

Fayad, Abdallah A. S.; Arifatul Husna Binti Mohd Ariff; Sue Chern Ooi

Article

Dose board characteristics influence integrated reporting quality? Empirical evidence from an emerging market

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*Corresponding author: Abdallah A.S. Fayad, School: Tunku Puteri Intan Safinaz School of Accountancy, Universiti Utara Malaysia 06010 UUM Sintok, Kedah, Malaysia
E-mail: abdallahsfayad@gmail.com

Reviewing editor:
Louis Murray, University College
Dublin, Dublin, Ireland

Additional information is available at
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DEVELOPMENT ECONOMICS | RESEARCH ARTICLE

Dose board characteristics influence integrated reporting quality? Empirical evidence from an emerging market

Abdallah A.S. Fayad^{1*}, Arifatul Husna Binti Mohd Ariff¹ and Sue Chern Ooi¹

Abstract: Although scholars and practitioners are recently showing a growing interest in integrated reporting, investigating the variables affecting the integrated reporting quality in Malaysia has not been examined and is still unexplored. This paper aims to fill this gap, by exploring the influence of board of directors' characteristics on integrated reporting quality in Malaysia. The board's characteristics considered are size, independence, expertise, gender diversity, and activity, as hypothesized by the agency theory. A total of 64 companies were analyzed from 2017 to 2020, for a total number of 173 integrated reports. The findings highlight that IRQ is positively related to the board size, gender diversity and activity of the board. This study's finding adds to the current literature in numerous ways, and it contributes to the intensive scientific debate on integrated reporting. Furthermore, it is the first study that investigates such a relationship in Malaysia.

Subjects: Business, Management and Accounting; Accounting; Corporate Social Responsibility & Business Ethics

Keywords: Board of directors; agency theory; integrated reporting quality; disclosure; Malaysia

1. Introduction

Integrated reporting (IR) is a corporate reporting approach that combines all the information of financial, social, environmental, and governance in one single report (Adegboyegun et al., 2020; Cosmulese et al., 2019; Stent & Dowler, 2015). The purpose of IR is to provide relevant and material information that enables shareholders and other stakeholders to determine how a business creates value. Meanwhile, an integrated report measures, reports, and communicates the value creation of a business by disclosing other vital non-financial information that may not be captured in traditional reports (J. C. Jensen & Berg, 2012). An integrated report also provides information to

ABOUT THE AUTHORS

Abdallah A.S. Fayad He works as a research assistant for several projects at Tunku Puteri Intan Safinaz School of Accountancy. Currently, he is a PhD researcher at Universiti Utara Malaysia (UUM). His research interests include corporate governance, corporate social responsibility, integrated reporting, corporate disclosure, and content analysis.

Arifatul Husna Binti Mohd Ariff is an Associate Professor of Accounting at Tunku Puteri Intan Safinaz School of Accountancy, College of Business, Universiti Utara Malaysia (UUM). Her expertise is in accounting education, intellectual capital reporting, and corporate governance (including accountability, ethics, and integrity).

Sue Chern Ooi is a senior lecturer at Tunku Puteri Intan Safinaz School of Accountancy, College of Business, Universiti Utara Malaysia. Her research interests include accountability and social accounting, governance in charities and non-profit organisations, and accounting education.

stakeholders about firm activities in eight connected elements: organizational overview, governance, risks and opportunities, strategy and resources allocation, business model, company performance, future outlook, and basic presentation (IIRC, 2013, 2021). IR also contains information about company in several principles such “as strategic focus, future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability, completeness, consistency, and comparability” (IIRC, 2013, 2021).

In Malaysia, integrated reporting also grew rapidly to meet international growth (Mohammed et al., 2020). The International Integrated Reporting Council (IIRC) supported Malaysia’s attempts to include IR into corporate reporting and governance reforms to accelerate the country’s goal of becoming a developed economy (Mohammed et al., 2020). Similarly, Malaysian Institute of Accountant (MIA) “established the Integrated Reporting Steering Committee” (IRSC), and the Malaysian Code on Corporate Governance (MCCG) (Practice 12.2 And Practice 11.2) “encouraged large companies to adopt integrated reporting” (Malaysian Securities Commission, 2017, 2020). Besides, Malaysia is an influential player in the Association of Southeast Asian Nations (ASEAN) economic bloc that includes ten economies and is gradually considered as an entryway to China and other Asian countries. The transfer to IR is, therefore, a means to attract capital and enhance communication with key stakeholders (Darus et al., 2019). Furthermore, Malaysia’s accounting authority, namely the Malaysian Institute of Accountant (MIA), is devoted to fostering high-quality reporting, thus improving Malaysian companies’ international competitiveness. Integrated reporting is the latest wave of business reporting, and MIA is successfully developing the trend (Darus et al., 2019).

Nevertheless, the status of IR adoption in Malaysia is still voluntary (Hamad et al., 2020; Mohammed et al., 2020; Qaderi et al., 2021). The knowledge of integrated reporting among corporate report preparers and the users of these reports is still relatively low (Adhariani & de Villiers, 2019; Masduki & Mohd Zaid, 2019; Mohammed et al., 2020), as well as the level of integrated reporting practices (Ghani et al., 2018). Although, Several academic papers have examined such relations in different countries such as (Chouaibi et al., 2021; Songini et al., 2021; Cooray et al., 2020; Vitolla et al., 2019a). Therefore, such relations have yet not been explored in Malaysia.

Despite the importance of this topic, no study has yet examined this link in Malaysia. Consequently, previous studies have extensively investigated IR adoption (Darus et al., 2019; Ghani et al., 2018; Hamad et al., 2020; Masduki & Mohd Zaid, 2019; Mohammed et al., 2020; Qaderi et al., 2022, 2021; Singh et al., 2019). There are limited papers investigating IRQ of companies in Malaysia. Because of this considerable gap in the research, it is vital to investigate the main factors that can explain the quality of integrated reporting in Malaysia. From this perspective, this study explores the role of board characteristics in determining the quality of IR. Indeed, the board of directors (BOD) is an important tool in corporate governance mechanisms (Masulis et al., 2012), given its role in protecting and safeguarding shareholders’ interests. Publicly traded companies have concentrated on the role of boards as a control mechanism and a means of improving the quantity of disclosed financial information (Karamanou & Vafeas, 2005). The objective of this research is to investigate the influence of board directors on the integrated reporting quality.

