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Integrated reporting and firm value: moderating role of CEO integrity in the context of GCC countries

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ABSTRACT

The study examines the impact of Integrated Reporting (IR) on firm value, and it explores the moderating role of CEO integrity (CEOI) in this relationship for companies listed on GCC stock exchanges. The sample consists of 177 listed firms from six GCC countries (Saudi Arabia, UAE, Bahrain, Qatar, Oman, and Kuwait) that published integrated reports from 2017–18 to 2022–23 in Arabic and English. Using secondary data from the firms' websites, the research applies the system GMM model and dynamic fixed-effect robust standard error model to analyze the data. The findings reveal that IR positively influences firm value. Furthermore, CEO integrity moderates the relationship between IR and firm value, amplifying the positive effects of IR when CEOs demonstrate ethical leadership. The study's implications suggest that firms should adopt IR practices and ensure CEO integrity to boost firm value. Supervisory boards must oversee both IR practices and CEO performance to maintain transparency, safeguard the firm's reputation, and drive sustainable value creation.

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Integrated reporting; firm value; CEO integrity; GCC countries; system GMM

SUBJECTS

Business, Management and Accounting; Finance; Economics

1. Introduction

Integrated reporting (IR) has emerged as a pivotal tool for organizations seeking to enhance transparency and accountability, particularly in the dynamic and rapidly evolving economies of the Gulf Cooperation Council (GCC) countries. It is relatively a new approach to firm reporting that aims to provide a more comprehensive and coherent picture of the firm's performance and value creation. Rather than just focusing on financial performance, IR seeks to provide stakeholders with information about a firm's strategy, governance, risks, opportunities, and impacts on the environment and society (Eccles & Krzus, 2015; Permatasari & Tjahjadi, 2024; Rizzato et al., 2024; Setia et al., 2024). IR is based on the premise that a firm's value is not only determined by its financial performance but also by its ability to create and sustain value over time (Maroun, 2017). This means taking into account a wide range of factors, such as the organization's social and environmental impacts, its relationships with stakeholders, and its long-term sustainability (Eccles & Krzus, 2015). The International Integrated Reporting Council (IIRC) defines IR as '*a process founded on integrated thinking that results in a periodic integrated report by an organisation about value creation over time and related communications regarding aspects of value creation*'. According to the IIRC, an integrated report identifies the connections between financial and non-financial information and presents a holistic picture of the organisation.

IR is becoming increasingly important to investors around the world, including in the GCC countries. Investors in the GCC region are increasingly demanding IR from firms as they seek more information about the long-term sustainability and performance of their investments (Buallay et al., 2021). In addition, regulators in some GCC countries encourage firms to provide more comprehensive integrated reports. For example, the Saudi Arabian Capital Market Authority introduced new corporate governance regulations

in 2017 that require listed firms to provide more information on their environmental, social, and governance performance in their annual reports. The Dubai Financial Services Authority also requires listed firms to provide more comprehensive reporting on their ESG performance. Investors in the GCC are also increasingly interested in firms that prioritize sustainability and social responsibility, and they are using IR as a way to evaluate firms on these criteria. As a result, firms that provide more comprehensive reports are more likely to have a competitive advantage in attracting investment in the GCC region.

By providing stakeholders with a complete picture of its performance and value creation, a firm can build trust and confidence among its stakeholders. Hence, academicians are getting motivated to investigate empirically the significant impact of IR on firm value. Accordingly, research has been undertaken globally (Arguelles et al., 2015; Barth et al., 2017; Dey, 2020; Giorgino et al., 2017; Lee & Yeo, 2016; Mervelskemper & Streit, 2017). There is evidence which also depicted that the relationship between non-financial reporting and firm value can be further strengthened by including moderating variables like CEO integrity (CEOI) (Pham & Tran, 2020). CEOI refers to the personal ethical standards and reputation of the CEO, and it is an important factor that can influence the relationship between IR and firm value.

Firms in GCC countries are currently facing challenges regarding the integrity of their CEOs, especially when it comes to meeting the expectations of stakeholders by improving disclosure through IR practices (Al-Shammari & Al-Sultan, 2010). CEO integrity is of utmost importance as these leaders occupy crucial governance positions, exerting direct influence over firm transparency and stakeholder trust (Pham & Tran, 2020). CEOs in the GCC need to prioritize IR to address stakeholder concerns and improve the overall value of their firms. Research has shown that when the CEO has high levels of integrity, the positive effect of IR on firm value is stronger, while low levels of integrity can weaken or even reverse this effect. When the CEO has high levels of integrity, it can enhance the credibility of the integrated report. This can lead to increased stakeholder engagement and a better understanding of the firm's performance, which can ultimately result in higher firm value. Again, a CEO with high levels of integrity is more likely to use the integrated report as a tool for communicating the firm's long-term value-creation strategy. This can help to align stakeholder expectations with the firm's vision and can lead to increased investment in the firm's growth and development. Furthermore, such CEOs are committed to acting in the best interests of their business while performing their roles. The moderating role of CEOI on the relationship between IR and firm value highlights the importance of ethical leadership in shaping the impact of IR on a firm's value.

IR has attracted much interest as a revolutionary method of corporate disclosure; yet, its potential is still inadequately examined in the GCC region, characterised by a distinct economic and governance environment. In contrast to other global studies, our research examines the GCC countries, emphasising the impact of IR on firm value in a market marked by swift economic diversification and growing demand for sustainable practices. Moreover, the study introduces the examination of CEOI as a moderating variable in this connection, providing novel insights into the influence of ethical leadership on improving IR performance. This novel perspective enhances the literature on corporate governance and offers practical implications suited to the region's distinct economic landscape.

Although IR is progressively acknowledged for its capacity to improve transparency and accountability, enterprises in the GCC have distinct obstacles in the effective implementation of these practices. These issues arise from changing legislative mandates, stakeholder anticipations, and cultural influences on corporate governance. The differing levels of CEOI introduce an added layer of complication that directly affects the credibility of IR practices. This study examines how ethical leadership can connect IR practices with improved firm value, offering an exclusive response to a significant governance challenge in the region.

Notwithstanding the worldwide attention to the advantages of IR, empirical studies concentrating on the GCC region are limited. Current research primarily investigates the effect of IR on firm value, neglecting the moderating role of leadership characteristics like CEOI. By incorporating this overlooked component, our analysis addresses a significant gap, illustrating how CEOI enhances the beneficial impacts of IR on firm value. This addition enhances the theoretical comprehension of IR in corporate governance while also rectifying a notable gap in the context of emerging markets.

The motivation for this research stems from the growing regulatory focus on sustainability and governance in the GCC, alongside escalating stakeholder demands for improved disclosure standards. This study seeks to aid companies in addressing these changing needs by offering evidence-based solutions to utilise IR and CEOI for value enhancement. The findings intend to assist policymakers in formulating

legislation that harmonises leadership integrity with disclosure standards, assuring long-term sustainability and competitive advantage for GCC enterprises.

Although there is evidence on the impact of IR on firm value in the GCC context, but limited; there is no single empirical research on the moderating role of CEOI to the best of your knowledge. Hence, to fill this research gap, the following research questions are raised:

RQ1: What is the impact of IR on firm value in the context of companies listed on the GCC stock exchanges?

RQ2: Does CEOI play any moderating role in the relationship between RI and firm value in the context of companies listed on the GCC stock exchanges?

To fulfil the above research questions, the following research objectives are raised:

RO1: To examine the impact of IR on firm value in the context of companies listed on the GCC stock exchanges.

RO2: To examine the moderating role of CEOI in the relationship between RI and firm value in the context of companies listed on the GCC stock exchanges.

The research makes a substantial contribution to the fields of corporate governance and sustainability by underscoring the importance of CEOI and IR in the enhancement of firm value. It illustrates that IR practices, which provide a comprehensive perspective on financial and non-financial performance, promote transparency and accountability, which are critical factors in a company's reputation and investor appeal. Additionally, the study underscores the significance of the supervisory board's function in overseeing the integrity of the CEO and the IR practices, as the former is associated with ethical leadership and effective resource management. The study offers practical insights for boards to identify inefficiencies or unethical practices by employing the asset utilisation ratio as a measure of CEOI. The importance of aligning executive leadership with IR practices to enhance stakeholder trust and foster long-term value creation is emphasised by this research.

The research demonstrates substantial evidence that IR positively impacts firm value, confirming its significance as a vital catalyst for transparency and accountability in the Gulf Cooperation Council (GCC). Furthermore, the results indicate that CEO integrity substantially influences this relationship, amplifying the effect of IR on firm value. This highlights the significance of ethical leadership in cultivating stakeholder trust and maximising resource efficiency, hence facilitating sustainable value development. The findings offer practical insights for companies, investors, and regulators, highlighting the twin significance of implementing IR processes and maintaining elevated standards of CEO integrity.

