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Unveiling the impact of firm-characteristics on sustainable development goals disclosure: A cross-country study on non-financial companies in Asia

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Unveiling the impact of firm-characteristics on sustainable development goals disclosure: A cross-country study on non-financial companies in Asia

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ABSTRACT

This study examines the practices of the UN Sustainable Development Goals (SDGs) in Asian countries with special reference to listed firms in China, India, Indonesia, Japan, Malaysia, Singapore, and Saudi Arabia. Further, it evaluates the impact of firms' specific factors on SDGs practices. The original sample consists of 1462 companies for the 2018–2021 financial years. Data are extracted from the Refinitiv Eikon Database. One-way ANOVA and regression analysis are used to estimate the data. Results reveal that there is a significant difference in SDGs practices among the elected countries. Moreover, results reveal that Return on Assets (ROA), Return on Equity (ROE), market value added, leverage, and current ratio have a negative and significant impact on SDGs practices, while the Earnings per Share (EPS) has a positive and significant impact on SDGs practices. This research contributes to the existing literature by making a comparison among the Asian largest economies regarding the achievement of UN sustainable development goals.

1. Introduction

The United Nations (UN) established the Sustainable Development Goals (SDGs) through the 2030 Agenda for Sustainable Development in 2015 in response to pressure on sustainability issues from across the world. The Sustainable Development Goals (SDGs) are a comprehensive collection of worldwide economic, social, and environmental objectives intended to tackle issues like poverty, inequality, climate change, environmental degradation, and peace and justice. To address a variety of economic, social, and environmental issues, 169 specific targets have been added to the 17 SDGs. According to the United Nations Development Programme (International Accounting Bulletin, 2023; UNDP, 2018), preventing poverty, protecting the environment, and ensuring that everyone lives in peace and prosperity are some of the SDGs' objectives. This is due to different social and economic problems like health concerns, unemployment, and economic depression that have been caused by a deteriorating environment and exhausted resources (Wang et al., 2022; Zhang et al., 2022).

Yiu and Saner (2017), and Adams (2017) emphasised that although national governments are largely responsible for achieving the SDGs, businesses and other stakeholders must also contribute for it to be successful. Companies may assist in ensuring the SDGs be implemented by creating business operations that support the SDGs, increasing board level awareness of the SDGs, and implementing the SDGs agenda into their core principles and value chains (Ern, 2017). In the same way, Schonherr et al. (2017) and UNDP (2018) found that businesses may improve Corporate Social Responsibility (CSR) activities by using the SDGs as a framework to improve. In addition, corporate environmental responsibility (CER) practices that are beneficial for enhancing environmental performance are advised to support the environmental SDGs by business organisations. As a result, businesses can boost their positive bottom-line benefits (such as alleviating poverty, livelihoods, health, and education) and reduce their negative ones (such as use of resources, pollution, and human rights violations).

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However, studies have disclosed the minimal involvement of corporations in SDGs (Cho et al., 2015; Van der Waal & Thijssens, 2020). For example, Cho et al. (2015) demonstrated that reporting on the SDGs is mostly symbolic as corporations only want to engage in SDGs to make a positive impression on customers about their management. This finding is in line with the Price Waterhouse Coopers (2018) survey conducted in 2018 with 729 countries around the world, which found that only 27% of firms had SDGs in their business strategy, despite 72% of them mentioning them in their corporate and sustainability reporting. In addition, a report of an investigation by the United Nations Global Compact (UNGC) revealed that out of 1584 global firms, 71% acknowledged their critical impact in fulfilling the SDGs and only 21% thought they were already fulfilling those tasks (UNGC, 2019). This agrees with Van der Waal and Thijssens (2020), who determined that corporate involvement in SDGs was minimal and primarily symbolic and intentional rather than substantive. In other words, the majority of businesses viewed SDGs as a plan with ambiguous implications. According to the International Accounting Bulletin (2023), Asia appears to be less stringent in terms of enforced sustainability reporting laws, norms, and regulations. Considering Southeast Asia's vulnerability to the most severe effects of climate change, more action is required to ensure that countries and businesses have effective mitigation strategies, including carbon reduction programmes (Global Reporting Initiative, 2022). Recently, the primary outcome of the 28th session of the Conference of the Parties to the UN Framework Convention on Climate Change (COP28, 2023) held in Dubai was the establishment of a loss and damage fund to support the development of countries suffering from climate change (COP28, 2023). In addition, it was agreed that a fossil fuel phase-out be included as a mitigation measure instead of only a phase-down in order to achieve net-zero emissions by 2050 (COP28, 2023). The outcome of COP28 (2023) also highlights the role of the private sector in the implementation of a phase-out of fossil fuels through the launch of a 30 billion USD dollar private market climate fund to mobilise the private sector to invest in low-carbon and climate-resilient projects in emerging and developing economies, including Asia and the Middle East (COP28, 2023).

In addition, Sachs et al. (2018) discovered that the majority of G20 nations, except for Korea, Saudi Arabia, and the United States, have officially committed to achieving the SDGs and have formed (or aimed to adopt) an action plan. In addition, Germany and India were the only two countries that have performed a numerical estimation of the additional funding needed to support the SDGs. As a result, the ways in which the central governments of the G20 countries have embraced and implemented the SDGs varied significantly due to the variations in the circumstances, traits, capabilities, and priority settings of the countries for implementing the SDGs. In order to improve the sustainability practices and disclosures of listed issuers, Bursa Malaysia announced the enhanced sustainability reporting requirements in the Main Market Listing Requirements and the ACE Market Listing Requirements (collectively, "Listing Requirements") in September 2022 (Bursa Malaysia, 2022). Bursa Malaysia is therefore well-positioned to implement global reporting frameworks and standards, such as those published by the Global Reporting Initiative and the International Sustainability Standards Boards, which might enhance corporate compliance with the SDGs.

Based on the above judgment on SDGs, there is room for improvement in how SDGs are to be implemented in companies. Since accomplishing the SDGs specified in the 2030 Agenda is a worldwide responsibility, businesses must concentrate their corporate sustainability management system on the requirements of this global action plan for sustainability. The business community requires a non-financial sustainability audit instrument designed for the SDGs of the 2030 Agenda in this circumstance. With the use of such technologies, firms will be more transparent and accountable when producing their sustainability reports. Many previous studies investigating corporate sustainability and SDGs have been conducted (Poddar et al., 2019; Rosati & Faria, 2019; Scheyvens et al., 2016), as well as sustainability reports giving detailed information (Kouloukoui et al., 2019; Rim et al., 2019). However, reports on sustainability studies in Asia are insufficient. Thus, this research explores the existing body of knowledge regarding the practice of sustainability by corporations in Asia.