In the context of analyzing the determinants of IRQ, 173 integrated reports published by 64 Malaysian companies over 4 years ranging from 2017 to 2020 were analyzed. The sample includes only companies that have adopted the IIRC reporting framework. The IRQ has been measured using several indices (Chouaibi et al., 2021; Cooray et al., 2021; Filippo et al., 2020; Pistoni et al., 2018; Raimo et al., 2020b; Songini et al., 2021; Vitolla et al., 2019b, 2019a, 2019c, 2020). However, some of these indices fail to provide a comprehensive perspective of IRQ since they pay no attention to the qualitative aspect of IR. Therefore, the current study uses Pistoni et al.’s (2018) index to measure IRQ in Malaysian companies. To achieve this purpose, we analyze a non-

balanced sample of 64 Malaysian companies listed on Bursa Malaysia, for the years 2017–2020, producing 173 integrated reports. The Panel Corrected Standard Errors (PCSEs) was used to test the relationship between the five independent variables and IRQ while controlling for ROA, ROE, firm size, firm age, and leverage.

This study selected the Malaysian context due to several reasons. Firstly, the regulatory and professional bodies in Malaysia have concentrated their attention on IR practice by creating the Integrated Reporting Steering Committee (MIRSC) in 2014 to provide a comprehensive picture of IR practice. Secondly, the Malaysian Code on Corporate Governance (MCCG) (Practice 12.2 And Practice 11.2) “encouraged large companies to adopt integrated reporting” (Malaysian Securities Commission, 2017, 2020).

The current study makes several important contributions to the existing body of research theoretical and practical. The theoretical, the paper aims to fill a gap in the existing research by presenting the results of an empirical investigation on the impact of the board of directors’ characteristics on integrated reporting quality. It contributes to the body of knowledge by making use of agency theory as an underlying and supporting theory to explain the relationship between the board of directors’ characteristics and integrated reporting quality. Specifically, the current study explores the association between the board of directors’ characteristics (size, independence, expertise, gender, and meeting) and the integrated reporting quality.

The practical, the study results will be beneficial, from a realistic viewpoint, for companies and stakeholders in Malaysia, including policymakers, developers, decision-makers, analysts, and academics. They all need to understand more about the determinations and reasons that drive management to adopt IR rather than traditional annual reporting. In particular, regulators need to develop a deeper grasp of IR to establish new regulations and standards for IR and provide greater security for minorities. Interestingly, the reporting quality is important because it is used in several areas such as financial information and non-financial information, including assistance in evaluating the usefulness of the information contained in financial statements and reporting, improving its quality, determining what information should be available, and the accuracy required in that information in order to enhance the decision usefulness. Hence, the agency cost problem may be mitigated with the use of high-quality information by bridging the gap in understanding that naturally develops between shareholders and management. Therefore, the results of a study are expected to help the companies in Malaysia to understand the importance of the IRQ.

This paper is structured as follows: Section 2 introduces the literature review and hypothesis development, followed by the describes the research methodology Section 4. Section 5 presents and discusses the findings, and finally, Section 6 outlines the conclusion.

2. Literature review and hypothesis development

This study aims at detecting and examining the impact of some of the board characteristics on IRQ. Previous literature suggested that IRQ is affected by several corporate governance determinants (Chouaibi et al., 2021; Raimo et al., 2020a; Vitolla et al., 2019a). In particular, the board is widely recognized as playing a crucial role in determining a firm’s voluntary disclosure, impacting its quality (Fiori et al., 2016). The board is accountable for safeguarding different stakeholder interests (Tumwebaze et al., 2021).

The role and importance of different board characteristics is established by the agency theory, which is considered as a foundation theory that was widely used to explain the link between various corporate governance attributes and IRQ (Songini et al., 2021; Vitolla et al., 2019a). In fact, the agency theory clarifies the motivation behind managers’ voluntary disclosure of information (Cooke, 1992; Hossain et al., 1995). The separation between management and ownership involves agency costs and conflicts arising from any opportunistic behavior taken by the agents to achieve their own interests (Donnelly & Mulcahy, 2008). Thus, the board is not only responsible for the

maximization of the shareholders' wealth but also regulating the management's work to make sure that management carry out the company's operations to optimize shareholder resources rather than their own benefits (Kassim et al., 2013; Mawardani & Harymawan, 2021; Zahra & Pearce, 1989). In this regard, the board of directors can reduce agency conflicts by supervising and controlling managers (Fama & Jensen, 1983a). Therefore, it has a critical role in protecting and safeguarding shareholders' interests against the self-interests of the management (Li et al., 2008).

According to Masulis et al. (2012), the board of directors has two key functions: the monitoring role, which includes hiring, separating, and compensating management personnel; and the advisory role, which includes advising the management personnel on critical strategic decisions. The effectiveness of the directors in fulfilling these responsibilities will create shareholder value and assist in corporate decision-making processes (Omran et al., 2021). In this regard, some of the board's attributes can affect the action of top management in financial reporting (Gerwanski et al., 2019). Thus, the analysis of the characteristics of a board needed to generate high IRQ is our objective. Thus, we inspect the influence of board size, board independence, board financial expertise, board gender diversity, and board meeting on IRQ.

2.1. Board size and IRQ

Board size is defined as the total number of executive and non-executive members serving on the board (Wang & Hussainey, 2013). It is often observed as an important element contributing to board efficiency and financial reporting quality (Beasley, 1996; Xie et al., 2003). There is no agreement in the prior studies on the relationship between size and IRQ. On one side, the agency theory suggests that a larger board tends to improve its effectiveness, accordingly increasing management oversight, transparency of financial statements, and the disclosure of information (Epps & Ismail, 2009; Klein, 2002; Xie et al., 2003). Besides, larger board sizes are more likely to have a more diversified pool of skills and resources and more experienced directors with diverse experiences and backgrounds, which enhance the supervisory functions and encourage the integration of various reports.

The positive influence of board size on IRQ was supported in several studies (Filippo et al., 2020; Pearce & Zahra, 1992; Wang & Hussainey, 2013). A high-quality IR should demonstrate the current interconnections between several categories of information, which necessitates a continuous discussion between more experienced and knowledgeable directors. The latter is more evident in a larger board. While the number of board members generally results in an increase in the board's capacity for monitoring, this advantage might be outweighed by the disadvantage related to ineffective communication and coordination and inefficient decision-making with large groups. On the other side, Jensen (1993) mentions that the optimal number of directors serving on a board is about eight and a board larger than this is less likely to function effectively as it will experience more difficulties in reaching consent, leading to a poor disclosure. The negative relationship between board size and information quality disclosure is supported in some studies (Alnabsha et al., 2018; Said et al., 2009). Based on the above we introduce the following hypothesis:

H1: There is a positive relationship between board size and IRQ.

