	0.232	0.247

Note(s): T-statistics in parentheses, *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Source(s): Authors' own work

Table 10. Mediation effect of earnings quality

Variables	(1) COC_PEG	(2) DA	(3) COC_PEG
IRQ	-0.0005** (-2.21)	-0.0003** (-2.28)	-0.0005** (-2.03)
DA			0.139** (2.12)
SIZE	-0.006*** (-2.85)	0.001 (1.19)	-0.006*** (-2.95)
LEV	0.100*** (6.31)	-0.002 (-0.16)	0.101*** (6.34)
MTBV	-0.012*** (-5.24)	-0.002 (-1.21)	-0.012*** (-5.15)
DIVIDEND	-0.009*** (-2.78)	-0.007*** (-3.32)	-0.009** (-2.50)
INDEP	0.0001 (0.64)	0.0001 (1.15)	0.0001 (0.55)
BETA	0.020*** (3.25)	-0.003 (-0.83)	0.021*** (3.33)
Constant	0.169*** (5.39)	0.023 (1.24)	0.166*** (5.30)
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Observations	720	720	720
Adj R-squared	0.352	0.085	0.355

Note(s): *T*-statistics in parentheses, ****p* < 0.01; ***p* < 0.05; **p* < 0.1

Source(s): Authors' own work

5.4.2 The mediation effect of analyst forecast's accuracy. Analysts play a crucial role in information dissemination as significant participants in the capital market. [Zhou et al. \(2017\)](#) highlighted a strong connection between a company's information and the accuracy of analysts' forecasts. These forecasts increase the likelihood of uncovering hidden information, which, in turn, reduces COC. Therefore, we explore the potential mediating role of analyst forecast accuracy. Analyst forecast accuracy (Analyst_Acc) is the absolute difference between the average earnings per share anticipated by analysts and the actual earnings per share, adjusted by the firm's year-end price. The indicator is then multiplied by -1. The results regarding the mediating effect are presented in [Table 11](#).

In [Table 11](#), Column (1) presents the primary regression outcomes. In Column (2), we observe that IRQ positively influences analyst forecast accuracy (0.0004, *p* < 0.05). Column (3) extends the analysis by including analyst forecast accuracy in the regression. The results indicate that the quality of IR and analyst forecast accuracy have negative associations with COC at a 5% and 1% significance level respectively, marking a significant mediating effect. In summary, IRQ enhances analyst forecast accuracy, which, in turn, decreases COC.

5.5 Further analysis

5.5.1 The impact of external financing need. Voluntary disclosure minimizes information asymmetry and reduces the cost associated with external financing. Consequently, this enhanced transparency enables companies to secure funding for profitable projects. Therefore, the theory suggests that businesses with a high need for external financing are more inclined to engage in high levels of voluntary disclosures ([Verrecchia, 1983](#)). [Francis et al. \(2005\)](#) found that companies operating in sectors with substantial needs for external funding tend to provide more voluntary disclosure. In addition, these businesses benefit from increased voluntary disclosure as they experience reduced debt and equity capital costs. Therefore, firms with higher external financing need seek to minimize information risk through improved IRQ to secure the necessary funds at a lower cost. As a proxy for external financing needs, we use the annual growth rate in total assets minus the sustainable growth

Table 11. Mediation effect of analyst forecast's accuracy

Variables	(1) COC_PEG	(2) Analyst_Acc	(3) COC_PEG
IRQ	-0.0005** (-2.21)	0.0004** (2.09)	-0.0004** (-1.97)
Analyst_Acc			-0.252*** (-6.79)
SIZE	-0.006*** (-2.85)	-0.001 (-0.35)	-0.006*** (-3.03)
LEV	0.100*** (6.31)	-0.088*** (-5.58)	0.078*** (4.96)
MTBV	-0.012*** (-5.24)	0.006*** (2.84)	-0.010*** (-4.65)
DIVIDEND	-0.009*** (-2.78)	0.006 (1.59)	-0.008** (-2.45)
INDEP	0.0001 (0.64)	0.0003* (1.67)	0.0002 (1.09)
BETA	0.020*** (3.25)	-0.001 (-0.15)	0.020*** (3.32)
Constant	0.169*** (5.39)	-0.052* (-1.67)	0.156*** (5.13)
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Observations	720	720	720
Adj R-squared	0.352	0.288	0.392

Note(s): T-statistics in parentheses, *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Source(s): Authors' own work

rate, where the sustainable growth rate is $ROE/(1 - ROE)$ (Chen *et al.*, 2010). A firm is considered to have a higher external financing need if its external financing need is greater than the sample median value and vice versa.