The remaining part of the study is organized as follows: [Section 2](#) deals with the literature review; [Section 3](#) deals with data and methodology, followed by [Section 4](#) with results and discussion and finally [Section 5](#) deals with the practical implications of the study followed by conclusion and scope for future research.

2. Literature review

2.1. Theoretical perspective

2.1.1. Stakeholder theory

In 1984, R. Edward Freeman introduced stakeholder theory, which questions the conventional belief that corporations are solely focused on maximising shareholder value Freeman (1984). Instead, it suggests that businesses have a wider responsibility to all stakeholders - any individual or group that can impact or be impacted by the efforts of the organization. These stakeholders may be shareholders, employees, customers, suppliers, communities, and regulatory bodies. The core principle of stakeholder theory is that a firm's success is closely linked to its capacity to generate value for all parties involved (O'Dwyer et al., 2005). Stakeholder theory is essential in the context of IR, which integrates financial and non-financial data to provide a comprehensive view of a firm's performance and is in line with the principles of stakeholder theory (Laskar & Maji, 2016). IR is crafted to effectively convey the value creation of firms over time, encompassing financial outcomes and considering environmental, social, and governance (ESG) factors. Applying stakeholder theory to IR requires firms to carefully consider and disclose the impact of their activities to all stakeholders, rather than solely focusing on shareholders (Ofoegbu et al., 2018). By following the principles of stakeholder theory in their IR practices, firms can improve transparency and

accountability, which helps foster stronger relationships with all stakeholders. This approach effectively caters to the information needs of investors while also taking into account the concerns of regulators, employees, and the wider community.

2.1.2. Ethical leadership theory

According to ethical leadership theory, leaders who consistently demonstrate integrity, impartiality, and steadfast adherence to ethical principles can propel organisations to achieve exceptional results. Leaders establish a precedent that resonates throughout the entire organisation and cultivates a climate marked by confidence, regard, and responsibility through their exemplification of ethical conduct (Brown & Treviño, 2006). Trust in leadership has been found to positively impact employee engagement, turnover rates, and productivity. This is due to employees' greater propensity to demonstrate motivation and commitment to their corporation when they perceive that it is dedicated to upholding principles of integrity (Piccolo et al., 2010).

The ethical leadership theory places significant emphasis on the role of CEOs, who are considered the most senior leaders of an organisation, in establishing ethical norms and shaping the firm culture. The preservation of an ethical environment and the establishment of accountable and transparent decision-making procedures are both dependent on their integrity. In other words, CEOs who exhibit high integrity, in accordance with ethical leadership theory, are endowed with solid moral principles that empower them to make decisions and give preference to ethical aspects while dealing with decision-making situations (Pham & Tran, 2020). According to Eisenbeiss et al. (2015), these ethical considerations are expected to be meticulously considered by these CEOs and incorporated into the fundamental basis of their firm's decisions. These CEOs also fulfil their duty in the best interest of their organisation.

2.2. The Conceptual framework

The conceptual framework is depicted in Figure 1, which demonstrates how CEO integrity moderates the impact of IR on TQ. It shows that CEO integrity has an impact on the strength and direction of the link

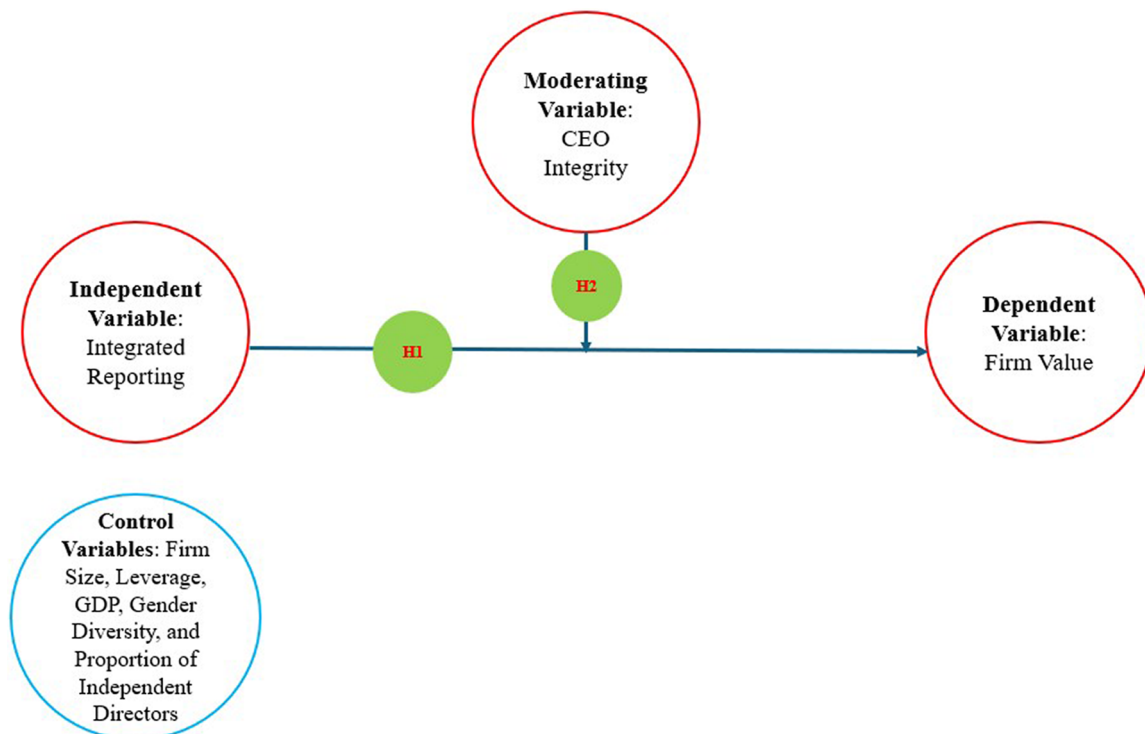


Figure 1. The conceptual framework.

between IR and TQ. Within this framework, the implementation of IR is anticipated to have a favourable effect on TQ by improving transparency and accountability. Nevertheless, the CEO's integrity serves as a moderating factor that could potentially enhance this association. Strong CEO integrity can enhance the favourable impact of IR on TQ by ensuring the credibility and reliability of the disclosed data, thus bolstering investor trust and further elevating the firm's market worth.

2.3. Empirical studies and hypotheses development

2.3.1. Integrated Reporting and firm value

IR has become a comprehensive strategy that combines both financial and non-financial data to offer a complete perspective on a firm's performance. The core of IR resides in its capacity to augment transparency, accountability, and communication with stakeholders, thereby impacting the firm's market valuation. Several empirical studies have investigated the association between IR and the value of a firm, resulting in findings that mostly indicate a favourable association.

Biddle and Saudagaran (1991) were the initial researchers to investigate the influence of firm reporting on firm growth. They found a clear connection between improved reporting methods and the growth of firms. De Klerk and de Villiers (2012) provided additional evidence for this claim by examining the top 100 South African firms. They found that firms that disclosed more information experienced an increase in their stock values. This highlights investors' inclination to consider supplementary information while making investment decisions. In a similar vein, Buys et al. (2009) discovered that South African firms had a greater value, which is consistent with the outcomes of Arguelles et al. (2015). The latter study found a positive relationship between the value of stocks in the market and the quality of integrated reports worldwide.

In their study, Lee and Yeo (2016) examined South African firms and found a significant positive association between Tobin's Q, which is used as an indicator of a firm's value, and the level of IR. Bernardi and Stark (2018) emphasised that the implementation of obligatory IR improves the accuracy of analysts' earnings estimates by increasing the amount of environmental disclosure. According to Iyoha et al. (2017), a study conducted on 98 bank personnel in Nigeria's banking industry showed that IR had a beneficial and substantial impact on firm value.