The research problem addressed in this study is the limited involvement and symbolic nature of corporate engagement in the application of SDGs. Despite the worldwide emphasis on sustainability and SDGs, corporate entities often exhibit a gap between their rhetoric and substantive actions (Cho et al., 2015; Van der Waal & Thijssens, 2020). To this end, this study aims to address how firm-specific factors affect the quantity and calibre of SDG practices among non-financial companies in Asia, and the extent of variations in Sustainable Development Goals (SDGs) practices among selected Asian countries. Thus, this research aims to investigate the underlying reasons for this limited involvement and investigate the difficulties businesses encounter when implementing and disclosing SDG-related practices. Accordingly, the objective of this research is to assess the firm-specific determinants of Sustainable Development Goals (SDGs) practices among non-financial companies in Asia.

This research focuses on China, India, Indonesia, Japan, Malaysia, Singapore, and Saudi Arabia to understand the elements affecting the quantity and calibre of SDG practices. By exploring these determinants, this assessment contributes to the theoretical underpinnings of sustainability reporting practices in this region. This is supported by the institutional theory, which proposes that organisations are affected by external influences from their institutional environment, such as norms, values, and regulations (Al-Ahdal et al.,2023; Sekarlangit & Wardhani, 2021). The report makes the case that businesses should publish information about their performance in terms of sustainability and their contributions to the SDGs in order to comply with institutional constraints from stakeholders – investors, clients, and regulators. According to institutional theory, the behaviour and decision-making processes of organisations can be shaped by the values, standards, and regulations of their institutional context (Scott, 2014). Hunjra et al., (2022) argued that many corporate organisations have faced significant challenges in addressing sustainability issues within their business model and strategy as a result of institutional demands from the global agenda of sustainable development goals. They found that SDG levels reported on Nigerian-listed industries were low, with only a few companies providing comprehensive practices on their progress towards achieving the SDGs. The implementation of institutional theory in the current research provides a useful framework for understanding why some companies may be more likely to engage in SDGs reporting than others. Through assessment of the institutional pressures faced by Asian companies, the study is able to identify potential barriers to SDGs reporting and suggest ways in which these barriers can be overcome. The research gap that justifies the paper's contribution to the theoretical underpinnings lies in the limited understanding of the firm-specific factors that drive SDGs practices in Asian non-financial companies. While previous research has explored corporate sustainability and SDGs reporting, there is a scarcity of studies specifically focusing on sustainability reporting practices in Asia (Kouloukoui et al., 2019; Tsang et al., 2009). By investigating the practices of sustainability and SDGs practices in the region, this research contributes to the available knowledge on corporate sustainability and advances the understanding of sustainability reporting practices in Asia.

2. Literature review

2.1. Theoretical underpinning

Numerous theories have been employed to comprehend the implementation of SDGs for every country. This includes agency theory, institutional theory, and stakeholder theory. The agency theory explores the relationship between the cooperative parties in which principals

delegate work to agents (Eisenhardt, 1989; Jamil et al., 2021; Masud et al., 2018). The companies act as agents to the principal, such as the UN, to obey the guidelines established by the principal. The agency theory supports the connection between the UN and companies in implementing the SDGs highlighted in the organisation's operations. However, the institutional theory elaborates on the procedure of institutionalising a practice in order to bring about a structured institutional change in behaviour for the purpose of forming institutions (Clemens & Cook, 1999; Dacin et al., 2002; Scott, 1995; Fernando & Lawrence, 2014; Zainul Abidin et al.,2024). Specifically, this theory addresses the interaction between the enforcement of SDGs and the reactions of companies to the enforcement by changing the sustainable behaviour within their organisations. In the stakeholder theory, a corporation operates within a larger society with multiple stakeholders whose actions and decisions are influenced by the company's actions and decisions. The essential goal of companies is to meet the needs of many different stakeholders and satisfy them so that they can enhance the company's performance and reputation (Javed, Rashid, & Hussain, 2016). Thus, the theory relates to how SDGs are implemented in businesses to influence stakeholders' sustainable behaviour and improve the efficacy of the business (Kao et al., 2018).

2.2. Application of sustainable development goals (SDGs) in Asian countries

According to the Global Reporting Initiative (GRI, 2015), the report that publicly exposes firms nonfinancial information – governance performance and social, environmental, and economic information – to their stakeholders is known as corporate reporting sustainability. As many businesses began using sustainability performance, GRI was founded to advance social and environmental sustainability and give all businesses access to a sustainability reporting framework. The GRI (2015) also highlighted elements like materiality, stakeholder participation, and strategy that need to be disclosed in corporate reporting sustainability. Such practices encourage businesses to be forthcoming with information about their operations that is pertinent to stakeholders, which, in turn, demonstrates their commitment to ensuring the viability of their business practices.

For example, Rahi et al. (2021) found that Malaysian companies only reported a small quota of sustainability-related activities and emphasised sustainability as a whole without addressing the economic, social, and environmental aspects. They also found that firms have primarily allocated funds for social causes, with public and private companies adopting this practice through CSR. Furthermore, Buniamin et al. (2020) concluded that there is still a lack of transparency, particularly when it comes to environmental and governance issues. This can be attributed to investors believing that business income will not be directly impacted by investing time and money on governance and environmental activities. Nevertheless, Shad et al. (2019) suggested that businesses can maintain their sustainability performance and disclose it to the public. The outstanding economic growth of Malaysian companies over the past few decades with less government interference has encouraged companies to improve and disclose their sustainability records.

Besides that, in the Indian context, Aggarwal & Singh, (2019) found significant differences in sustainability reporting practices across industries, with the energy sector exhibiting the best performance. Further research by Singh and Roy (2019) revealed that Indian micro, small, and medium scale businesses still do not adhere to the best practices for implementing SDGs, particularly when it comes to social practices. Additionally, when considering the Indian financial sector, Kumar and Prakash (2019) showed that India's banks have a slower rate of adopting sustainability practices, and that most Indian banks largely ignore the environmental consideration indicators. The study's findings also demonstrated that India's governmental and private sector banks practice environmental and internal socio-environmental factors at significantly different rates. Also, Kumar and Prakash (2019) claimed that India is having trouble incorporating environmental, social, and governance factors into its strategic practices because of its poor infrastructure, vast population, high population density, scarce resources, and unstable political climate.