2.2. Board independence and IRQ

Boards include both executive and non-executive (dependent and independent) members. The board composition serves as an effectiveness corporate governance mechanism in reducing the agency problems resulting from the separation of ownership and control (Brennan & Michael, 2004; Fama & Jensen, 1983b; Frias-Aceituno et al., 2013). The agency theory highlights the importance of non-executive directors in effectively monitoring and controlling management actions (Fama & Jensen, 1983a). Empirically, previous studies again have shown different

findings as to the sign of the relationship between independent directors and disclosure. For example, Siagian and Tresnaningsih (2011) argue that board independence is positively related to the quality of financial reporting. In the same vein, board independence positively impacts the financial performance of Malaysian companies. Elshandidy et al. (2013) confirm the positive relationship between the number of independent directors and reporting (voluntary and mandatory). In the context of IR, Cooray & Senaratne (2020) examine the role of board independence on IRQ and find no significant impact. The result was supported by Songini et al. (2021). Some other studies, however, claim that board independence is positively related to IRQ (Chouaibi et al., 2021; Vitolla et al., 2019a). Independent directors put a great emphasis on monitoring firm behavior and on the disclosure of information. Independent directors are more willing to improve firm reputation and are more interested in satisfying new information needs. Thus, having more independent members on boards will lead to greater control over management decisions and better monitoring effectiveness. Consequently, the integrated report is of a higher quality for companies that have more non-executive directors. Following the previous studies and results presented above, we propose the second hypothesis:

H₂: There is a positive relationship between board independence and IRQ.

2.3. Board financial expertise and IRQ

Boards are generally composed of members with different educational backgrounds and experience levels. The presence of members with financial/accounting and professional expertise should play an important role in improving the effectiveness of the corporate governance and the monitoring functions of the board of directors (Hillman & Thomas, 2003). In particular, board expertise defines their knowledge and their skills, which improve the board's capacity to monitor and enhance the financial reporting quality (Cohen et al., 2008). In the same vein, AGRAWAL and CHADHA (2005) argue that managers with extensive economic and accounting expertise have a greater capacity to better plan financial reports. Fama and Jensen (1983b) state that the board of directors with management and accounting knowledge and qualifications will mitigate agency costs and problems. More specifically, if the board has the expertise needed, the opportunistic acts of management would be less likely (Krishnan et al., 2011).

Empirically, Yunos et al. (2012) find a positive relationship between the financial expertise of board members and asymmetric timeliness in Malaysia. They suggest that the accounting knowledge of directors is important for limiting unscrupulous actions and generating transparent financial information. Kakanda et al. (2017) also suggest a positive influence of the board expertise on firm performance. However, Al-Rassas and Kamardin (2016) find that financial expertise does not affect accruals earnings management. In summary, board members with financial and accounting expertise are more likely to disclose information of a higher quality. Accordingly, we suggest the third hypothesis:

H₃: There is a positive relationship between board financial expertise and IRQ.

2.4. Board gender diversity and IRQ

Women on boards may influence the practices of information disclosure. More specifically, female directors apply different ethical reasoning than their male colleagues and use more care reasoning, which is associated with increased information transparency. They are seen to be more participative, communicative, and socially constructed to satisfy other people's needs with a larger sense of social responsibilities (Ciocirlan & Pettersson, 2012). Empirically, previous studies have shown inconsistent results regarding the connection between gender diversity and integrated reporting. This inconsistency could be attributed to the difference in governance structures and institutional, social, cultural, political, and legal systems of the country within which a company operates. For instance,

Wasiuzzaman and Wan Mohammad (2020) support the positive impact of board gender diversity on the transparency of environmental, social, and governance disclosure in Malaysia. Frias-Aceituno et al. (2013) find that the presence of women on board positively impacts the information in integrated reports. However, N. B. J. Ahmad et al. (2018) examine the influence of diversity on corporate social responsibility in Malaysia from the year 2008 to 2013 and find a non-significant impact. By having different values than men, women pay more attention to sustainability, which could improve the quality of integrated reporting. Thus, the presence of women directors on boards does not only positively impact the quantity of mandatory and voluntary reports, but also the quality of integrated reports. Based on the above analysis, we formulate the fourth hypothesis:

H₄: There is a positive relationship between board gender diversity and IRQ.

2.5. Board meetings and IRQ

Board activity, which is quantified by the number of board meetings, is another factor that affects the board's ability to monitor managers' actions. However, there are two opposing views regarding the possible impact of board activity on transparency and disclosure. An active board can be interpreted as inefficient on one side, or more effective in monitoring and in disclosing more information needed to inform shareholders and stakeholders on the other side (Vafeas, 1999). From the agency theory's point of view, boards with more regular meetings play an important role in advising and controlling management (Gyapong et al., 2019). The regular board meetings improve the management's monitoring and supervising functions (Zaheer, 2013), thus reducing the information asymmetry problem (Frias-Aceituno et al., 2014). Moreover, more board meetings mean greater demand for management to report additional information to the board and for the management to exchange details with shareholders (Barros et al., 2013).

Focusing on the relationship between board meetings and the disclosure of information, Laksmana (2008) adds that a more active board is positively related to the disclosure of greater levels of information. Similarly, Ghafran and O'Sullivan (2017) report that the frequency of meetings is positively associated with the disclosure of more forward-looking information. Brick and Chidambaran (2010) show that more board meetings enhance the quality of information and reduce the manipulation of earnings. Furthermore, a more reliable integrated reporting is the result of increased board meeting. The higher level of monitoring and the increased efficiency of supervision resulting from a greater number of meetings will improve the quality of the integrated report (Vitolla et al., 2019a). In another vein, Kakanda et al. (2017) underline an increase in firm performance as a result of more meetings. Therefore, the fifth hypothesis is formulated as follows:

H₅: There is a positive relationship between board meeting and IRQ.

3. Literature on control variables

Several control variables were included in the model of the study to improve the quality of model, as suggested by previous studies, which are related to the firm characteristics such as profitability, firm size, age, and leverage.

3.1. Profitability

Vitolla et al. (2019a) demonstrate that firms with good performance have greater motivation to participate in IR owing to the high cost of planning for such operations. The level of a company's profitability influences the options available to it, giving it the flexibility to commit varying amounts of resources to the process of creating an integrated report. Giannarakis (2014) indicated that there is a positive relationship between profitability and level of disclosure. Frias-Aceituno et al. (2013) also found that there is a positive relationship between profitability and IR level. Likewise,

Buitendag (2017) found that there is a positive relationship between profitability and quality of IR. Thus, the current study used profitability as a control variable.

3.2. Firm size

The firm size can be an important variable to describe the variation in corporate disclosure (Omran et al., 2021). More specifically, a larger firm has more information to be disclosed as well as complex operations and more stockholders than a small firm (Watts & Zimmerman, 1978). Previous studies have demonstrated a relationship between company size and level of disclosure (Giannarakis, 2014; Habbash, 2016). On the other hand, Frias-Aceituno et al. (2014) have found a positive relationship between firm size and IR adoption. Further, Vitolla et al. (2019a) reported a positive relationship between firm size and IRQ. Therefore, we anticipate that the firm size will affect the quality level of IR positively.