Zhou et al. (2017) conducted a study using 443 firm-year observations from the Johannesburg Stock Exchange. They found that integrated reports provide more advantages compared to traditional financial reporting when it comes to evaluating a firm's future financial success. Barth et al. (2017) found a clear link between the quality of integrated reports and the value of a firm, mainly through higher expected cash flows in the future. The studies conducted by Cosma et al. (2018) and Sofian (2019) further supported these conclusions by demonstrating that IR awards led to positive reactions in the stock market and that IR has a beneficial effect on Tobin's Q. El-Deeb (2019) examined the influence of IR on firm performance and firm value in Egypt's EGX30-listed firms between 2012 and 2017. The study highlights the importance of IR in improving transparency and decision-making by utilising regression analysis and an IR compliance index to discover a positive association between IR compliance and firm value (market capitalisation) as well as firm performance (ROE, debt ratio). In addition, Dey (2020) and Vitolla et al. (2020) presented evidence from the banking industry and global firms, respectively, highlighting the importance of IR in improving market-to-book value ratios and lowering the cost of equity capital, thus increasing the overall value of a firm. Consistent with the outcome of Caglio et al. (2020) in the context of South Africa for 443 firm-year observations from 2011–2016. A study conducted by Makri and Kabra (2023) has confirmed the substantial and beneficial impact of IR on the market worth of Indian corporations. Again, in the context of Indian firms, Bansal (2024) has revealed that the adoption of IR practices amongst Indian firms has led to a shift in their focus from more to less observable earnings management. Bansal (2024) further articulated that the adoption of IR among Indian firms leads to gaining legitimacy. Based on the regression model such as feasible generalized least squares, Hichri, and Alqatan (2024) found a significant positive impact of IR on firm value in the context of a sample of 300 international companies collected from the Thomson Reuters Eikon database between 2010 and 2019. Again, Asadi et al. (2024) conducted a study using an international data set consisting of 1195 firm-year observations from 2018 to

2022 to investigate how IR quality impacts value creation. Their findings reveal a significant relationship only for countries with a mandatory adoption of IIRF. For 714 firm-year observations of internationally listed firms, Mansor et al. (2024) also articulated that IR leads to value creation. In European countries, according to Hurghiş et al. (2024), IR also helps in partially reducing the analyst's forecast error. Abdelmoneim and El-Deeb (2024) investigate the influence of ESG disclosure on IR quality, focussing on the moderating function of board features. Their study, which examined 34 Egyptian non-financial enterprises (2015–2021) subject to ESG disclosure rules, discovered a substantial positive correlation between ESG disclosure and IR quality, which was increased by board gender diversity and size.

Nevertheless, it is crucial to recognize studies that give divergent findings. In a study conducted by Soumillion (2018), it was shown that there was no significant correlation between IR and market value among 63 enterprises in South Africa. Bijlmakers (2018) and Nurkumalasari et al. (2019) reached similar conclusions independently, with Bijlmakers focusing on the European context and Nurkumalasari et al. focusing on the Asian context. According to Wahl et al. (2019), voluntary disclosures of integrated reports do not significantly affect the accuracy of analyst earnings estimates or the value of a firm. This implies that organisations with high levels of transparency may not benefit much from extra IR disclosures. Ribeiro et al. (2024), examined the significance of IR in investment decision-making in the context of Brazil. The outcome of the study reveals that Brazilian professional investors do not use IR in making investment decisions. On the other hand, Gerwanski (2020) and Landau et al. (2020) in the European context, as well as Muttakin et al. (2020) in the context of South Africa, have encountered a significant negative impact of IR on firm value.

By incorporating this empirical evidence into the framework of stakeholder theory, a theoretical justification can be established for the positive effect of IR on the value of a firm. Stakeholder Theory asserts that to achieve long-term success, organisations should prioritise addressing the interests and concerns of all their stakeholders rather than solely focusing on shareholders (Freeman, 1984; Velte, 2022). Through the implementation of IR, firms openly convey their financial and non-financial activities, catering to the informational requirements of many stakeholders such as investors, employees, consumers, regulators, and the wider community (Hichri & Alqatan, 2024). This extensive disclosure promotes confidence, improves the firm's standing, and demonstrates the firm's dedication to ethical conduct and sustainable development.

According to Velte (2022), reports of better quality help investors make more accurate predictions, which reduces uncertainty and can potentially increase the value of a firm. Moreover, stakeholders who value partnering with socially conscious firms respond favourably to these kinds of disclosures, which could lead to a rise in investments and customer support.

Despite the increasing focus on firm governance and sustainable business practices in GCC countries, there is a noticeable gap in empirical research on the relationship between IR and firm value within this region. As GCC economies continue to evolve and prioritize transparency, IR may serve as a critical tool for firms to communicate their value creation processes to stakeholders, thereby enhancing firm value.

Moreover, the economies of the GCC region have experienced rapid growth, with significant investments made to diversify their industries beyond oil. There is also a strong focus on sustainability and firm governance, reflecting a commitment to long-term development. As countries increasingly adopt global financial and environmental standards, firms are recognising the importance of using IR as a valuable tool to improve transparency, gain stakeholder trust, and ultimately increase their firm value. In light of this, the study formulates the following hypothesis for empirical testing:

H₁. *There is a positive influence of integrated reporting on firm value.*

2.3.2. Moderating role of CEO integrity

The importance of CEOs in influencing firm strategy is recognized, especially in voluntary disclosure practices (Pham & Tran, 2020). Nevertheless, it is important to closely examine the ethical aspect of leadership, particularly the integrity of CEOs, to fully understand the impact of these practices on the value of a firm. Integrity, as a fundamental ethical characteristic, has a significant impact on how stakeholders

perceive and trust a firm's disclosures. This is particularly relevant in regions such as the GCC, where there is a growing emphasis on transparency and accountability.

Research highlights the crucial role of ethical leadership in cultivating a culture of integrity within organisations. Leaders who prioritise ethics are responsible for upholding and promoting moral values, which can have a significant impact on organizational behaviour (Brown & Treviño, 2006; Treviño et al., 2000). CEOs who prioritise ethical principles are not only more likely to avoid unethical shortcuts but also to set an example that fosters confidence and allegiance among workers and other interested parties (Eisenbeiss et al., 2015). The firm's commitment to ethical values strengthens the credibility of its disclosures, including those about IR.

The concept of integrity is complex and encompasses a dedication to honesty, authenticity, and moral principles. The literature on ethical leadership highlights the importance of integrity, which goes beyond simply following rules. It emphasises the need to embody and promote a wider ethical vision within the organisation (Bauman, 2013; Palanski & Yammarino, 2007; Verissimo & Lacerda, 2015). A CEO who values integrity is likely to prioritise transparent and truthful reporting practices within the organisation, which in turn enhances the perceived reliability of the data provided.

In the GCC context, where IR is becoming important for firm governance, the integrity of the CEO could have a significant impact on how effectively IR influences the value of the firm. Evidence from the study of Pham and Tran (2020) suggests that the relationship between CSR reporting and firm value is positively moderated by CEO integrity, indicating that stakeholders are more likely to trust the disclosures made by moral leaders. Extending this to IR, one can reasonably postulate that the CEO's integrity will amplify the positive impact of IR on firm value in the GCC region. In today's business landscape, where transparency and ethical conduct are highly valued, the integrity of a CEO plays a crucial role in assuring stakeholders that the firm's disclosures, both financial and non-financial, are reliable and credible. This not only builds trust among stakeholders but also boosts the firm's image, making it more appealing to investors and other important parties. Therefore, it is anticipated that within the GCC context, the influence of IR on firm value will be evident in firms headed by CEOs who possess strong integrity. This highlights the importance of ethical leadership in not only enhancing internal governance but also in influencing external perceptions and ultimately, the value of the firm. Hence, the following hypothesis is developed for empirical testing:

H₂: *CEO Integrity positively moderates the relationship between integrated reporting and firm value*

3. Data & methodology

3.1. Population of the study, study period & sample size

This study is based on secondary data gathered from the published Corporate Governance Reports and Integrated Reports found on the official websites of firms listed on GCC stock exchanges. The population of the study comprises all firms listed on the stock exchanges of the six GCC countries, namely the United Arab Emirates, Bahrain, Saudi Arabia, Qatar, Kuwait and Oman. The study covers a period of six years, from 2017–18 to 2022–23. While some firms, such as Abdullah Al Othaim Markets Company and National Shipping Company of Saudi Arabia, have been publishing integrated reports since 2013–14, the KPMG (2019) survey report indicates that in general, the adoption of IR practices in the GCC began around 2017–18. Furthermore, the choice to commence the study from 2017–18 is based on both practical and contextual factors. This period signifies a crucial juncture for the implementation of IR practices in the GCC region. In 2017, the growing global acknowledgement of the International Integrated Reporting Council (IIRC) framework led to a rise in IR adoption, as corporations aimed to improve transparency, stakeholder engagement, and adherence to evolving corporate governance norms. Again, reliable and consistent IR data in both English and Arabic became broadly accessible beginning in 2017–18. Prior to this period, the data was inconsistent and irregular, potentially undermining the analysis's credibility. By choosing this time frame, the study corresponds with a pivotal period in corporate reporting developments throughout the GCC, confirming that the results are based on precise and comprehensive information.