In China, a study by Li et al. (2019) analysed the environmental and social responsibility data from between 2006 and 2016 for 34,000 CSR projects. They found that most projects in China are more concerned with enhancing the environmental sustainability of businesses rather than their social responsibility. Moreover, Li (2019) indicated that businesses operating in areas where the economy is more fragile compared to businesses operating in areas with better economic conditions appear less likely to pursue environmental and social sustainability initiatives. Whereas Yu et al. (2020) found that Chinese businesses focus on infrastructure development, industrial innovation, and economic growth, as well as the provision of a respectable and dignified working environment, affordable and clean energy, peace, justice, and strong institutions.

Also, according to Shen and Chen (2020), the environmental accounting information in China need to be more systematic, thorough, and accurate. Several businesses directly report environmental accounting data without being examined by third-party agencies. Thus, Shen and Chen (2020) suggested that it is crucial to promote the reliability of environmental information and public attention to environmental information and environmental conservation. These findings are comparable to those reported by Dong et al., (2023), which indicated that there has been no considerable improvement in the quality of CSR practices in the financial industry despite the release of the "Guiding Opinions on Establishing a Green Finance System". However, Dong et al. (2023) argued that quality will eventually converge over time. In contrast to the above findings, Weber (2017) determined that the sustainability performance of Chinese banks may influence the economy to make it greener and less polluting without sacrificing the financial rewards.

Singapore also enforces sustainability reporting for all companies, and it has become a part of the business strategy that should be highlighted as the main agenda of the business. According to Tan (2022), since 2011, Singapore has encouraged companies to report their sustainability on a voluntary basis, and in 2014, there were plans for mandatory sustainability reporting, which came into effect in 2016. The study exposed that sustainability reporting in Singapore among businesses is strongly aligned with the international standards and frameworks of sustainability. In another study that focused on 100 leading brands in Singapore, the results showed that four out of five of the leading brands engaged in sustainability and it was concluded that better sustainability reporting could enhance the brand value (Loh & Tan, 2020). Additionally, investing in CSR activities might garner additional profits for the companies in the long-term as Dahalan et al. (2012) proved in their study of the shipping industry. They highlighted that the preservation of the maritime environment in Singapore and the Straits of Malacca can be viewed as a long-term investment rather than an expenditure. Thus, sustainability commitment and reporting in Singapore are seen to have more benefits that exceed the limitation of implementing sustainability practices.

Sustainability reporting has become increasingly popular in Indonesia over the years. According to Gunawan et al. (2022), Indonesian companies mainly disclosed the social, economic, and environmental aspects in their sustainability reporting. In the banking sector, reporting on sustainability has a beneficial effect on the bank's reputation (Sumarta et al., 2021). Additionally, as Wardhani and Hamidah (2019) revealed, a good reputation could enhance the likelihood of the companies receiving awards for sustainability reporting, which, in turn, could have a favourable effect on the financial performance of the companies. The awards could also create value for companies since they represent a positive sentiment through practices in sustainability reporting that enhance the company's accountability as well as financial performance (Harymawan et al., 2020).

In Saudi Arabia, Ajina et al. (2019) revealed that customer views on CSR initiatives implemented by the companies influenced the level of their expectation. This included the customer perception in terms of the social, economic, ethical, legal, and philanthropic responsibility. Customers expect more from the companies compared to what they actually do, which highlights the importance of CSR initiatives in that they could enhance the performance of sustainability reporting. Malo-Alain et al. (2019) reported that practices of sustainability lead to an increase in accounting conservatism value. However, the study by Omair Alotaibi & Hussainey, (2016) showed that even though CSR disclosure in Saudi Arabia is at a higher level, the quality was relatively low. Thus, the situation of CSR practices in Saudi Arabia is still in a moderate mode and needs to be improved.

The United Nations (UN) receives the third-largest national contribution from Japan, and the UNDP receives the second largest (UNDP, 2019; United Nations, 2019). These commitments by Japan illustrate the efforts of the country to adopt sustainable development goals and promote investment in low-carbon green infrastructure. The text analysis on urban climate plans was done in two Japanese cities, and the results show that the cities promote responsible consumption and production (SDG12). The cities' plans link SDGs in terms of climate mitigation and adaptation approaches, which can also secure energy, as well as marine, freshwater, and terrestrial ecosystems (Ozawa-Meida et al., 2021). Additionally, Rajesh et al. (2021) examined the corporate social responsibility performance of businesses in advanced nations, including Japan. The study revealed that the Economic, Social, and Governance (ESG) performance score of firms is relatively significant to the CSR strategy score. Thus, the CSR strategy score becomes a predictor of the ESG performance of the firms in Japan. Tolliver et al. (2020) revealed that the majority of significant businesses in China, South Korea, and Japan demonstrated revenue increase concurrent with the sharing of sustainability information.

Based on the above studies, sustainability reporting in Asian countries may differ based on the economics, demographics, and culture of the countries. This demonstrated that although sustainability reporting had been established earlier, there was still variations in how it was implemented by the different organisations. Based on the previous studies, among the factors that contribute to a low level of sustainability performance are the lack of legislation and enforcement (Yu et al., 2020), lack of a reporting structure (Dong et al., 2023; Harun et al., 2013), high reporting costs, a lack of stakeholder or public pressure, a low degree of sustainability awareness (Qian et al., 2020), and low performance on board governance (Dissanayake et al., 2020).

Sekarlangit and Wardhani (2021) conducted a study on the properties and activities of the board of directors and their role on SDGs practices in Southeast Asia. The study focused on five Southeast Asian countries and examined factors, such as board activities, board size, independence, diversity, citizenship and gender diversity, and CSR committee presence, in relation to SDGs practices. The findings indicated that certain characteristics and activities of the board of directors had a positive impact on SDGs practices. This research offers an important insight for companies in Southeast Asia to improve their SDGs practices and contribute to sustainable development. However, it is noteworthy that the measurement of SDGs practices in the study was restricted to the level of disclosure based on the availability of information in sustainability reports using the GRI index. The study did not assess the quality or comprehensiveness of SDGs practices. This measurement approach, while understandable given the early stage of SDGs reporting, does not capture the distinction between companies that provide extensive information on each SDGs target and those that provide minimal information. Future research could consider incorporating a more comprehensive analysis of the level and quality of SDGs practices in Southeast Asia.

Monitoring progress towards achieving the SDGs is crucial for accountability and identifying areas that require further action (Erin & Bamigboye, 2022). The private sector significantly contributes to this by implementing ethical business procedures, investing in sustainable infrastructure, and collaborating with other stakeholders. Civil society organisations also contribute by advocating for policy change, raising awareness, monitoring progress, and holding governments accountable. The achievement of the SDGs necessitates political will, strong leadership from civil society organisations and businesses, and collaboration at all levels of government.