3.3. Firm age

It is commonly agreed that a firm that has been in business for a longer length of time will have a competitive edge over a firm that has been operating for a shorter amount of time (Hansen, 1992). Several past studies have reported that firm age play important role in disclosing voluntary information. For instance, Habbash (2016), found that firm age influences the CSR information. Logically, a firm that has been operating for a long period must have the trust of investors. Additionally, Alnabsha et al. (2018) also a positive relationship between firm age and corporate disclosures. Hence, we expect that the long firm operation will enhance the level of IRQ.

3.4. Leverage

A firm with a high level of leverage is more likely to face a large agency cost, thus they must provide more information to their creditors (C. Jensen & Meckling, 1976). Prior studies have demonstrated that leverage could lead to improving the disclosure level, whereby Eng and Mak (2003) and Ho and Wong (2001) discovered that there was a positive connection between leverage and the level of voluntary disclosure. The correlation between leverage and IR in previous studies was found inconsistent. For instance, Mawardani and Harymawan (2021) found that there is a negative relationship between the level of IR and leverage. In contrast, Marrone and Oliva (2020), have found a positive relationship between the two variables. Therefore, the current study used leverage as a control variable.

4. Methods

4.1. Sample

This study's initial sample is made of all companies listed on Bursa Malaysia from 2017 to 2020. We selected this time frame because the Malaysian Corporate Governance Code (MCCG) was revised twice, in 2017 and 2020. In its revised version, MCCG incentivized large companies to implement IR grounded on a globally recognized framework (Malaysian Securities Commission, 2017, 2021). To find the companies that have adopted IR, a two-step process has been conducted. In the first stage, we included all companies that have declared to adopt IR following the corporate governance report of each company under section "Practice 11.2". We have also checked the financial reporting prepared by the company as another inspection. In the second stage, we have included those companies that have adopted the "International Integrated Reporting Council (IIRC)". The result is a sample of 173 firm-year observations spanning thirteen sectors (64 companies). Table 1 displays the distribution of firms by sector and by year. Results show that the most representative sector is consumer products and services (14.45%), followed by the financial services (13.29%), telecommunication and media (12.14%), and transportation and logistics (11.56%), together representing more than half of the sample (51.44%). The sector which is less predominant in IR is Construction (2.89%). The yearly distributions show the increase in IR over time, with 63 companies in 2020 as compared to only 21 in 2017.

Table 1. Distribution of sample firms by sector and by year

NO	Sector	2017	2018	2019	2020	Total	%
1	Construction	0	1	2	2	5	2.89%
2	Energy	0	0	3	3	6	3.47%
3	Financial Services	4	4	7	8	23	13.29%
4	Health Care	2	2	2	3	9	5.20%
5	Industrial Products & Services	2	5	4	5	16	9.25%
6	Plantation	1	2	5	5	13	7.51%
7	Property	0	1	5	7	13	7.51%
8	Real Estate Investment Trusts	1	2	2	2	7	4.05%
9	Technology	0	1	3	3	7	4.05%
10	Telecommunications & Media	3	6	6	6	21	12.14%
11	Transportation & Logistics	1	3	8	8	20	11.56%
12	Utilities	2	2	2	2	8	4.62%
13	Consumer Products & Services	5	5	6	9	25	14.45%
Total		21	34	55	63	173	100.%

4.2. Variables

Our dependent variable is IRQ which can be assessed using several methods, including a content analysis methodology. IR represents a concept without inherent characteristics, making it difficult to define. It is important not to confuse quality with quantity, as the latter cannot represent a satisfactory proxy for the quality. Since published documents may be incomplete or missing, a careful measurement of quality must not concentrate only on the content. Given our focus on the quality of the integrated report, this study measures IRQ using the scoreboard developed by Pistoni et al. (2018). There are several advantages of using this scoreboard. First, it combines both financial and non-financial information. Second, it is not restricted to assessing quality in terms of contents alone. Third, it comprehensively covers IR elements and concepts. More specifically, this scoreboard explicitly considers four areas to evaluate IR quality: background, assurance and reliability, content, and form (Filippo et al., 2020; Songini et al., 2021; Vitolla et al., 2019b, 2019c).

Originally, these four areas were developed from the eleven quality attributes defined by Hammond and Miles (2004), using semi-structured questionnaires. These attributes are suitable for the assessment of the quality of both financial and non-financial disclosure. Later on, Pistoni et al. (2018) adapted twenty-three items assessing the quality of disclosure and grouped them into the four areas mentioned above.

The first area is background, which is evaluated based on seven items assessing whether the report contains an introduction that outlines (1) objectives, (2) motivations behind IR, (3) manager responsibilities, (4) consumers, (5) title, (6) compliance with disclosure, and (7) CEO commitment. The adopted scoreboard assigns a score of 1 if the item is present, and a score of 0 if the item is absent. Thus, the score of this area ranges between 0 (absence of all items) and 7 (presence of all items).

The second area is assurance and reliability and has three items assessing (1) the practice of internal audit, (2) the practice of third-party verification, and (3) awards received by the company to encourage this practice. Similarly, the adopted scoreboard assigns a score of 1 if the item is present, and a score of 0 if the item is absent. Thus, this area receives a score ranging between 0 (absence of all items) and 3.

The third area is content being assessed using ten items evaluating IIRC compliance (“eight elements and two concepts, mainly organizational overview and external environment, business model, risks and opportunities, strategy and resource allocation, governance, performance, outlook, basis of presentation, capitals, and value creation process”). The scoring of this area is different, where each variable has a score ranging between “0” in case of a full absence and “5” in case of very high quality. Thus, the overall score of this area ranges between 0 and 50 (in other words, the score of 5 per 10 items).

The last and fourth area is form, which is assessed by reviewing the report summary based on three elements (accessibility, number of pages, and readability and clarity). The adopted score-board assigns a score of 0 in case of absence and 5 in case of very high quality. Thus, the score of this area ranges between 0 and 15.

The total IRQ score is the sum of the scores of the above-mentioned areas ranging between 0 and 75, where a higher score represents a higher quality of IR (Pistoni et al., 2018).

Independent variables are related to board characteristics, mainly board size, board independence, board financial expertise, board gender diversity, and board meetings. Board Size (BSZ) is measured by the total number of members on board (Busco et al., 2019; Eldaia et al., 2022; García-Sánchez et al., 2012); Board Independence (BIND) is measured by the total number of independent members serving on board to total number of board member (Qaderi et al., 2022); Board Financial Expertise (BEX) is measured by the total number of board members with qualifications in accounting and finance (R. A. R. Ahmad et al., 2015); Board Gender Diversity (BGN) is measured by the number of women on board (Allini et al., 2016); and Board Meeting (BMEE) is measured by the number of annual board meetings (Frias-Aceituno et al., 2013).