The choice of 2017–18 as the base year is additionally backed by the fact that it aligns with significant governance and regulatory reforms in the region. Initiating the process earlier would not have ensured equivalent consistency in data or alignment with the research objectives, therefore validating the decision with both methodological and contextual precision. Consequently, this year is chosen as the base year for the study.

The final overall sample size for the study is comprised of 177 firms that can meet the rigorous criteria that are defined for the study. The criteria for selection are based on the requirement to include only those firms that regularly released integrated reports in both English and Arabic languages on their respective website from 2017–18 to 2022–23. Firms failing to satisfy these criteria are eliminated from the sample. The total sample size of 177 firms comprises 49 firms from Saudi Arabia, 22 from Oman, 20 from Qatar, 36 from Kuwait, 35 from the United Arab Emirates, and 15 from Bahrain. These sample details are presented in Table 1. This sample comprises all firms in the GCC region that published integrated reports on their website throughout the specified time period.

3.2. Measurements of the variables

3.2.1. Dependent variable

The dependent variable of the study is the firm value. One of the most well-known indicators of firm value is Tobin's Q (Cahan et al., 2016). It is calculated by the market value of equity (i.e. year-ending closing price multiplied by the numbers outstanding shares) plus the book value of total liabilities divided by total assets (Lee & Yeo, 2016). Tobin's Q is concerned with ways that a firm might enhance the market value of its assets. Tobin's Q is used as it offers a thorough assessment of firm worth by associating the market value of a company's equity and liabilities with its whole asset base. It signifies investor anticipation regarding the company's prospective profitability and operational efficiency. A Tobin's Q exceeding 1 suggests that the market views the firm as capable of yielding superior returns from its assets, indicating robust growth potential or efficient management techniques. A Tobin's Q below 1 indicates diminished market confidence or inefficient resource utilisation. The integration of market-based valuation with economic metrics renders it especially appropriate for assessing the influence of governance, reporting standards, and strategic decisions on corporate value. The majority of the recent studies have used Tobin's Q to assess the relationship between firm disclosure and firm value (Arguelles et al., 2015; De Klerk & de Villiers, 2012; lyoha et al., 2017; Jones et al., 2007; Lee & Yeo, 2016; Murray et al., 2006; Nurkumalasari et al., 2019).

3.2.2. Independent variable

IR is the independent variable in this present study. Researchers have mostly adopted the methodology of content analysis while measuring integrated disclosure (i.e. IR) (Lee & Yeo, 2016; Zhou et al., 2017). Thus, the content analysis technique based on the International Integrated Reporting Framework (IIRF) is employed to measure the independent variable, i.e. IR.

To measure IR, IIRF provided a list of major eight elements - strategy and resource allocation, business model; organizational overview and external environment; governance; risks and opportunities; performance; the basis of preparation and presentation and finally Outlook. Al Amosh et al. (2022) have developed specific items for each of the major elements of IIRF to investigate the IR practices in their study. Following Al Amosh et al. (2022), the present study has also used these specific items for each major element of IIRF. In other words, there are altogether fifty-eight specific items for all the major elements

Table 1. Details of sample firms.

Countries	Total number of listed firms as of 31 March 2023	Total number of firms published integrated report
Saudi Arabia	223	49
Kuwait	168	36
UAE	133	35
Oman	122	22
Qatar	49	20
Bahrain	43	15
Total	738 (Population)	177 (Sample)

of IIRF as shown in [Appendix 1](#). The items encompass all eight principal components of the IIRC framework, facilitating a thorough and rigorous evaluation of integrated reporting practices. The utilisation of this specific set of items guarantees alignment with globally recognised standards and facilitates a comprehensive assessment of firms' IR practices. While doing a content analysis of the integrated reports, these specific fifty-eight items/information is checked thoroughly to find whether the sample firms are disclosing each of these items or not. For doing content analysis, binary coding is used i.e. '1' if an item/information is disclosed; otherwise '0'. Accordingly, the disclosure index of each sample firm for each year is derived by using the following formula:

$$\text{IRScore}_j = \left(\frac{\sum_{i=1}^n X_{ij}}{N_j} \right) * 100 \quad (\text{i})$$

Where, 'IR Score_j' is the disclosure score of IR for the j^{th} firm; 'N_j' is 58 (i.e. the maximum possible disclosure for the j^{th} firm); 'X_{ij}' assumes the value 1 if the item is revealed in the report and 0 otherwise; 'i' is the item (i.e. specific item/information as shown in [Appendix 1](#)). To validate the reliability of the IR Score, the study has employed Cronbach's Alpha. The score of Cronbach's Alpha is found to be 0.83, indicating a high degree of internal consistency and reliability for the constructed index. This reliability measure ensures that the IR scores obtained from the content analysis are appropriate for subsequent statistical analysis.

3.2.3. Control variables

Following previous studies, the present study also uses several control variables. These variables are firm size, leverage; independent director, gender diversity, and GDP. The measurements of these control variables are provided in [Table 2](#) below:

3.2.4. Moderating variables

CEO integrity (CEOI), the moderating variable in this study, is a term for which there is presently no standardised measure, as noted in the nascent literature (Pham & Tran, 2020). According to agency theory, Jensen and Meckling (1976) and Jensen (1986) assert that opportunistic behaviour by CEOs can result in agency costs, negatively impacting shareholder interests. Ang et al. (2000) operationalised the asset utilisation ratio, defined as yearly revenues divided by total assets, to measure agency costs. According to Ang et al. (2000) and Pham and Tran (2020), this ratio is a good indicator of CEO integrity since it shows how well assets are used to generate income. This ratio is a crucial measure of

Table 2. Definition and measure of control variables.

Variable	Definition	Measure	Reference
Firm size (FS)	Firm size is defined as the extent or size of a company's activities and resources.	Natural logarithm of firm's total assets	Artiach et al. (2010); Hahn and Kühnen (2013); Crisóstomo et al. (2019); Al Amosh et al. (2022)
Leverage (DE)	The degree to which a business depends on debt to fund its operations in comparison to equity	Debt-equity ratio	Al Amosh et al. (2022); Permatasari and Narsa (2022)
Board independence (IND)	The ratio of directors on a company's board who are neither part of the management nor significantly affiliated with the company in question.	Percentage of independent directors to the total number of directors on the board of a firm	Haque (2017); Jo and Harjoto (2011); Nekhili et al. (2017);
Gender diversity (GD)	The extent to which women are represented in decision-making positions on a company's board.	Percentage of women directors to the total number of directors on the board of a firm	Bear et al. (2010); Frías-Aceituno et al. (2013); Kiliç and Kuzey (2018)
Gross domestic product (GDP)	The aggregate monetary value of all commodities and services produced within a nation over a specified time frame.	The GDP value is collected from World Economic Forum's Global Competitive Reports from 2017–18 to 2022–23	Pham and Tran (2020); Bochenek (2020); Falatifah and Hermawan (2021)

management efficiency and integrity, as it demonstrates the CEO's capacity to utilise the firm's assets to create income while maintaining responsible decision-making and responsibility.

Following Ang et al. (2000) and Pham and Tran (2020), we also employ asset utilisation ratio as a proxy for CEOI for the present study. The justification for employing the asset utilisation ratio arises from its capacity to include essential elements of management integrity. A lower asset utilisation ratio signifies inefficiency in the deployment of organisational resources, which, as Henry (2010) posits, may result from suboptimal investment choices or the misallocation of resources to unproductive assets. Such approaches are not only ineffective but may also indicate a deficiency of integrity within the management. In contrast, the higher ratio indicates the CEO's ability to optimise the efficiency of existing assets, along with the tenets of management responsibility and integrity.

This proxy has received extensive endorsement in the literature for its resilience and significance. Ang et al. (2000) illustrated the relevance of the asset utilisation ratio in measuring agency costs, which are intricately associated with management conduct and integrity. Pham and Tran (2020) further substantiated its application in assessing management efficiency and integrity within the framework of corporate governance. Collectively, these studies highlight the appropriateness of the asset utilisation ratio as a credible metric for CEOI. Furthermore, this ratio is advantageous as it is derived from audited financial statements, which are subject to thorough examination by independent external auditors. This ensures the precision and reliability of the data. This metric inherently exhibits a high degree of reliability by depending on audited reports, therefore reducing the necessity for further validation steps. Thus, the asset utilisation ratio provides a robust and reliable basis for evaluating CEO integrity in this study.