In respect of sustainable development, institutional quality has been found to have an encouraging role (Azam et al., 2021). The study conducted on developing countries showed that when compared to low-income countries, institutional quality has a greater beneficial impact on sustainable development in lower-middle-income nations. The findings underscore the importance of legislative backing and efficient institutional enforcement for designing productive policies in environmental resource management. It is crucial to consider various institutional forms when designing policies for environmental resource protection. In low- and middle-income nations, financial development is equally crucial for long-term economic growth (Hunjra, Azam, Bruna, Verhoeven, & Al-Faryan, 2022). The study revealed that financial development, along with factors such as sufficient availability of natural resources, global travel, trade openings, and foreign direct investment, positively affects sustainable economic development. Together with other social factors, financial development must be considered to address sustainable economic development issues effectively.

Furthermore, political risk, uncertainty in macroeconomic policy, and social risk's effects on sustainable development have been examined (Hunjra, Azam, Bruna, Verhoeven, & Al-Faryan, 2022). The study showed that these risk variables have a detrimental effect on sustainable development in developing economies. Risk management becomes crucial in designing sustainability policies that promote pollution emission abatement. In evaluating SDGs practices in Africa, Erin and Bamigboye (2022) found that the level of SDGs practices by selected firms, except for South African firms, was still very low. The study identified voluntary practices, a lack of managerial commitment, weak enforcement of regulations, and cost implications as factors contributing to low SDGs disclosure by African firms. The findings emphasize the need for corporate institutions in Africa to take responsibility and drive SDGs performance. Collaboration between government and corporate organisations is essential for the actualisation of the SDGs.

2.3. *Sustainable development goals and firm's characteristics*

Recent decades show an increasing trend in voluntary practices by companies that concentrate on implementing non-financial topics, such as the environment, society, or sustainability. The growing global attention on sustainable development has made voluntary sustainability practices an essential agenda for companies, regulators, professional bodies, and researchers. A report by Muhmad (2020) showed that the financial performance of organisations and sustainability practices are positively correlated in 96% of articles. However, businesses that engage in sustainability practices suffer higher costs, which makes it harder for these businesses to show profitable operations (Duc Cuong Pham et al., 2021). Additionally, Preston and O'Bannon (1997), and Ho and Taylor (2007) found that practicing corporate social responsibility had a negative impact on financial performance. However, Jensen (2002) argued that companies practicing sustainability in their management would decrease the objective of firm value maximisation. Conversely, Montabon et al. (2007) demonstrated that numerous company performance measurements are favourably correlated with a variety of environmental management practices (EMPs). Martí-Ballester (2021) discovered that businesses investing in SDG-themed mutual funds were able to satisfy non-financial preferences and, therefore, to succeed financially over the long term.

The study by Wang et al., (2022) indicated a strong association between a firm's characteristics (export income ratio, foreign ownership percentage, staleness of fixed assets, and firm growth) and the disclosure

of sustainability practices. While Nursimloo et al. (2020) and Bhatia and Tuli (2017) showed a favourable association between firm size and performance of sustainability. Bigger corporate size could increase their reputation through social work and ratings that increase corporate social practices (Githaiga & Kosgei, 2022). A study by Azzam et al. (2020), Carolina et al. (2020), and Rezaee and Tuo (2017) revealed that sustainability practices have a positive relationship with financial performance, as indicated by return on equity and assets, and leverage. Hardiningsih et al. (2020) also reported that environmental and social disclosure significantly affect the return on assets, equity, price-earnings ratio, and Tobin-Q. Thus, it demonstrates a favourable relationship between a firm's attributes, most notably return on assets, equity, earnings per share, Tobin-Q, market value added, leverage, liquidity, and firm size, and sustainability performance (Al-ahdal et al., 2020; Jamil et al., 2021).

3. Methodology

3.1. Data collection and sampling

This study examines the practices of UN Sustainable Development Goals in Asian countries with regards to the listed firms in China, India, Indonesia, Japan, Malaysia, Singapore, and Saudi Arabia. These countries were selected primarily based on their position as the largest economies in Asia, as reported by the World Bank in 2022 (World Bank, 2022). The other large economies of Kazakhstan and Uzbekistan in central Asia were omitted due to the unavailability of data in the Refinitiv Eikon Database. The original sample consisted of 1462 companies for the 2018–2021 financial years.

In the past few years, particularly after the UN Sustainable Development Goals were adopted in 2015, sustainable finance and reporting have been subjected to increased regulation in Asian countries. Hence, our study began with the 2018 financial year to study the impact of practicing Sustainable Development Goals on selected big Asian companies. The businesses we selected span every sector of the Asian stock market, with the exception of financial services firms, which are exempt due to their unique capital structures and regulatory constraints. Raw data were accumulated from the Thomson Reuters database in May 2022. Table 1 gives a summary of the 5856 firm years-observations that make up the final sample. Since they make up more than 50% of the companies, the sample is regarded as a fair representation of the total non-financial sector. This collection seems to be representative of the entire Asian market and proportionate in size.

The motivation for the selection of specific countries, namely, China, India, Indonesia, Japan, Malaysia, Singapore, and Saudi Arabia, is based on the recognition that each country possesses unique cultural and country-specific characteristics that influence their approach to sustainable development and their focus on SDGs. These countries represent a diverse range of economies, cultural backgrounds, governance structures, and social contexts. Cultural factors play a crucial role in shaping a country's sustainability priorities and focus on SDGs. For instance, in countries like China and India, with their rich cultural heritage and strong emphasis on social responsibility, there is a growing awareness of the need for sustainable development practices. These countries are increasingly recognising the importance of dealing with problems including poverty, inequality, and environmental degradation, which are important SDGs targets (Wang et al., 2022; Zhang et al., 2022). Additionally, country-specific factors, such as economic development levels, resource availability, and environmental challenges, further shape the motivations and priorities of these countries regarding the SDGs. For example, countries like Indonesia and Malaysia, which possess significant biodiversity and natural resources, have a vested interest in addressing environmental degradation and biodiversity conservation through their focus on specific SDGs related to environmental sustainability (Scheyvens et al., 2016). Furthermore, the governance structures and policy frameworks in these countries also influence their motivation and commitment towards the SDGs. Governments, in collaboration with various stakeholders, play a crucial role in setting the sustainability agenda and establishing an environment that encourages companies to align their operations with the SDGs (Ern, 2017). For instance, in countries like Japan and Singapore, which have well-established regulatory frameworks and policies promoting sustainable development, businesses are urged to incorporate the SDGs into their business plans and reporting practices (UNDP, 2018). By considering country-specific factors that shape the motivations and focus on SDGs, this study acknowledges the diversity among the selected countries and seeks to explore how these factors influence the extent and quality of SDGs practices among non-financial companies. This approach will share insightful information about the nuanced challenges and opportunities faced by these countries in their pursuit of sustainable development and contribute to the conceptual framework of Asian sustainability reporting practices.