The control variables have been identified and adopted in this paper. Return on assets (ROA) and return on equity (ROE) are included in the regression as a measure of operational and financial performance respectively. They are defined as net income divided by total assets and net income divided by total equity (Buallay et al., 2021; El Khoury, Naimy et al., 2021; El Khoury, Nasrallah et al., 2021; Saleh et al., 2020). Profitability is an important element affecting the quality of IR, given the high costs and the resources associated with the IR drafting process. Regarding, firm size was measured by Book value of total assets. We take into account the influence of firm size (FSZ) since the previous empirical research reveals firm size is a key indicator of integrated reporting adoption (Frias-Aceituno et al., 2014). while the firm age number of years from the time the firm was incorporated. From this point of view, it is reasonable to anticipate that more established companies will have integrated reports of better quality than newer companies. lastly, Debt/book value of total assets is used to measure the leverage. Table 2 summarizes the definition and measurements of all variables.

4.3. Reliability test

As mentioned previously, measuring quality disclosure is a subjective appraisal of the information based on its relevance, dependability, and comparability. However, it is important to differentiate between the quality of disclosure with the quantity of information displayed (Gray & Vint, 1995; Unerman, 2000). In fact, the quantity disclosed does not adequately denote the disclosure quality since some reports may be inadequate or irrelevant (Garegnani et al., 2015). A detailed measurement of the quality of the disclosure must be extended beyond evaluating content (Unerman, 2000) to cover other aspects such as the form, design, themes, and range of problems (Garegnani et al., 2015; Hammond & Miles, 2004; Milne & Hackston, 1996). Given its subjective assessment and to increase the accuracy and reliability of the data, the researchers randomly selected the integrated reports of twenty companies and analyzed them by calculating the IRQ index. Following prior studies (Abhayawansa & Guthrie, 2016; Qaderi et al., 2022, 2021; Sadou et al., 2017; Unerman, 2000; Wan-hussin et al., 2021), two months later, the researchers reanalyzed these twenty documents again and recalculate the new IRQ index. Comparative results indicate good data reliability. More specifically, Cronbach's coefficient

Table 2. Variables description and measurement

Variables	Acronym	Measurement
Board Characteristics Variables		
Board Size	BSZ	Total number of board members
Board Independence	BIND	Total number of independent directors on the board divided by total number of the board
Board Financial Expertise	BEX	Total number of board members with qualifications in accounting or finance, including those who are members of accounting professional bodies.
Board Gender Diversity	BGN	Total number of women on the board
Board Meetings	BMEE	Total number of board meetings in a fiscal year.
Control Variables		
Return on Assets	ROA	Net income divided by total assets.
Return on Equity	ROE	Net income divided by shareholders' equity
Firm Size	FSZ	Book value of total assets
Firm Age	FAG	Number of years from the time the firm was incorporated
Leverage	LEV	Debt/book value of total assets
Industry	-	Dummies for each of the thirteen industries
Year	-	Dummies for the years 2017–2020, inclusive

Alpha was applied to measure the internal consistency of the IRQ index. In conjunction with Guthrie and Mathews (1985), Cronbach's Alpha values should exceed 0.80 to indicate an adequate level of internal consistency reliability. In our study, Cronbach's Coefficient Alpha for IRQ over four years was 0.873, indicating highly reliable data with an acceptable internal consistency.

4.4. Method

Using panel data covering several companies across four periods, we estimate the following panel model to determine if board attributes are associated with enhanced quality of IR as hypothesized in H1-H5:

$$IRQ_{it} = \beta_0 + \beta_1 BSZ_{it} + \beta_2 BIND_{it} + \beta_3 BEX_{it} + \beta_4 BGN_{it} + \beta_5 BMEE_{it} + \beta_6 ROA_{it} + \beta_7 ROE_{it} + \beta_8 FSZ_{it} + \beta_9 FAG_{it} + \beta_{10} LEV_{it} + \epsilon$$

Given the panel structure of the dataset, we use a panel regression analysis and apply either a fixed effect or a random effect model based on the Hausman test. While the random effect model analyses the variance between companies for the same year and the variance within each company over time, the fixed-effect model analyses the within-firm variation (Weber, 2017). However, the findings in Table 7 for Pesaran Cross-sectional Dependence (CD), Wooldridge test for autocorrelation, and Breusch–Pagan/Cook–Weisberg test for heteroscedasticity demonstrate that the data are suffering from cross-sectional dependence, serial correlation, and heteroscedasticity. The ordinary least squares (OLS), fixed effect (FE), and random effect (RE) are not good estimators due to their sensitivity, particularly with regard are sensitive estimators, especially to heteroscedasticity and serial correlation (Beck, 2001; Hoechle, 2007). Therefore, as shown in Table 7 the data of this study are suffering from several issues related to heteroscedasticity, serial

Table 3. Descriptive statistics for IRQ

Year	N	Mean	Std. Deviation	95% Confidence Interval		Minimum	Maximum
				Lower Bound	Upper Bound		
2017	21	51.7619	3.41913	50.2055	53.3183	42.00	56.00
2018	34	53.6176	4.20688	52.1498	55.0855	39.00	59.00
2019	55	54.1273	4.67877	52.8624	55.3921	39.00	59.00
2020	63	55.8571	4.40255	54.7484	56.9659	40.00	60.00
Total	173						

correlation, and cross-sectional dependence. To solve these issues, the current study employed the Panel Corrected Standard Errors (PCSEs) as suggested and used by previous scholars in such situations (Hategan, 2019; Martin, 2019; Rahman & Zahid, 2021; Sellami & Cherif, 2019; Yahya & Ghazali, 2017).

5. Findings

5.1. IRQ summary statistics

The descriptive statistics of the IRQ in Malaysia from 2017 to 2020 are presented in Table 3. The sample companies include only those that have implemented IR following the IIRC framework. During this period, the mean and the maximum IRQ records a higher value on a year-to-year basis. More specifically, in 2017, IRQ has an average value of 51.48, with a minimum of 42 and a maximum of 56. This number increases to an average value of 55.86 in 2020, with a minimum of 40 and a maximum of 60. The standard deviations in all years are quite low. The results suggest that (i) IR in Malaysia is of high quality; (ii) Malaysian companies are improving their IRQ over time; and (iii) there is no significant variation within the sample.