3.3. Empirical models

To examine the impact of IR on firm value and the moderating effect of CEOI, system GMM (Generalized Methods of Moments) regression models are employed in the present study. The System GMM model is a robust econometric instrument intended for the analysis of dynamic panel data. This is particularly important as it mitigates endogeneity concerns by employing lagged variables as instruments, hence assuring more reliable parameter estimates. Furthermore, it encapsulates the dynamic essence of connections, including the impact of the past on present outcomes, which is essential in research about financial and firm performance metrics. The model enhances estimation efficiency and robustness. This regression models are examined using two-steps system GMM model because system GMM provides a more precise prediction that takes into account the obstacles posed by the unit root characteristic (Bond, 2002). Furthermore, the two-step estimation method is implemented due to its significantly lower asymptotic variance in comparison to the one-step estimation method. To evaluate the validity of the instrument and the over-identifying restrictions, the Sargan test is applied in GMM dynamic model estimation. Furthermore, Arellano-Bond autocorrelation (AR) tests are carried out to determine whether the idiosyncratic errors demonstrate a serial correlation pattern (Arellano & Bond, 1991). The GMM's estimates are consistent if there is no second-order serial correlation. Additionally, the present study has taken into account the dynamic specification of the model, which includes the lag value of the dependent variable, as the firm value (dependent variables in the present case) may persist over time. These models are presented below:

$$TQ_{i,t} = \beta_0 + \beta_1 IR_{i,t} + \beta_2 FS_{i,t} + \beta_3 DE_{i,t} + \beta_4 IND_{i,t} + \beta_5 GD_{i,t} + \beta_6 GDP_{i,t} + \beta_7 Lag_TQ_{i,t} + \omega_{i,t} + e_{i,t} \quad (\text{Model 1})$$

$$TQ_{i,t} = \gamma_0 + \gamma_1 IR_{i,t} + \gamma_2 CEOI_{i,t} + \gamma_3 CEOI * IR_{i,t} + \gamma_4 FS_{i,t} + \gamma_5 DE_{i,t} + \gamma_6 IND_{i,t} + \gamma_7 GD_{i,t} + \gamma_8 GDP_{i,t} + \gamma_9 Lag_TQ_{i,t} + \omega_{i,t} + e_{i,t} \quad (\text{Model 2})$$

The presence of the moderating effect of CEOI on the relationship between IR and TQ is assessed based on the significant outcome of the above model 2. Moreover, it is very important to know how to read the significant outcome of the above model for identifying the presence of the moderating effect of CEOI. The following Table 3 will help in understanding and assessing the presence of the moderating effect:

4. Results & discussion

4.1. Descriptive statistics

Descriptive statistics play a vital role in providing information regarding the distributional properties of data, which is an essential prerequisite for regression analysis. The descriptive statistics are shown in Table 4. The table clearly shows that the minimum value of the IR score is 0.090, the maximum value is 0.900 and the mean value is 0.485. The mean value of 0.485 indicates that the sample firms have disclosed on average 48% of the information specified in the IR framework. The standard deviation of IR is relatively low, i.e. 0.161 which indicates that variability of the data around the mean is low. The IR score generated from the content analysis technique is reliable, as the score of Cronbach's alpha is found to be more than 0.8. According to Nunnally (1978), if the score is more than 0.8 it is good and reliable for further analysis. The mean value of DE is less than 1 (i.e. 0.578) which indicates that on average the sample firms have less debt as compared to equity. The range as well as the standard deviation are also less. The average firm size (FS), as measured by the natural logarithm of total assets, is 6.915 with a standard deviation of 2.112 indicating a moderate level of variability around the mean. Again, the descriptive statistics reveal that the natural logarithm of GDP has an average value of 5.506, with a standard deviation of 1.002. The range of values for GDP spans from a minimum of 3.540 to a maximum of 7.010. This indicates that GDP has a moderate level of variability around its mean, with a range that includes both relatively low and relatively high levels of GDP.

The sample firms exhibit a mean value of 0.333 for the proportion of independent directors (IND), indicating that 33% of the boards consist of independent directors on average. Further, the mean value of gender diversity (GD), measured as the percentage of women directors on the board, is 7.998, indicating that on average, women constitute approximately 8% of board members across the sample. The standard deviation is 2.284, suggesting moderate variability around this average. Furthermore, the management efficiency, as measured by the asset utilisation ratio, serves as a proxy for assessing CEO integrity (CEOI). CEOI has a mean value of 0.813, which measures the average assessment of integrity among CEOs in the sample. This indicator provides insight into how CEOs are viewed to manage organisational assets with integrity. The standard deviation, observed at 0.417, indicates the degree of variability in CEOI scores across the sample. The wide variation of CEOI is further shown by the range of values, which extend from a minimum of 0.073 to a maximum of 4.348. Finally, the mean Tobin's Q (TQ) value of 1.530 indicates that firms are valued at around 1.53 times their total assets. The standard deviation of 2.446 shows less variety in Tobin's Q values across the sample. Tobin's Q values range from 0.010 to 18.780, highlighting the huge variations of market valuations, from low to highly valued firms. It is also worth

Table 3. Presence of moderating effect.

Independent Variable (IR)	Moderating Variable (CEO Integrity)	Interaction Variable (IR*CEO Integrity)	Moderating Effect
Insignificant	Insignificant	Significant	No
Significant	Significant	Insignificant	No
Significant	Significant	Significant	Yes
Significant	Insignificant	Insignificant	No
Insignificant	Significant	Significant	Yes

Table 4. Descriptive statistics.

Variables	Min	Max	Mean	Std. Dev	Skew	Kurto
IR	0.090	0.900	0.485	0.161	0.156	-0.940
DE	0.000	5.000	0.578	0.791	0.897	1.257
FS	0.460	13.390	6.915	2.112	0.508	0.170
GDP	3.540	7.010	5.506	1.002	-0.178	-1.079
IND	0.032	0.425	0.333	0.077	0.093	1.896
GD	0.000	28.570	7.998	2.284	0.390	0.213
CEOI	0.073	4.348	0.813	0.417	0.793	1.649
TQ	0.010	18.780	1.530	2.446	1.062	1.993

Note: No. of Observations are 1062.

Source: Author's computation.

noting that the values of skewness and kurtosis of all the variables under study are relatively less than the critical values i.e. -2 to $+2$ (George, 2011) which indicates that the data are normally distributed.

4.2. Multi-collinearity detection

The validity of the linear model hinges on the assumption of independence among the explanatory variables. Severe multicollinearity can artificially inflate the standard errors of estimated coefficients. Multicollinearity arises when there is a high correlation between independent variables (Black, 2008, p. 652). To detect multicollinearity in this study, a standard Pearson bivariate correlation matrix is calculated and shown in Table 5. Pearson's correlation evaluates the intensity of the linear correlation between variables, with values ranging between $+/-1$. According to Anderson et al. (1996), correlations equal to or exceeding $(+/-) 0.7$ suggest multicollinearity issues in the regression model. The correlation matrix presented in Table 5, clearly reveals that there are no instances of correlations equal to or exceeding $(+/-) 0.7$, indicating the absence of multicollinearity concerns. Additionally, the variance inflation factor (VIF) is also calculated to assess the multi-collinearity issue. According to Gujarati and Porter (2003), a VIF exceeding 10 indicates significant multicollinearity issues for the respective independent variable. Table 5, reveals that all VIF values for all the variables are below 10, indicating an absence of severe collinearity concerns.

4.3. Results and discussions

4.3.1. Impact of IR on firm value

The outcome of system GMM model 1 is shown in Table 6. The results of Table 6 demonstrate that the coefficient of IR (i.e. $\beta_1 = 1.321$) is statistically significant at the 5% level and is positive. This indicates that companies adopting IR are more proficient in managing and conveying their sustainability efforts, hence improving their market reputation and credibility. IR enhances decision-making by offering a more transparent perspective on financial and non-financial performance, hence fostering greater stakeholder participation and confidence. In an era where transparency is paramount, companies that reveal their sustainability initiatives through IR can entice long-term investors, thus enhancing market worth. These results align with prior research (Cosma et al., 2018; Iyoha et al., 2017; Lee & Yeo, 2016), underscoring the significance of IR as a mechanism for enhancing corporate performance. By implementing IR practices, companies may exhibit their dedication to sustainability, governance, and transparency, which are increasingly vital criteria for investors and stakeholders, thereby augmenting firm worth in the global market.

Among the control variables, only FS and Lag_TQ are found to be positive and statistically significant at 1% level indicating that firm size (FS) and last year years firm value (Lag_TQ) play a critical role in influencing firm value positively. Moreover, the positive impact of FS on TQ indicates that firms typically possess more resources, capabilities, and market power, enabling them to more effectively execute IR processes. This, consequently, bolsters market confidence and favourably impacts corporate valuation. Moreover, the past value of Tobin's Q (Lag_TQ) acts as a dependable predictor of future business value,

Table 5. The correlation matrix.