Table 1
List of sample companies and the corresponding Asian countries.

Industries	Final sample	Observations
China	638	2552
India	137	548
Indonesia	46	184
Japan	468	1872
Malaysia	66	264
Singapore	93	372
Saudi Arabia	14	56
Total	1462	5848

3.2. The study variables

There is no specific corporate reporting tool associated with the UN Sustainable Development Goals. Most companies do not have any corporate indicators or reporting guidelines for sustainability reporting and need to address the SDGs' relevance or their business-related metrics. As a result, it is still unclear if the same legitimacy mechanism that applies to reporting requirements, such as Global Reporting Initiative or Sustainability Accounting Standards Board, is also valid for SDGs reporting (Elalfy et al., 2021). For the aim of fulfilling the study's first goal, SDGs were used to check which Asian countries started implementing those goals in their listed firms. Moreover, we evaluate the procedures and programmes created and put into action to achieve the SDGs. The summary of the SDGs is described in Table 2.

To achieve objective 2, we used SDGs as dependent variables to check whether these voluntary practices are affected by a firm's characteristics. The independent variables (firm's characteristics) were measured using return on assets, return on equity, earnings per share, Tobin-Q, market value-added, leverage, liquidity, and firm size, which were drawn from the literature (Al-ahdal et al., 2020; Jamil et al., 2021). The summary of the measurements for all the variables is provided in Table 3.

3.3. Statistical tests

To achieve objective 1, to find any differences, a descriptive statistic and a one-way ANOVA *t*-test were used in implementing SDGs practices scores in Asian countries. To achieve objective 2, multiple regression analysis was run for every country separately to determine the influence of SDGs practices on the firm's characteristics and to estimate the variation between the selected countries. The multiple regression models were developed and executed cross-sectionally for the four years from 2018 to 2021. The models were built by modelling SDGs practices scores for firm i in year t as a dependent variable ($SDGS_{it}$), and explanatory variable [ROA, ROE, EPS, TQ, MVA, CR, LEV, FSIZE]. The model is represented as:

Table 2
UN sustainable development goals (SDGs).

NO	UN Sustainable Development Goals	Used in the existing study
1	The company is committed to achieving the first objective of the Sustainable Development Goals (SDGs), which aims to eliminate poverty in all its forms everywhere.	(Di Vaio et al., 2022; Elalfy et al., 2021; Heras-Saizarbitoria et al., 2022; Yu et al., 2020)
2	The company is dedicated to realising the second goal of the SDGs, which focuses on ending hunger, ensuring food security and improved nutrition, and advancing sustainable agriculture.	
3	The company supports the third objective of the SDGs, which seeks to promote good health and well-being for all.	
4	The company is invested in fulfilling the fourth goal of the SDGs, which aims to provide inclusive and equitable quality education and lifelong learning opportunities for everyone.	
5	The company is committed to advancing the fifth goal of the SDGs, which seeks to achieve gender equality and empower all women and girls.	
6	The company is focused on supporting the sixth goal of the SDGs, which aims to ensure access to water and sanitation for all.	
7	The company is dedicated to achieving the seventh goal of the SDGs, which seeks to ensure access to affordable, reliable, sustainable, and modern energy for everyone.	
8	The company is committed to advancing the eighth goal of the SDGs, which seeks to promote inclusive and sustainable economic growth, employment, and decent work for all.	
9	The company is focused on supporting the ninth goal of the SDGs, which seeks to build resilient infrastructure, promote sustainable industrialisation, and foster innovation.	
10	The company is dedicated to realising the tenth goal of the SDGs, which aims to reduce inequality within and among countries.	
11	The company is invested in fulfilling the eleventh goal of the SDGs, which seeks to make cities inclusive, safe, resilient, and sustainable.	
12	The company is committed to advancing the twelfth goal of the SDGs, which seeks to ensure sustainable consumption and production patterns.	
13	The company is focused on supporting the thirteenth goal of the SDGs, which seeks to take urgent action to combat climate change and its impacts.	
14	The company is dedicated to achieving the fourteenth goal of the SDGs, which seeks to conserve and sustainably use the oceans, seas, and marine resources.	
15	The company is committed to advancing the fifteenth goal of the SDGs, which seeks to sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss.	
16	The company is invested in fulfilling the sixteenth goal of the SDGs, which seeks to promote just, peaceful, and inclusive societies.	
17	The company is focused on supporting the seventeenth goal of the SDGs, which seeks to revitalise the global partnership for sustainable development.	

Table 3
Measurement of variables.

Variables	Measurement	Sources
Dependent variables		
UN Sustainable Development Goals (SDGs)	UN Sustainable Development Goals Score	Refinitiv Eikon Database
Independent variables		
Return on Assets (ROA)	ROA = Profit after Tax/Total Assets.	Thomson Eikon Reuters database
Return on Equity (ROE)	ROE = Profit after Tax/Total Equity	Thomson Eikon Reuters database
Earnings per share (EPS)	EPS = Net income/Total shares	Thomson Eikon Reuters database
Tobin-Q (TQ)	Tobin-Q = Market Capitalisation/Shareholders' Equity	Thomson Eikon Reuters database
Market Value Added (MVA)	MVA = Market Capitalisation - Book Value	Thomson Eikon Reuters database
Leverage (LEV)	It is determined by overall debt to aggregate assets	Thomson Eikon Reuters database
Current Ratio (CR)	CR = Current assets/Current liabilities	Thomson Eikon Reuters database
Firm size (FSIZE)	Natural logarithm of aggregate assets	Thomson Eikon Reuters database

$$SDGS_{it=}\ \alpha + \beta_1\ ROA_{it} + \beta_2\ ROE_{it} + \beta_3\ EPS_{it} + \beta_4\ TQ_{it} + \beta_5\ MVA_{it} + \beta_6\ CR_{it} + \beta_7\ LEV_{it} + \quad \beta_8\ FSIZE_{it} + \ \varepsilon_{it}$$