The findings regarding the influence of the quality of IR on COC for firms with low and high external finance needs are shown in Table 12. The results indicate that the quality of IR has a significant and negative effect on COC for firms with high external financing needs (-0.0008 , $p < 0.05$), suggesting that higher-quality IR reduces COC when the external finance need is high. However, the negative impact of the quality of IR on COC for firms with low external financing needs is insignificant.

Table 12. Impact of external financing need

Variables	Firms with low external financing need COC_PEG	Firms with high external financing need COC_PEG
IRQ	-0.0003 (-0.88)	-0.0008** (-2.28)
SIZE	-0.001 (-0.51)	-0.005 (-1.50)
LEV	0.079*** (3.60)	0.095*** (3.91)
MTBV	-0.009*** (-3.01)	-0.015*** (-4.00)
DIVIDEND	-0.011** (-2.51)	-0.018** (-2.53)
INDEP	0.0001 (0.80)	-0.0001 (-0.01)
BETA	0.009 (1.06)	0.025*** (2.70)
Constant	0.102** (2.42)	0.183*** (3.68)
Country effects	Yes	Yes
Industry effects	Yes	Yes
Year effects	Yes	Yes
Observations	360	360
Adj R-squared	0.274	0.382

Note(s): T-statistics in parentheses, *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Source(s): Authors' own work

5.5.2 The impact of firm profitability. Signaling theory suggests that highly profitable companies are incentivized to signal their strong performance to interested stakeholders. Moreover, their profitability might draw increased attention from institutions and interested parties, prompting a deeper investigation into the reasons behind their strong financial performance and potentially leading to a demand for more specific information (Girella *et al.*, 2019). Furthermore, profitable firms seek to elevate their IRQ to improve their information environment, reduce information risk and consequently lower their COC and get funds for their profitable projects at a reasonable cost.

We used the sample's median value of return on assets (ROA) to categorize companies into low- and high-profitability groups. The outcomes are detailed in Table 13. The results reveal that the quality of IR negatively influences COC for high-profitability firms (-0.0006 , $p < 0.05$), suggesting that high-profitability firms can decrease their COC by enhancing IRQ. However, the negative effect of IRQ on COC for low-profitability firms is insignificant.

5.5.3 The impact of COVID-19 pandemic. COVID-19 pandemic had a significant impact on firms' performance and their ability to secure adequate finance for their projects. To examine the effect of COVID-19 pandemic we divided the sample into two subperiods (before and during COVID). The results reveal that the quality of IR significantly negatively influences COC before (-0.0004 , $p < 0.05$) and during (-0.001 , $p < 0.05$) the COVID-19 pandemic, however, the magnitude of this negative impact is higher during the pandemic period. With the pandemic causing significant disruption, companies with high-quality IR helped reduce information asymmetry by providing transparent and timely disclosures, which reassured investors and lowered perceived risks, resulting in a lower risk premium. This transparency became crucial during the volatile market conditions, leading to a greater reduction in the COC for firms with strong IR practices (Table 14).

6. Conclusion

IR represents a novel approach to corporate reporting, concisely clarifying the connections between financial and nonfinancial aspects. This paper aimed to examine the impact of IRQ on

Table 13. Impact of firm profitability

Variables	Low profitability firms COC_PEG	High profitability firms COC_PEG
IRQ	-0.0005 (-1.45)	-0.0006** (-2.59)
SIZE	-0.007** (-2.04)	-0.003 (-1.31)
LEV	0.086*** (2.94)	0.068*** (4.00)
MTBV	-0.017*** (-3.58)	-0.002 (-1.12)
DIVIDEND	-0.022** (-2.24)	-0.0002 (-0.07)
INDEP	0.0003 (0.94)	-0.0001 (-0.82)
BETA	0.016 (1.49)	0.013* (1.90)
Constant	0.222*** (3.83)	0.127*** (4.34)
Country effects	Yes	Yes
Industry effects	Yes	Yes
Year effects	Yes	Yes
Observations	360	360
Adj R-squared	0.275	0.368

Note(s): T-statistics in parentheses, *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Source(s): Authors' own work