To gain more insights, Table 4 shows the average score for IRQ for each sector. The highest value is recorded for utilities (56.25), while the lowest value is recorded for technology (50.14). Nevertheless, the relatively low standard deviations for most of the sectors symbolize that there are slight variations among the companies operating within the same sector. Overall, the level of IRQ does not vary significantly between sectors.

5.2. Descriptive analysis of all variables

The descriptive statistics for all variables included in the regression are presented in Table 5. The average value Mean for IRQ is 54.37 (56) out of 75, suggesting that the sample firms in Malaysia achieve outstanding performance when looking at the quality of integrated reporting. The maximum of 60 suggests that some companies achieve a high level of IRQ, consistent with the finding that some Malaysian companies were awarded the National Annual Corporate Report Award (NACRA) for their outstanding report. However, the low minimum (39) indicates the lack of knowledge of IR among reporters and users, which hinders the production of a high-quality IR (Adhariani & de Villiers, 2019; Mohammed et al., 2020).

Moving to board characteristics, BSZ ranges from a minimum of three and a maximum of 13 members with a mean value of about eight members, similar to the mean value reported by Abdul Rahman et al. (2006) and close to that of Latif et al. (2020). This average value is very close to the number of members needed for the effective functioning of the board. The average number of independent members on board is 57%, ranging from 3 to 8, suggesting that most members are independent non-executive, consistent with Al-absy et al. (2019), suggesting that firms are complying with MCCG guidelines that at minimum 33% of the board should be independent

Table 4. Descriptive statistics for IRQ by sector

NO	Sector	N	Mean	Std. Deviation	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	Construction	5	52.8000	2.94958	49.1376	56.4624	48.00	55.00
2	Energy	6	52.0000	6.89928	44.7597	59.2403	40.00	58.00
3	Financial Services	23	55.6087	2.14771	54.6800	56.5374	52.00	59.00
4	Health Care	9	55.6667	3.12250	53.2665	58.0668	50.00	59.00
5	Industrial Products & Services	16	56.2222	2.46280	54.9975	57.4469	51.00	60.00
6	Plantation	13	55.0000	3.09839	52.9185	57.0815	49.00	60.00
7	Property	13	55.5385	2.69615	53.9092	57.1677	49.00	59.00
8	Real Estate Investment Trusts	7	54.2857	2.81154	51.6855	56.8860	50.00	59.00
9	Technology	7	50.1429	6.44020	44.1867	56.0990	39.00	57.00
10	Telecommunications & Media	21	53.0000	5.59464	50.4534	55.5466	39.00	59.00
11	Transportation & Logistics	20	54.5000	5.38516	51.9797	57.0203	43.00	60.00
12	Utilities	8	56.2500	3.01188	53.7320	58.7680	51.00	60.00
13	Consumer Products & Services	25	53.0800	5.83038	50.6733	55.4867	40.00	59.00
Total		173						

(MCCG, 2012). Looking at board expertise, the average number stands at 3, with a minimum of 1 and a maximum of 7, indicating the presence of expertise on boards. Regarding gender diversity, there is a clear prevalence of male members. Some boards are purely dominated by males as shown by the minimum value of 0 consistent with Latif et al. (2020) and Saleh et al. (2020). The average number of women on board is relatively low, being 2, with a maximum of 6. Finally, the annual board meetings are on average 9.035 with a median of 8, ranging from a minimum of 4 to a maximum of 26, showing a high board meeting. This result is due to the high number of meetings in 2020 amid the pandemic, where boards intensified their meeting.

Table 5, present the firm performance. It suggests a large variation within the sample. The mean ROA is 6.01 with a minimum of -20.67 and a maximum is 32.74. As for ROE, its mean is 15.48, ranging from -15.08 to 100.35. The means ROE and ROE are higher than the median, implying a highly skewed distribution to the right. The mean and median of firm size were RM 16283 and 16,213 million respectively. Firm age were 42 to 36 years as the mean and median. Table 5 also shows 27% and 26% as the mean and median of leverage respectively.

5.3. Correlation analysis

We proceed by exploring the relationship between the board characteristics and IRQ, through a Pearson correlation test. Results reported in Table 6 show that the correlation is not high, suggesting no multicollinearity problems. According to Gujarati and Porter (2009), multicollinearity exists when the coefficient surpasses the threshold level of 0.8.

5.4. Regression analysis

The Panel Corrected Standard Errors (PCSEs) model is used to test the five hypotheses. The results of the regression in Table 7 report an R^2 of 0.892, suggesting that 89.2% of the variance in IRQ can

Table 5. Descriptive statistics for all variables

Variable	Obs	Mean	Median	min	max	std. Dev.
IRQ	173	54.37	56	39.000	60	4.515
BSZ	173	8.197	8	3	13	2.101
BIND	173	.577	.571	.375	.833	.118
BEX	173	3.202	3	1	7	1.402
BGN	173	2.364	2	0	6	1.062
BMEE	173	9.035	8	4	26	4.352
ROA	173	6.012	4.31	-20.67	32.74	7.874
ROE	173	15.485	8.47	-15.08	100.35	26.12
FSZ	173	16.283	16.213	12.425	20.568	1.64
FAG	173	42.092	36	6	173	26.491
LEV	173	.27	.26	0	.925	.192

Note: IRQ = integrated reporting quality, BSZ = Board Size, BIND = Board Independence, BEX = Board Financial Expertise, BGN = Board Gender Diversity, BMEE = Board Meetings, ROA = Return on assets, ROE = Return on equity, FSZ = Firm size, FAG = Firm Age, LEV = Leverage

be explained by the regression model. Regarding the hypotheses formulated, we observe the following.

First, we find a positive (.229) and significant coefficient ($p < .1$) for board size. Thus, the previous expectations that a larger board size might increase IRQ by fostering a more diverse set of perspectives, skills, and viewpoints (Vitolla et al., 2019a), our current findings suggest that board size play a meaningful role in affecting IRQ. Also, our outcome are similar with (Chouaibi et al., 2021; Thilini Cooray & Senaratne, 2020; Vitolla et al., 2019a). Therefore, the first hypothesis is accepted.

Second, the coefficient of the number of non-executive directors is positive (.369), but again insignificant ($p > 0.1$), suggesting that the presence of independent board members does not affect the quality of IR. We can reasonably expect that non-executive directors in Malaysia are lacking knowledge of IR, despite the presence of some curiosity about IR (Adhariani & de Villiers, 2019). Therefore, the second hypothesis is rejected.

Third, we find a positive (.039), but insignificant coefficient ($p > 0.01$) for the number of board members with financial expertise. Ideally, internal control mechanisms will be strengthened by having some board members with accounting knowledge, which will result in more accurate and valuable financial reporting, as well as improved quality of financial statements. However, in Malaysia, the level of knowledge of IR is still relatively low (Mohammed et al., 2020). According to our results, we can state that the third hypothesis is rejected: a higher presence of financial expertise does not improve the quality of IR.