4. Results and discussions

4.1. The UN sustainable development Goal scores

The scores used to compute the UN Sustainable Development Goal scores for the Asian countries are based on 17 attributes. These include all goals like end poverty; end hunger; achieve gender equality and empower all women and girls; ensure access to water; ensure inclusive and equitable quality education; build resilient infrastructure; encourage sustainable industrialisation and foster innovation; ensure that everyone has access to affordable, dependable, modern, and sustainable energy; foster inclusive and sustainable economic growth, employment, and decent work; and reduce inequality within and between countries by promoting opportunities for lifelong learning and sanitation for all. Each of the objectives is represented by a binary value based on the Thomson Eikon Reuters database: While 0 shows a goal's lack or non-adherence, 1 denotes the goal's presence or adherence. The unweighted values are simply the sum of the firm-specific indices for each of the parameters. Companies that meet all the attributes are assigned a maximum value of 17 and this value is then converted into a percentage to reflect the level of compliance with the UN Sustainable Development Goals. In conclusion, the UN Sustainable Development Goals, which are the total values assigned to each attribute and transformed into a percentage, illustrate the degree to which each company

complies with the UN Sustainable Development Goals. In this manner, the scores obtained for each company in the respective country under study are added up, and the averages are then calculated to provide the index for the entire country. The mathematical equation for the SDGs is expressed as follows:

$$PC_j = \frac{\sum_{i=1} X_i}{R_j} \quad (1)$$

PC denotes the practices attributes ranging from 0 to 1 for company j. Xi refers to whether the item is available in the Refinitiv Eikon Database for the respective firms (i) for the UN goals (1–17). The sum score is divided by the entire number of standards that apply to the particular company j, i.e., Rj.

Table 4 and Fig. 1 show the frequency of adherence to SDGs by countries. The results for the first goal, "end poverty", reveal that Indonesia has the highest percentage with 22.8% of their firms complying with the UN's first goal to end poverty. On the other hand, Singapore shows the highest percentage of 19.4% to support Goal 2 of the SDGs to end hunger, achieve food security, raise nutrition standards, and advance sustainable farming. It is also noted that 36.3% of Singapore firms and 35.5% of Japanese firms support Goal 3 of the SDGs to support wellbeing and ensure healthy lives. Regarding supporting Goal 5 of the SDGs to attain gender equality and provide women and girls more authority, 32.1% of Indonesian and 29.2% of Malaysian companies disclose information. In supporting Goal 6 of the SDGs, 22.9% of Japanese firms disclose information to ensure access to water and sanitation for all-data considered from the SDGs Goals. In comparison, 34.1% of the Singapore companies adhere to support Goal 7 of the SDGs to provide access to modern, dependable, cheap, and sustainable energy for all, while 43.0% of companies in Singapore disclose information to support Goal 8 of the SDGs to encourage employment, economic growth that is inclusive and sustainable, and decent work for everyone. The disclosure on supporting Goal 9 of the SDGs to build resilient infrastructure, promote sustainable industrialisation, and foster innovation is adhered to by only 37.1% of Japanese companies and only 35.8% of Singapore companies, while only 26.1% of Singapore companies support Goal 10 of the SDGs to reduce inequality within and among countries – the data considered only pertains to the SDGs Goals. Goal 11 of the SDGs reveals that 33.5% of Japanese companies report adherence to making cities inclusive, safe, resilient, and sustainable. Also, 36% of Japanese companies support Goal 12 of the SDGs to ensure sustainable consumption and production patterns, while 39.6% of Japanese companies report information for supporting Goal 13 of the SDGs to take urgent action to combat climate change and its impacts. Meanwhile, Goal 14 of the SDGs to conserve and sustainably use the oceans, seas, and marine resources is supported by only 21.8% of Japanese companies. Goal 15 of the SDGs – to sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss – is only reported by 26.7% of Japanese firms, while 28.0% of Singapore companies support Goal 16 of the SDGs to promote just,

Table 4
Frequency of adherence to UN Sustainable Development Goals.

	UN Sustainable Development Goals	India (%)	Saudi Arabia (%)	Singapore (%)	Malaysia (%)	China (%)	Japan (%)	Indonesia (%)
1	The company is committed to achieving the first objective of the Sustainable Development Goals (SDGs), which aims to eliminate poverty in all its forms everywhere.	15.1	5.4	15.9	13.3	8.3	14.0	22.8
2	The organisation is committed to achieving the SDGs' second objective, which is to end hunger, guarantee food security and enhanced nutrition, and advance sustainable agriculture.	14.6	8.9	19.4	7.6	5.1	15.0	16.8
3	The company supports the third objective of the SDGs, which seeks to promote good health and well-being for all.	23.9	8.9	36.3	26.5	10.5	35.5	31.5
4	The company is committed to achieving the SDGs' fourth objective, which is to give everyone access to inclusive, egalitarian, high-quality education, and opportunities for lifelong learning.	23.0	8.9	26.1	29.2	9.2	27.5	32.1
5	The company is dedicated to supporting the SDGs' fifth objective, which aims to promote gender equality and give all women and girls more power.	22.6	8.9	22.8	23.1	8.5	32.9	19.6
6	The company is focused on supporting the sixth goal of the SDGs, which aims to ensure access to water and sanitation for all.	22.8	5.4	21.5	20.5	6.0	22.9	19.6
7	The organisation is committed to attaining the seventh of the Sustainable Development Goals, which aims to guarantee that everyone has access to modern, affordable, dependable, and sustainable energy.	20.6	3.6	34.1	23.9	6.7	36.1	26.6
8	The company is committed to advancing the eighth goal of the SDGs, which seeks to promote inclusive and sustainable economic growth, employment, and decent work for all.	25.7	8.9	43.0	35.6	9.3	38.6	32.1
9	The company is focused on supporting the ninth goal of the SDGs, which seeks to build resilient infrastructure, promote sustainable industrialisation, and foster innovation.	37.6	5.4	35.8	23.9	8.2	37.1	27.2
10	The company is committed to achieving the SDGs' tenth goal, which is to lessen inequality within and between nations.	19.2	7.1	26.1	23.9	6.3	25.9	20.1
11	The business is committed to achieving the SDGs' eleventh objective, which calls for inclusive, secure, resilient, and sustainable cities.	16.1	3.6	29.8	17.0	6.1	33.5	20.7
12	The company is dedicated to furthering the SDGs' twelfth objective, which aims to ensure sustainable patterns of consumption and production.	23.5	8.9	32.3	32.2	8.0	36.5	21.2
13	The company is focused on supporting the thirteenth goal of the SDGs, which seeks to take urgent action to combat climate change and its impacts.	23.4	12.5	38.2	32.6	8.1	39.6	27.7
14	The company is dedicated to achieving the fourteenth goal of the SDGs, which seeks to conserve and sustainably use the oceans, seas, and marine resources.	8.4	5.4	17.7	14.0	3.1	21.8	10.9
15	The business is dedicated to advancing the SDG-15, which aims to manage forests sustainably, combat desertification, stop and reverse land degradation, and stop biodiversity loss.	13.3	8.9	20.7	18.2	4.2	26.7	21.7
16	The company is invested in fulfilling the sixteenth goal of the SDGs, which seeks to promote just, peaceful, and inclusive societies.	11.3	7.1	28.0	21.2	5.9	26.3	19.6
17	The company is focused on supporting the seventeenth goal of the SDGs, which seeks to revitalise the global partnership for sustainable development.	16.8	8.9	27.2	17.8	6.0	29.1	15.2
Country average		**19.88**	**7.45**	**27.94**	**22.38**	**7.03**	**29.35**	**22.67**