Variables	VIF	IR	DE	TQ	FS	GDP	IND	GD	CEOI	CEOI*IR
IR	1.13	1								
DE	1.2	0.16**	1							
TQ	0.11	0.01	-0.07	1						
FS	3.56	0.01	0.26**	0.21**	1					
GDP	1.59	0.02	0.08**	0.13	0.26**	1				
IND	1.21	0.01	-0.08**	0.01	-0.06*	0.19**	1			
GD	1.17	0.062*	-0.04	0.04	0.09**	-0.05	0.25**	1		
CEOI	2.48	0.03	-0.05	0.09**	-0.03	0.01	-0.04	-0.05	1	
CEOI*IR	1.84	0.55**	0.14**	0.10**	0.04	-0.02	0.01	0.02	-0.72**	1

Note:

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Source: Author's contribution.

Table 6. System GMM results.

Variables	Coeff	Std. error	Z-stats
Const.	7.526	2.065	3.644***
IR	1.321	0.529	2.496**
FS	1.004	0.302	3.324***
DE	-0.135	0.138	-0.983
IND	1.205	1.576	0.765
GD	0.023	0.046	0.49
GDP	0.063	0.053	1.182
Lag_TQ	0.276	0.092	2.997***
Sargan_test (p-value)		0.234	
Hansen_test (p-value)		0.111	
AR (1):		0.13	
AR (2):		0.195	
Wald (χ^2)		0.000	

Note for Model 1:

(1) ***, ** and * indicates significance at 1, 5 and 10%, respectively.

(2) N = 1061.

(3) Dependent Variable: TQ.

Source: Authors Computation.

since investors generally favour organisations with a robust prior performance. The steady past performance indicates long-term stability, supporting the firm's adherence to transparency and sustainability, hence enhancing the favourable impacts of IR. This highlights the significance of firm size and past performance in augmenting the value of IR for fostering future growth and profitability. The capacity to uphold a solid record of performance and integrity over time greatly enhances investor confidence, so reinforcing the long-term advantages of implementing IR practices.

The outcomes presented in Table 6 also display some important facts. At first, the coefficients of the lagged values are about unitary throughout the three models, aligning with Roodman's (2009) assertion that the estimated coefficient of the lagged dependent variables should signify convergence by possessing an absolute value smaller than one. Second, AR (1) and AR (2) are both insignificant which indicates the absence of auto-correlation. Again, Hansen's test and Sargan's test of over-identification of restrictions are not statistically significant, which suggests that the choice instruments are valid. Lastly, the Wald chi-square value is statistically significant, as evidenced by Table 6, suggesting that the current models have predictive power. Based on these facts, it is possible to infer that the results of the system GMM models are reliable and valid for decision-making.

4.3.1.1. Robustness check. Additional analysis is undertaken to analyse the impact of IR on firm value. In this analysis, an appropriate panel data regression model is employed based on the Breusch and Pagan test and the Hausman test. Since both the tests are significant, the dynamic fixed effect regression model is employed. The specific forms of the regression models are provided below:

$$TQ_{i,t} = \beta_0 + \beta_1 IR_{i,t} + \beta_2 FS_{i,t} + \beta_3 DE_{i,t} + \beta_4 IND_{i,t} + \beta_5 GD_{i,t} + \beta_6 GDP_{i,t} + \beta_7 Lag_TQ_{i,t} + e_{i,t} \quad (\text{Model 1a})$$

It is crucial to acknowledge that two issues that may affect the estimation of the fixed effects model are heteroscedasticity and serial correlation in the residual term. These issues can result in inaccurate standard errors assigned to each regression coefficient (Gujarati, 2003). To avoid this problem, specifically, the present study uses a dynamic fixed effect robust standard error regression model, as this model will take care of the heteroskedasticity and serial correlation if present in the data set. The outcomes of the regression model 1a, are presented in Table 7. The outcomes of Model 1a reveal that the coefficient of IR (i.e. $\beta_1 = 0.757$) is positive and statistically significant at a 1% level indicating that the overall effect of IR plays a significant role in impacting TQ.

Among the control variables, FS and Lag_TQ are positive and significant at 1% level and GD is positive and significant at 5% level in Model 1a. The study also investigates the potential endogeneity issue through the Durbin–Wu–Hausman's (DWH) test (Chmelarova & Hill, 2010) for Models 1a. Upon analysis, it is found that neither the Durbin chi-square nor the Wu–Hausman F-Statistic values demonstrate statistical significance. Hence, this observation indicates that, currently, there exists no discernible influence of endogeneity issues in the model. Moreover, the significant F-statistic value and R^2 value support the predictive capability of Models 1a; hence the outcome of the dynamic fixed effect model is reliable.

Table 7. Dynamic fixed effect (robust standard error) model.

Variables	Coeff	Robust Std. error	t-stats
Const.	−0.379	0.225	−1.686*
IR	0.757	0.106	7.155***
FS	0.117	0.031	3.769***
DE	0.019	0.028	0.675
IND	0.083	0.283	0.295
GD	0.021	0.009	2.432**
GDP	0.161	0.115	1.395
Lag_TQ	0.351	0.110	3.190***
R ² Overall		0.250	
F-stats.		16.74***	
B-P test (χ^2)		203.967***	
Hausman test (χ^2)		131.728***	
DWH test of endogeneity:			
Durbin (χ^2)		1.762 ($p=0.172$)	
Wu-Hausman (F-stats.)		1.812 ($p=0.1821$)	

Note for Model 1a:

(1) ***, ** and * indicates significance at 1, 5 and 10%, respectively.

(2) N = 1061.

(3) Dependent Variable: TQ.

Source: Author computation.

Table 8. System GMM results.

Dependent Variable: TQ			
Variables	Coefficient	Std. error	Z-stats
Cons.	−2.223	1.041	−2.135**
IR	0.389	0.191	2.037**
CEOI	2.100	1.010	2.079**
CEOI*IR	1.263	0.631	2.002**
FS	0.639	0.220	2.910***
DE	−0.307	0.311	−0.990
IND	0.045	1.068	0.040
GD	0.010	0.170	0.060
GDP	0.484	0.314	1.540
Lag_TQ	0.513	0.133	3.860***
Sargan_test (p -value)		0.170	
Hansen_test (p -value)		0.228	
AR (First-order autocorrelation test)		0.296	
AR (2): Second-order autocorrelation test		0.787	
Wald (χ^2)		0.000	

Note: ***, ** and * indicates significance at 1, 5 and 10%, respectively; N = 1061.

Source: Authors computation.

Finally, it is worth noting that outcomes related to the impact of IR on TQ as per both the system GMM and Panel data model are consistent. Hence, these outcomes are robust and the hypothesis (H_1) is accepted.

4.3.2. Moderating role of CEO integrity

Table 8 presents the outcome of system GMM (Model 2). The outcome in Table 8 reveals that the coefficient CEOI is positive and statistically significant at a 5% level indicating that CEOI plays a significant role in impacting TQ. Similarly, the interaction variable (i.e. CEOI*IR) is also found to be positive and statistically significant at a 5% level. The positive significant effect of the moderating variable (i.e. CEOI) along with the positive significant effect of the interaction variable (i.e. CEOI*IR) indicates that CEOI moderates the association between TQ and IR. In particular, the positive relationship between CEOI and TQ indicates that firms with high-integrity CEOs are valued more highly by the market because investors have more faith and confidence in them. The evidence presented by the significant interaction component (CEOI*IR) indicates that the presence of an ethical and reliable CEO increases the credibility and efficacy of integrated reporting by amplifying the positive impact of IR on TQ.

This combination, i.e. the positive impact of both CEOI and CEOI*IR on TQ, results in increased investor confidence and enhanced firm value. Hence, the study's findings underscore that CEO integrity is pivotal in augmenting firm value, both through direct impact and by boosting the beneficial benefits

of IR. Ethical leadership, exemplified by a CEO with strong integrity, fosters stakeholder trust and enhances the credibility of IR practices. This therefore enhances the company's reputation and market valuation. The moderating influence of CEO integrity corresponds with prior research, including Pham and Tran (2020), Lee and Yeo (2016), Iyoha et al. (2017), and Cosma et al. (2018), which indicates that robust governance, as demonstrated through CEO leadership, is crucial for optimising the advantages of transparent and comprehensive disclosure. These findings highlight the importance of ethical leadership in facilitating the effective execution of IR and promoting sustained economic success through the improvement of the firm's operational transparency and reliability. The study provides significant insights into the relationship between leadership ethics and the value generated through IR, emphasising the critical role of CEO integrity in promoting a transparent and value-oriented organisational environment.