Fourth, we observe a positive (.457) and significant relationship ($p < 0.05$) for the number of women on boards. Thus, the presence of women on board is found to strengthen the company's reputation by focusing on social concerns. Furthermore, female directors appear to produce better voluntary reporting. Our finding is similar to (Chouaibi et al., 2021; Vitolla et al., 2019a). Therefore, we can state that the fourth hypothesis is accepted, as our findings show that the quality of IR is higher with more gender diversity.

Fifth, the coefficient of the board meeting is positive (0.15) and significant ($p < 0.001$), suggesting a positive and significant impact on IRQ. This finding is consistent with Vitolla et al. (2019a) and supports the agency theory. Boards with more frequent meetings play an essential monitoring role

Table 6. Pearson Correlation

Variables	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11
(1) IRQ	1.000										
(2) BSZ	0.221	1.000									
(3) BIND	0.095	-0.124	1.000								
(4) BEX	0.195	0.478	0.179	1.000							
(5) BGN	0.238	0.405	0.054	0.29	1.000						
(6) BMEE	0.302	0.325	0.304	0.317	0.281	1.000					
(7) ROA	-0.279	-0.1	-0.206	-0.219	0.04	-0.377	1.000				
(8) ROE	-0.299	-0.125	-0.177	-0.159	0.057	-0.247	0.83	1.000			
(9) FSZ	0.352	0.379	0.225	0.419	0.239	0.549	-0.379	-0.294	1.000		
(10) FAG	-0.126	0.146	0.04	0.127	0.12	0.009	0.204	0.226	-0.076	1.000	
(11) LEV	0.121	-0.038	-0.062	0.058	-0.035	0.157	-0.231	0.008	0.139	-0.142	1.000

Note: IRQ = integrated reporting quality, BSZ = Board Size, BIND = Board Independence, BEX = Board Financial Expertise, BGN = Board Gender Diversity, BMEE = Board Meetings, ROA = Return on assets, ROE = Return on equity, FSZ = Firm size, FAG = Firm Age, LEV = Leverage

that potentially enhances the board's effectiveness, resulting in better disclosure of information. Considering this result, we can say that the fifth hypothesis is accepted where more board meetings improve the quality of IR.

Concerning control variables, the result shows that the ROA is positive and significant with IRQ, suggestion that firm with better performance more likely to improve and enhance the information disclosure. however, the result show there is a negative relationship between ROE and IRQ. Also, the regression outcome revealed that FSZ had a positive and significant relationship with IRQ. It appears that large firm may have a more compelling incentive to produce IRQ, these finding is similar to the findings of previous studies (Girella et al., 2021; Nguyen et al., 2021; Vitolla et al., 2019a). Regarding to the FAG, the outcome shows that there is a negative relationship between the firm age and IRQ. Table 7 also indicted that LEV is positively and significantly related to IRQ, demonstrating that highly leveraged firms were less likely to engage in IRQ. Our result is consistent with previous studies (Busco et al., 2019).

Table 7. Regression results regression analysis using Prais–Winsten (PCSE)

IRQ	Coef.	t-value	p-value	Sig
BSZ	.229	2.22	.026	**
BIND	.369	0.59	.556	
BEX	.039	0.16	.871	
BGN	.457	2.26	.024	**
BMEE	.15	3.13	.002	***
ROA	.156	4.33	0	***
ROE	-.051	-3.36	.001	***
FSZ	.662	2.11	.035	**
FAG	-.042	-4.88	0	***
LEV	4.697	6.87	0	***
Constant	35.07	7.29	0	***
SD dependent var	4.515			
Number of obs	173			
Prob > chi2	0.000			
Mean dependent var	54.370			
R-squared	0.892			
Chi-square	54.888			
Industry Dummies	YES			
Year Dummies	YES			
Pesaran's test Cross-sectional dependence p-value	23.723 0.0000			
Autocorrelation F (1, 33) Prob. > F	45.957 0.0000			
Heteroscedasticity Chi2(1) Prob> Chi2	12.14 0.0005			

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: BSZ = Board Size, BIND = Board Independence, BEX = Board Financial Expertise, BGN = Board Gender Diversity, BMEE = Board Meetings, ROA = Return on assets, ROE = Return on equity, FSZ = Firm size, FAG = Firm Age, LEV = Leverage

Table 8. Regression using feasible generalized least squares (FGLS)

IRQ	Coefficient	t-value	p-value	Sig
BSZ	.254	2.86	.004	***
BIND	−1.687	−1.58	.113	
BEX	−.014	−0.11	.916	
BGN	2.541	2.05	.041	**
BMEE	.112	3.01	.003	***
ROA	.067	1.22	.224	
ROE	−.035	−1.59	.112	
FSZ	.328	1.92	.054	*
FAG	−.022	−2.96	.003	***
LEV	4.872	3.61	0	***
Constant	41.614	14.71	0	***
Industry	Yes			
Year	Yes			
Observations	173			
Wald Chi2(25)	396.30			
Prob > chi2	0.000			

Note: *** $p < .01$, ** $p < .05$, * $p < .1$, (BSZ = Board Size, BIND = Board Independence, BEX = Board Financial Expertise, BGN = Board Gender Diversity, BMEE = Board Meetings, ROA = Return on assets, ROE = Return on equity, FSZ = Firm size, FAG = Firm Age, LEV = Leverage)

Overall, our findings imply the presence of a significant and positive effect of board size, the presence of women on board and board meeting on IRQ. However, board independences, and board financial expertise do not affect IRQ.

5.5. Robustness tests

To ensure the sensitivity and robustness of the main results reported earlier. Although the panel-corrected standard error (PCSE) estimator is used for the main analysis to solve autocorrelation and heteroscedasticity problems. In this scenario, the ordinary least squares (OLS) couldn't be used due to the issues of autocorrelation and heteroscedasticity as mentioned earlier (Al-absy et al., 2019; Yahya & Ghazali, 2017). One of the common estimators to solve the issue of autocorrelation and heteroscedasticity is feasible generalized least squares (FGLS) (Al-Absy, 2020; Belal et al., 2020; StataCorp, 2015). Our findings using PCSE (Table 7) are accurately identical to those shown in Table 8. As a result, this consistency provides evidence for the conclusion that the study's findings are reliable and robust.