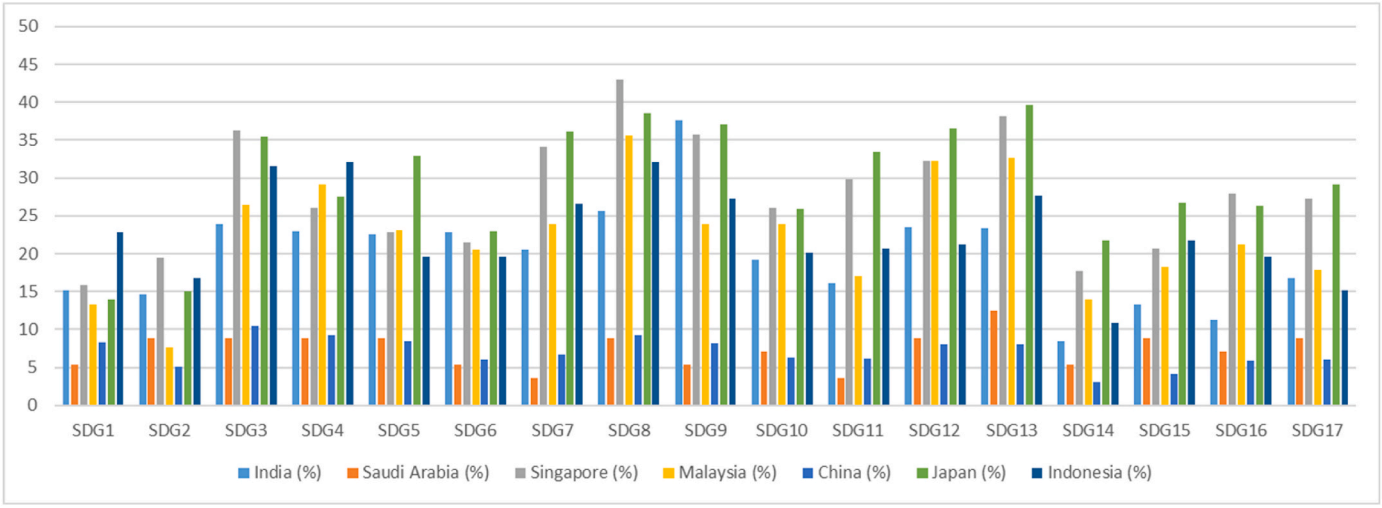


Fig. 1. Frequency of adherence to UN Sustainable Development Goals.

peaceful and inclusive societies. Finally, only 29.1% of Japanese firms report on supporting Goal 17 of the SDGs to revitalise the global partnership for sustainable development, together with 27.2% of Singapore companies.

India had an average SDG reporting score of 19.88, which indicates moderate performance by companies in their annual reports. The highest-scoring SDG for India was SDG 9 with a score of 37.6, indicating strong performance of industry, innovation, and infrastructure. On the other hand, India had the lowest score for SDG 14 with a score of 8.4, indicating poor performance of Life Below Water.

Saudi Arabia had a low average SDG reporting score of 7.45, which suggests poor performance by companies in their annual reports. The highest-scoring SDG for Saudi Arabia was SDG 8 with a score of 25.7, indicating moderate disclosure of Economic Growth and Decent Work. The lowest-scoring SDG was SDG 1 with a score of 5.4, indicating very poor performance of No Poverty.

Singapore had an average SDG reporting score of 27.94, indicating moderate to good disclosure by companies in their annual reports. The highest-scoring SDG for Singapore was SDG 8 with a score of 43, indicating strong performance of Economic Growth and Decent Work. The lowest-scoring SDG was SDG 5 with a score of 22.8, indicating moderate disclosure of Gender Equality.

Malaysia had an average SDG reporting score of 22.38, indicating moderate performance by companies in their annual reports. The highest-scoring SDG for Malaysia was SDG 8 with a score of 35.6, indicating good disclosure of Economic Growth and Decent Work. The lowest-scoring SDG was SDG 2 with a score of 7.6, indicating poor performance for Zero Hunger.

China had an average SDG reporting score of 7.03, indicating poor performance by companies in their annual reports. The highest-scoring SDG for China was SDG 9 with a score of 38.6, indicating moderate disclosure of Industry, Innovation, and Infrastructure. The lowest-scoring SDG was SDG 15 with a score of 4.2, indicating very poor performance of Life on Land.

Japan had an average SDG reporting score of 29.35, indicating good performance by companies in their annual reports. The highest-scoring SDG for Japan was SDG 13 with a score of 39.6, indicating strong disclosure of Climate Action. The lowest-scoring SDG was SDG 6 with a score of 22.9, indicating moderate disclosure of Clean Water and Sanitation.

Indonesia had an average SDG reporting score of 22.67, indicating moderate performance by companies in their annual reports. The highest-scoring SDG for Indonesia was SDG 8 with a score of 32.1, indicating moderate performance of Economic Growth and Decent Work. The lowest-scoring SDG was SDG 5 with a score of 19.6, indicating moderate to poor performance for Gender Equality.

Overall, Japan has the highest average score of 29.35, indicating better practices on the overall SDGs by its firms. Singapore follows closely with a score of 27.94. India, Malaysia, and Indonesia have average scores of 19.88, 22.38, and 22.67, respectively, indicating a need for improvement in their progress concerning the practices on SDGs. Saudi Arabia and China have the lowest average score of 7.45 and 7.03, reflecting poor and limited performance of SDGs by their firms. All countries have areas of strength and areas for improvement in their efforts towards sustainable development.