The outcomes presented in Table 8 also reveal that the impact of IR is positive and significant at a 5% level indicating that IR is crucial for TQ. It is also visible from the Table that FS and Lag_TQ are also positive and statistically significant at a 1% level indicating that both firm size and last year's firm value have a favourable impact on current years TQ. Moreover, AR (1) and AR (2) both are found to be insignificant which indicates the absence of autocorrelation. Again, Hansen's test and Sargan's test of over-identification of restrictions are also insignificant, which indicates that the choice instruments are valid. Further, the Wald chi-square value is statistically significant, which implies that the current model has predictive power. Based on these facts, it is possible to infer that the results of the system GMM models are reliable and valid for decision-making.

4.3.2.1. Robustness check. To ensure robustness, additional analysis is carried out to examine the moderating role of CEOI on the relationship between IR and TQ. Based on the outcome of the Hausman and Breusch tests, a suitable panel data regression model is employed. Given the significance of both tests (as shown in Table 9), the dynamic fixed effect regression model is employed. Below is the specific fixed effect model used in the present study:

$$TQ_{i,t} = \gamma_0 + \gamma_1 IR_{i,t} + \gamma_2 CEOI_{i,t} + \gamma_3 CEOI * IR_{i,t} + \gamma_4 FS_{i,t} + \gamma_5 DE_{i,t} + \gamma_6 IND_{i,t} + \gamma_7 GD_{i,t} + \gamma_8 GDP_{i,t} + \gamma_9 Lag_TQ_{i,t} + e_{i,t}$$

(Model 2a)

Specifically, the present study uses a dynamic fixed effect robust standard error regression model, as this model will take care of the heteroskedasticity and serial correlation if present in the data set. The

Table 9. Dynamic fixed effect (robust standard error) model.

Dependent variable: TQ			
Variables	Coefficient	Robust Std. Error	t-ratio
Cons.	3.126	1.112	2.811***
IR	0.951	0.157	6.056***
CEOI	2.282	0.746	3.058***
CEOI*IR	1.928	0.603	3.198***
FS	1.082	0.286	3.783***
DE	-0.000	0.039	-0.115
IND	1.127	2.695	0.420
GD	0.444	2.231	0.200
GDP	1.558	0.888	1.750*
Lag_TQ	0.064	0.022	2.91***
R ² Overall		0.350	
F-stats.		59.16***	
B-P test (χ^2)		1345.09***	
Hausman test (χ^2)		86.4912***	
DWH test of Endogeneity:			
Durbin (χ^2)		1.644 ($p=0.199$)	
Wu-Hausman (F-stats.)		1.638 ($p=0.201$)	

Note:

***, ** and * indicates significance at 1, 5 and 10%, respectively.

Source: Authors Computation.

outcomes of the regression model 2a are presented in Table 9. It is visible from Table 9 that the coefficients of the moderating variable (i.e. CEOI), as well as the interaction variable (CEOI*IR), are positive and statistically significant at a 1% level of significance. It is also clearly visible from the table that the coefficients of IR, FS and Lag_TQ are positive and statistically significant at a 1% level. These outcomes of the fixed effect model 2a presented in Table 9 are consistent with the outcomes of system GMM model 2 presented in Table 8.

Through the use of the Durbin–Wu–Hausman (DWH) test (Chmelarova & Hill, 2010) for the Model 4a, the study additionally looks into the possibility of endogeneity. After careful study, it has been confirmed that both the Durbin chi-square and the Wu-Hausman F-Statistic values do not show any statistical significance. Therefore, this observation suggests that there is currently no noticeable impact of the endogeneity issue in Model 2a. Additionally, the predictive power of Model 2a is substantiated by the R^2 value (i.e. 0.350) and significant value of F-statistic; consequently, the dynamic fixed effect model's results are reliable. It is important to mention that the results regarding the moderating effect of CEO integrity on the association between IR and TQ are consistent in both the system GMM and Panel data models. Therefore, the outcomes of the regression model are robust. Hence, the second hypothesis (H_2) of the present study is also accepted.

The findings of the study are anchored in two fundamental theoretical frameworks: stakeholder theory and ethical leadership theory. Stakeholder theory supports the beneficial impact of IR on firm value, emphasising that transparent and thorough reporting meets varied stakeholder information requirements, cultivates trust, and improves business reputation. The empirical findings support this theory by showing that IR enhances value generation via increased transparency and accountability.

Ethical leadership theory describes the moderating function of CEOI in increasing the positive benefits of IR on firm value. CEOs possessing high integrity foster a culture of ethical conduct and trustworthiness, hence enhancing shareholder trust in revealed information. The findings support this theoretical viewpoint by demonstrating that CEO integrity bolsters the legitimacy of IR strategies, resulting in improved stakeholder involvement and enhanced firm valuation.

In recent years, the GCC has experienced notable progress in its corporate governance frameworks, closely aligning with the principles of IR. In 2019, for example, the Capital Market Authority (CMA¹) of Saudi Arabia unveiled revised Corporate Governance Regulations that placed a greater emphasis on responsibility, ethics, and transparency. In a similar vein, the Securities and Commodities Authority (ESCA²) of the United Arab Emirates updated its Governance Guide in 2020 with an emphasis on thorough disclosure procedures, strong internal controls, and responsible leadership. Oman has implemented significant measures, as evidenced by its Corporate Governance Code³, which prioritises internal controls, transparency and the responsibilities of boards in promoting accountability, thus facilitating the adoption of IR.

Other GCC nations, including Kuwait and Bahrain, have also improved their corporate governance frameworks. The need of moral leadership, transparent reporting, and efficient board procedures is emphasised in Bahrain's Corporate Governance Code⁴. Kuwait has established regulations that emphasise disclosure, shareholder rights, and accountability, fostering an environment conducive to the integration of financial and non-financial information⁵. Qatar has advanced through reforms initiated by the Qatar Financial Markets Authority, which focus on enhancing governance in publicly listed companies (Saidi & Kumar, 2007⁶). The developments in the GCC highlight a regional dedication to improving corporate transparency and accountability. Our findings are better understood in light of the GCC's changing governance structures, which have a positive relationship with CEO integrity and impact IR adoption.

The difference between our findings and previous research, including studies by Soumillon (2018), Bijlmalasari (2018), and Nurkumalasari et al. (2019), illustrates the dynamic development of IR and its significance across various market contexts. Previous research conducted in markets such as South Africa, Europe, and certain regions of Asia frequently identified no significant or even negative correlations between IR and firm value. One of the main causes of these results may be the developed corporate governance frameworks in these areas, where long-standing customs and stringent disclosure laws may reduce the added benefit of IR. In these contexts, supplementary disclosures via IR may provide minimal new information to stakeholders, thereby diminishing their influence on firm valuation.

This study focusses on the GCC region, characterised by evolving corporate governance frameworks and a relatively recent adoption of IR. In this regard, IR is a game-changing instrument that fills important gaps in accountability and transparency, which are highly regarded by developing market investors. Furthermore, a distinct viewpoint is offered by the study's inclusion of CEOI as a moderating component. By building trust and making sure that managerial decisions are in line with the interests of stakeholders, ethical leadership raises the credibility of IR disclosures. This alignment enhances the beneficial effect of IR on firm value, particularly in emerging economies such as the GCC, where trust and transparency are crucial in investment decisions.

The contextual and methodological differences provide important insights into the evolving role of IR in corporate governance. They contend that the efficiency of IR in enhancing firm value varies and is impacted by a number of variables, including leadership ethics, regulatory frameworks, and market maturity. Our findings contribute to the broader narrative by illustrating the evolving impact of IR across various governance landscapes and emphasising the essential role of CEOI in enhancing its benefits.

5. Conclusions, implications and scope for future research

This study examines the effect of IR on firm value and investigates the moderating influence of CEOI among firms listed on GCC stock markets. The results demonstrate that IR markedly increases firm value by promoting transparency and accountability. Furthermore, the moderating influence of CEOI magnifies the positive benefits of IR, underlining the crucial necessity of ethical leadership in boosting the legitimacy of reporting processes and creating stakeholder trust. By concentrating on the GCC region, where there is still a dearth of empirical research on IR, the study fills a significant gap in the literature. It adds to corporate governance and sustainability research by combining stakeholder theory and ethical leadership theory, providing new insights into how leadership traits and reporting procedures influence firm value.