5.6. Discussion

Our findings support the impact of some board characteristics on IRQ in Malaysia. Specifically, the results show that active boards with more gender diversity encourage high-quality integrated reports. Moreover, the largest boards with a greater number of non-executives do affect the quality of integrated reporting. These results could be interpreted based on the agency theory. As mentioned before, the presence of information asymmetry exacerbates the misalignment of the interests of managers and shareholders and intensifies agency costs. Disclosure is seen as a tool to decrease such asymmetry and consequently the agency costs. However, for disclosure to be effective in alleviating agency costs, high quality of disclosed information is needed. Thus, the board of directors should have certain attributes in order to carry out its monitoring and supervising role efficiently. Our results can be used by investors to benefit in invest in firm that adopted the integrated reporting and these produce high quality reporting.

Despite investigating five main board attributes, this study shows that board size, and an active board with more women is effective in ensuring the disclosure of high-quality information. First, our results support the positive association between board size and IRQ. This results is supported by the agency theory suggests that a larger board tends to improve its effectiveness, accordingly increasing management oversight, transparency of financial statements, and the disclosure of information (Epps & Ismail, 2009; Klein, 2002; Xie et al., 2003). Besides, larger board sizes are more likely to have a more diversified pool of skills and resources and more experienced directors with diverse experiences and backgrounds, which enhance the supervisory functions and encourage the integration of various reports. Our results are similar with findings of (Chouaibi et al., 2021; Cooray & Senaratne, 2020; Vitolla et al., 2019a). However, its contradictory finding of Byard et al. (2006) they found that the board size does not affect the quality of the information.

Second, our results support the positive association between gender diversity and IRQ. Thus, women improve the monitoring function of the board, enrich its decision-making activities, and fortify its responsibility on sustainability issues. Women, in general, are more caring than men (Arujunan et al., 2019). This suggests that companies with more women on their boards disseminate higher-quality integrated reports, which will ultimately reduce agency costs. However, Cooray & Senaratne, (2020) found that the women on the board have negative affect on the IRQ. Studies with contradictory findings have found women on board have positive affect of IRQ (Chouaibi et al., 2021; Vitolla et al., 2019a). Furthermore, this conclusion supports the study of Frias-Aceituno et al. (2013) and Vitolla et al. (2019a) who supported the importance of gender diversity in the integrated reports.

Third, our results emphasize the positive role of board meeting, measured by more meetings, on IRQ. This suggests that the efficacy of the monitoring role of the board depends on the number of meetings. Several meetings are needed to guarantee effective control of the quality of disclosed information. This is expected given that integrating reporting is a long and very difficult process that requires continuous monitoring, implemented through meetings. Our results are similar with previous studies such as (Qaderi et al., 2022; Vitolla et al., 2019a). Nevertheless, our finding is contrary to Omran et al. (2021), who found that there is a negative and significant relationship between board meeting and IR.

Interestingly, our findings suggest that more professional expertise does not fuel a quality disclosure. Finally, our results suggest that greater board independence does not contribute to IRQ. These results are in line with the evidence reported by Frias-Aceituno et al. (2013) and Prado-Lorenzo and Garcia-Sanchez (2010), but inconsistent with Vitolla et al. (2019a).

In summary, our study supports the function of the board, in general, as a governance mechanism, and the role of some board characteristics, mainly board size, diversity and level of meeting, on the production of a more transparent and higher IRQ.

6. Conclusions

With the growing pressure on companies to disclose more information covering their financial and non-financial performance, some companies took the lead by publishing integrated reports. However, IRQ represents a critical issue for both academicians and practitioners, with only a few studies tackling it. The agency theory suggested the role played by the board in affecting IRQ. Therefore, this paper's objective is to investigate the variables that could influence IRQ regarding the board's characteristics. More specifically, we examine the role played by five board characteristics, mainly board size, board independence, expertise, board gender diversity, and board meeting on the quality of integrating reporting. To achieve this purpose, we analyze a non-balanced sample of 64 Malaysian companies listed on Bursa Malaysia, for the years 2017–2020, producing 173 integrated reports. The Panel Corrected Standard Errors (PCSEs) was used to test the relationship between the five independent variables and IRQ while controlling for ROA, ROE, firm size, firm

age, and leverage. Our results suggest that the quality of IR is positively related to board size, the level of gender diversity and the number of board meetings. However, we could not support any association between the quality of the disclosure and the number of non-executive members, and expertise.

This paper offers some contributions to the literature of IR in several ways. Firstly, it investigates an underdeveloped topic, which is the determinants of IRQ. Secondly, it identifies some significant board characteristics which affect IR quality, which could drive future research. Thirdly, it critically interprets the findings using the agency theory. Fourthly, this paper adds to the intensive scientific debate on integrated reporting. In which IR is still voluntary in Malaysia. According to Practice 11.2 in MCGG, the statement “Large enterprises are urged to use integrated reporting based on an internationally recognized framework” appears in the amended MCGG 2017 and the MCGG 2020. Fifthly, it demonstrates the importance of board members’ awareness of integrated reporting.

There are also crucial implications for practitioners and institutions. First, top management of a company should conduct multiple training sessions for all their employees on the benefits of integrated reporting and its value creation and transparency. Companies should set up a committee to oversee the implementation of integrated reporting processes such as (integrated reporting committee), which would improve the information disclosure as well as reduce the agency cost. Independent board members are encouraged to expand their knowledge on integrated reporting by attending additional seminars. The same is applicable for boards members with financial expertise. High-level executives should take time out of their board meetings to talk about integrated reporting and how it affects the whole company’s activities. Since women’s presence positively affects IRQ, it is essential to enact policies that encourage the presence of more women. This would ensure a decrease in information asymmetry and agency costs. Moreover, companies should also be concerned about increasing the board meeting level, to improve the quality of integrated reports. Investors may benefit from these results and invest in firms that provided high quality information in IR and that reflect the real business activity outcomes, which has significant economic implications.

This study suffers from some limitations. First, there could be a problem of subjectivity in measuring IRQ, even though we reduced it by ensuring the reliability of our measure. Moreover, the sample selection and sample size represent our second limitation, hindering the generalization of our results to other companies. Thus, a wider sample of integrated reports should be analyzed. Third, future studies can develop a new quality measure other than the scoreboard proposed by Pistoni et al. (2018), which could lead to different outcomes. Finally, future research should investigate the influence of other board characteristics and other corporate governance characteristics such as audit committee and ownership structure on the IRQ in Malaysia. Given the importance of gender diversity, a more in-depth study on the impact of some female characteristics on IRQ is needed such as their age, role, education, etc. Finally, and because our sample is limited to four years, potential studies can include the analysis over a longer period, with a broader sample of integrated reports.

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Author details

Abdallah A.S. Fayad¹
E-mail: abdallahsfayad@gmail.com
Arifatul Husna Binti Mohd Ariff¹
Sue Chern Ooi¹

¹ School: Tunku Puteri Intan Safinaz School of Accountancy, Universiti Utara Malaysia, Malaysia.

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