Table 14. Impact of COVID-19

Variables	Period before COVID COC_PEG	Period during COVID COC_PEG
IRQ	-0.0004** (-1.98)	-0.001** (-2.19)
SIZE	-0.003* (-1.65)	-0.008** (-2.21)
LEV	0.086*** (5.84)	0.120*** (4.25)
MTBV	-0.010*** (-4.22)	-0.011*** (-2.83)
DIVIDEND	-0.008* (-1.90)	-0.009* (-1.78)
INDEP	0.0001 (0.93)	0.0001 (0.27)
BETA	0.008 (1.45)	0.032*** (2.94)
Constant	0.133*** (4.81)	0.216*** (3.70)
Country effects	Yes	Yes
Industry effects	Yes	Yes
Year effects	Yes	Yes
Observations	360	360
Adj R-squared	0.435	0.306

Note(s): T-statistics in parentheses, *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Source(s): Authors' own work

the cost of equity capital. Our findings indicate a negative association between IRQ and the cost of equity capital. IRQ enriches the firm's information environment, diminishing information risk and information asymmetry ultimately reducing capital costs. In addition, this paper highlighted the mediating roles of earnings quality and analyst forecast accuracy in the relationship between IRQ and the COC. Further analysis was conducted on firms with low and high external financing needs, as well as high-profitability and low-profitability firms. The results show that the negative impact of IRQ on the COC is more pronounced in profitable firms and firms with a higher need for external financing. In addition, further analysis shows that the negative impact remains significant during the COVID-19 pandemic period. Understanding how IRQ influences the COC has implications for investors, policymakers, regulators and company management. For investors, better IRQ provides clearer insights into a company's value, reducing risk and potentially lowering the COC. Policymakers and regulators can use this understanding to shape guidelines that encourage transparency and stable markets. For company management, improving IRQ can attract investment and lower financing costs, benefiting overall business strategy and growth. The study faces certain limitations, mainly due to the relatively small sample size. Our results open boundaries for future research. As our study focuses on the voluntary Asian context, future studies can evaluate the relationship in another region. Future research may also examine the impact of IRQ on the cost of debt.

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Table A1. Content components

Content element	Components	No. of items
1-Organizational overview and external environment of the company	<ul style="list-style-type: none"> – Mission, vision and values – Description of ownership, operating structure, activities, markets and products – Competitive environment and market position – Key quantitative information (e.g. number of employees, number of countries where the company operates, etc.) – Significant factors affecting the external environment and the organization's response 	5
2-Governance	<ul style="list-style-type: none"> – Governance structure, including the skills and diversity – Governance and strategy – Organization culture and ethic – Governance and innovation – Remuneration and performance 	5
3-Business model	<ul style="list-style-type: none"> – Description of inputs – Description of activities – Description of outputs – Description of outcomes 	4
4-Risks and opportunities	<ul style="list-style-type: none"> – Identify key risks and opportunities – Assessment of risks and opportunities – Specific steps taken for risks and opportunities 	3
5-Strategy and resource allocation	<ul style="list-style-type: none"> – Short-, medium- and long-term strategic objectives – Strategies to achieve the strategic objectives – The resource allocation plans to implement the strategy – The competitive advantage 	5
6-Performance	<ul style="list-style-type: none"> – Stakeholder engagement to formulate a strategy – KPIs against targets, risks and opportunities – Impact on capitals – Stakeholder relationships – Past, current and future performance – Nonfinancial KPIs 	5
7-Outlook	<ul style="list-style-type: none"> – Anticipated changes over time – Potential implications for future performance – Potential response to the critical challenges and uncertainties – Forecasts about KPIs and related assumptions 	4
8-Basis of preparation and presentation	<ul style="list-style-type: none"> – Materiality determination process – Reporting boundary – Significant frameworks and methods used to quantify or evaluate material matters 	3
9-Capitals	<ul style="list-style-type: none"> – Description of various forms of capital that the organization depends on or affects to create value – Discussing factors that affect the availability, quality and affordability of the capital – Discussing the increases, decreases or transformations of capitals 	4

(continued)

Table A1. Continued

Content element	Components	No. of items
10-Value creation	<ul style="list-style-type: none">– Describing the flow between and within the capitals over time– Describing the value creation process and its components– Showing the external environment, the context within which the organization operates– Determining the responsibility of those charged with governance for creating an appropriate oversight structure to support the ability of the organization to create value– Describing the value created by an organization over time for itself and others	4
Total		42
Source(s): Authors' own work		

Corresponding author

Soltan Ramadan Ali Radwan can be contacted at: soltan_ali@commerce.sohag.edu.eg