The study employs a rigorous methodological framework, incorporating System GMM and dynamic fixed-effect models, to assure the reliability and validity of its conclusions. These results underscore the integrated relevance of implementing IR approaches and cultivating ethical leadership to maximize firm value, bringing theoretical and empirical enhancements to the current body of knowledge.

5.1. Implications of the study

This study's findings have important implications for businesses, policymakers, and corporate governance bodies, particularly within the GCC region. The study emphasises the importance of effective IR practices for firms. IR improves a company's transparency, accountability, and reputation by offering a comprehensive review of both financial and non-financial performance. This, in turn, enhances stakeholder trust and attracts investors. The findings underscore the importance of ethical leadership, indicating that companies led by CEOs with high integrity are more inclined to utilize IR effectively to improve firm value. To be competitive in a changing business climate that is becoming more and more influenced by sustainability and governance norms, companies are strongly encouraged to give equal weight to the adoption of IR and the ethical conduct of their top executives.

Supervisory boards play a critical role in aligning IR processes with ethical leadership. This study emphasises the necessity of monitoring CEO integrity, as evidenced by the asset utilisation ratio, which serves as a proxy for wise and efficient resource management. A high asset utilisation ratio indicates a CEO's integrity in optimising resource use and achieving sustainable growth, both of which are crucial for protecting the company's reputation and retaining stakeholder trust. Supervisory boards should implement mechanisms to evaluate and monitor CEO performance, thereby promoting transparency and accountability in leadership and reporting practices.

The results can be used by policymakers to create rules that support moral leadership standards and the adoption of IR practices. Regulatory agencies can establish an atmosphere that promotes long-term value creation by enforcing comprehensive IR practices and rewarding moral governance. In addition to bolstering the competitiveness of GCC firms on a global scale, this alignment of governance frameworks with IR and ethical leadership also improves market transparency.

The research highlights the strategic importance of IR in aligning corporate objectives with stakeholder expectations. Business leaders must view IR not just as a compliance obligation but as a strategic instrument for conveying long-term value creation to stakeholders. Fostering ethical leadership and integrating IR into corporate strategy can enhance investor confidence, mitigate risks related to governance failures, and establish firms as leaders in sustainability and corporate accountability.

5.2. Limitations and scope for further research

One notable limitation of the current study is its exclusive reliance on Tobin's q as the metric for firm value. To conduct a thorough assessment of the influence of IR on firm value, future research could benefit from the inclusion of a broader array of firm value measures, such as the market-to-book ratio and the economic value added.

Again, the sample comprises 177 firms from six GCC nations that consistently disseminated IR during the research period. This selection criterion guarantees the participation of firms dedicated to IR practices, hence improving data reliability. This technique, however, omits firms with sporadic or partial reporting, potentially leading to selection bias. Thus, the results may not comprehensively reflect the wider population of GCC businesses, especially those in the nascent phases of implementing IR or functioning in less regulated industries. This constraint underscores the necessity for future research to investigate a broader array of organisations, encompassing those with differing degrees of IR adoption, to get a comprehensive understanding of the phenomena. Further, the research used the asset utilisation ratio, determined by dividing yearly revenues by total assets, as an indicator of CEOI. This measure, rooted in agency theory and corroborated by existing literature (Ang et al., 2000; Pham & Tran, 2020), encompasses just a single aspect of CEO behaviour. The integrity of a CEO is a multifaceted concept that includes ethical leadership, transparent decision-making, and the trust of stakeholders. Dependence on an accounting-based metric may oversimplify this concept, thereby neglecting other behavioural dimensions of integrity. Future study may include qualitative metrics or other proxies to yield a more refined comprehension of CEO integrity.

Furthermore, the research utilises the system GMM and dynamic fixed-effect robust standard error models to mitigate possible endogeneity and dynamic panel data issues. Although these models are strong and extensively utilised, they presuppose a level of homogeneity across the selected companies, potentially overlooking cross-country variances within the GCC. Divergences in legislative frameworks, cultural conventions, and market development throughout Saudi Arabia, UAE, Bahrain, Qatar, Oman, and Kuwait may impact the linkages analysed in this paper. This constraint indicates that further research may investigate sub-sample analyses or include country-level fixed effects to address these discrepancies.

Notes

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Authors' contribution

Mohammed Saleem Alatawi- Conceptualization; Literature Review; Methodology; Data Collection; Data Analysis and Interpretation; Writing - Original Draft. Zaidi Mat Daud- Conceptualization; Data Analysis and Interpretation; Review and Editing; Supervision; Visualization. Jalila Johari- Conceptualization; Review and Editing; Supervision; Visualization.

Approval

All authors have approved the final manuscript.

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Data availability statement

Data will be made available on request made to the corresponding author.

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Appendix 1

Disclosure items

A. Organizational overview and external environment

- OE1 The nature of the organization's work and the circumstances in which it operates
- OE2 Mission and vision of the organization.
- OE3 Culture, morals and values.
- OE4 Ownership and operating structure.
- OE5 Competitive environment of the Organization.
- OE6 The most important factors influencing the external environment
- OE7 Needs of stakeholders.
- OE8 Economic conditions in which the organization operates.
- OE9 Market forces.
- OE10 Impact of technological changes.
- OE11 Demographic and Societal issues.
- OE12 Environmental challenges faced by the Organization
- OE13 The legislative and regulatory environment in which the organization operates.
- OE14 The political situation in the countries in which the Organization operates.

B. Governance

- GO1 Disclose how the governance structure contributes to creating value for the organization.
- GO2 Disclose the characteristics of the organization's leadership structure.
- GO3 The processes on which the organization builds its strategic decisions and organizational culture.
- GO4 Procedures for impact and monitoring of strategic direction of the organization.
- GO5 The reflection of organizational culture, its values and ethics in its use and its impact on capital.
- GO6 Promote and encourage innovation by governance officials.
- GO7 Whether the organization is implementing governance practices that exceed legal requirements
- GO8 Relationship of wages and incentives provided to create value for the organization.

C. Business model

- BM1 A diagram showing the main elements of the organization.
 - BM2 Identify the basic elements of the business model.
 - BM3 Show how the key inputs relate to the capitals on which the organization depends.
-

(Continued)

Continued.

Disclosure items

BM4 Disclose inputs that contribute to creating value for the organization.

BM5 The extent to which the organization is distinguished in the market (e.g. product differentiation, market segmentation, marketing).

BM6 The degree of adoption of the business model on revenue generation.

BM7 The extent to which the business model adapts with changes.

BM8 Approach to innovation.

BM9 Organization initiatives such as (staff training, process improvement).

BM10 Organization outputs of products, services and by-products such as waste and emission of gases.

BM11 Internal results such as organizational reputation, job loyalty, income and cash flow.

BM12 External results such as (customer satisfaction, tax payment, brand loyalty, social and environmental impacts).

BM13 Positive results lead to maximizing capital and creating value.

BM14 Negative results leading to capital reduction and lack of value.

D. Risks and opportunities

RO1 Disclose the risks that affect the organization's ability to create value.

RO2 Sources of risk, whether internal or external.

RO3 Procedures taken to address the risks to which the Organization is exposed.

E. Strategy and resource allocation

SR1 Strategic objectives of the Organization.

SR2 The organization current strategies or intends to implement.

SR3 Resources allocated for the implementation of the Strategy.

SR4 Measure achievements and goals.

SR5 Factors influencing the granting of a competitive advantage to the Organization (innovation, intellectual capital exploitation, evolution of the Organization and social and environmental considerations).

F. Performance

PE1 Quantitative indicators related to objectives, opportunities and risks.

PE2 The positive and negative effects of the organization on capital.

PE3 Organization's response to stakeholder needs.

PE4 Linking previous and current performance.

PE5 Key performance indicators that combine financial measures and other components.

G. Outlook

OL1 Outlook of Organization about the external environment.

OL2 Impact of the external environment on the organization.

OL3 Organization's preparedness to respond to challenges that could occur.

OL4 The impact of the external environment, risks and opportunities on achieving the organization's strategic objectives.

OL5 The availability of financial and natural resources that support the institution's ability to create value in the future.

OL6 Disclosure of the Organization's expectations in accordance with regulatory or legal requirements.

H. Basis of preparation and presentation

BP1 Summary of the process of determining the material importance of the organization (such as determining the role of those responsible for governance and staff who prioritize of material matters).

BP2 A description of the reporting boundary and how it has been determined.

BP3 Summary of the significant frameworks and methods used to quantify or evaluate material matters included in the report (e.g. the applicable financial reporting standards used for compiling financial information, a company-defined formula for measuring customer satisfaction, or an industry-based framework for evaluating risks).