Table 4 and Fig. 1 present the frequency of adherence to the United Nations' Sustainable Development Goals (SDGs) by countries. Indonesia has the highest percentage of firms complying with the UN's first goal, "end poverty," with 22.8% of their firms complying. Singapore follows closely with 19.4%, supporting Goal 2 of the SDGs to end hunger, achieve food security, raise nutrition standards, and advance sustainable farming. 36.3% of Singapore firms and 35.5% of Japanese firms support Goal 3 of the SDGs to support wellbeing and ensure healthy lives. Indonesia has the highest percentage of firms complying with Goal 5 of the SDGs to attain gender equality and provide women and girls more authority. In supporting Goal 6 of the SDGs, 22.9% of Japanese firms disclose information to ensure access to water and sanitation for all-data considered from the SDGs Goals. In comparison, 34.1% of Singapore companies adhere to support Goal 7 of the SDGs to provide access to modern, dependable, cheap, and sustainable energy for all, while 43.0% of companies in Singapore disclose information to support Goal 8 of the SDGs to encourage employment, economic growth that is inclusive and sustainable, and decent work for everyone. Only 37.1% of Japanese companies and 35.8% of Singapore companies adhere to Goal 9 of the SDGs to build resilient infrastructure, promote sustainable industrialisation, and foster innovation. Only 26.1% of Singapore companies support Goal 10 of the SDGs to reduce inequality within and among countries. Japanese companies report moderate performance in their annual reports on the SDGs, with the highest-scoring SDG being SDG 9 with a score of 37.6, indicating strong performance of industry, innovation, and infrastructure. Saudi Arabia had a low average SDG reporting score of 7.45, suggesting poor performance by companies in their annual reports. Singapore had an average SDG reporting score of 27.94, indicating moderate to good disclosure by companies in their annual reports. Malaysia had an average SDG reporting score of 22.38, indicating moderate performance by companies in their annual reports. China had an average SDG reporting score of 7.03, indicating poor performance by companies in their annual reports. Japan had an

average SDG reporting score of 29.35, indicating good performance by companies in their annual reports. Indonesia had an average SDG reporting score of 22.67, indicating moderate performance by companies in their annual reports. Overall, Japan has the highest average score of 29.35, indicating better practices on the overall SDGs by its firms. Singapore follows closely with a score of 27.94. India, Malaysia, and Indonesia have average scores of 19.88, 22.38, and 22.67, respectively, indicating a need for improvement in their progress concerning the practices on SDGs.

4.2. Country-wise analysis score

Fig. 2 shows the overall UN SDGs indexes for each selected country. A country-wise analysis shows that Japan has the best adaptation to UN SDGs, with 29.35% of the selected companies complying with SDGs. This can be attributed to the policies implemented by the Sustainable Development Goals Promotion Headquarters, which was established by the Japanese government to ensure a whole-of-government approach to implementing the 2030 Agenda, as well as the development of "SDGs Implementation Guiding Principles" (Japan SDGs Promotion Headquarters; Ikuta & Fujii, 2022). Likewise, Singapore has made significant progress in adhering to the UN 2030 Agenda for Sustainable Development, with 27.94% of companies adhering to the SDGs. They have set up the Inter-Ministry Committee on Sustainable Development Goals (IMC-SDG) for Voluntary National Review (VNR) to ensure greater congruence with SDGs and, after that, review ongoing progress in achieving these goals. The adherence of Indonesian, Malaysian, and Indian companies to SDGs was found to be 22.67%, 22.38%, and 19.88%, respectively. On the other hand, Saudi Arabia and Chinese companies showed lower adherence to SDGs, with 7.45% and 7.03% of their companies complying with SDGs, respectively. This suggests that Saudi Arabia and China need to implement more regulations and policies to ensure the adherence of the companies to implementing the 2030 Agenda and SDGs.

4.3. Descriptive statistics

The information provided by descriptive statistics includes sample statistics and an illustration of central tendency measures like maximum, minimum, mean, and standard deviation. The arithmetical average of the variables covered in the study is represented by mean values. The standard deviation indicates how far the data deviates from the mean value and shows the variance in the data. Table 5 shows that the largest SDG's mean value is 4.990 and the lowest value is 1.268 for Japan and Saudi Arabia with 6.314 and 3.916 standard deviations respectively. On the other hand, the highest return on assets is achieved by Saudi firms, the mean value is 6.088 with 7.086 standard deviation. Similarly, the highest return on equity is achieved by Saudi firms, the main value is 16.396 with a standard 11.674 deviation. Regarding earnings per share, Table 5 shows that the mean value of Indian firms is the highest 20.573 with a 23.500 standard deviation. Regarding market value, Table 5 shows that Indonesian firms have the lowest market value in comparison to other countries, the mean value is 1.415 with 3.261 standard deviation. Moreover, Saudi and Singaporean firms have the highest leverage, the mean values are 32.945 and 27.267 with 13.743 and 18.826 standard deviations respectively. In terms of liquidity, Table 5 shows that Malaysian firms are the most liquid firms with a mean value of 2.058 and a standard deviation of 1.536.

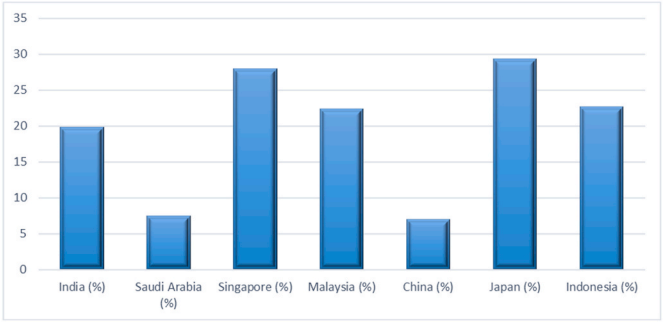


Fig. 2. Country-wise analysis score.

4.4. Analysis of the differences among countries

The one-way analysis of variance (ANOVA) has been used to determine whether there are any statistically significant differences between the means of three or more independent groups. In particular, it evaluates the null hypothesis. Our null hypothesis (H_0) states that there are no significant differences in the SDGs practices among the countries, while the alternative hypothesis (H_1) states significant differences in the SDGs practices among the countries.

In this study, we examine the difference in SDGs practices among the seven selected countries. The results in Table 6 reveal that there is a significant difference in SDGs practices among the countries ($p < 0.05$). This is attributed to the fact that in some of these countries, SDGs practices are more mature. For example, SDGs practices in China, Singapore, Malaysia, and Japan are more mature compared to the other sampled countries.

The post hoc test is used to examine the differences in the mean between the countries. The results of the post hoc test in Table 7 show that there is a significant ($p < 0.05$) difference between all countries except India vs Malaysia, and India vs Indonesia, which showed non-significant ($p > 0.05$) differences. Further, the results revealed no significant difference between Saudi Arabia and China. Finally, the results of the post hoc indicated that there is no significant difference between the SDGs practices in Japan and Singapore.

4.5. Correlation

The correlation research demonstrates a significant and favourable correlation between EPS and SDGs practices in China. This suggests that financial performance and SDGs practices have a considerable beneficial link. Saudi Arabia gave a strong negative correlation between leverage, firms' size, and SDGs practices, although a positive and significant association was shown between ROA and SDGs practices. Along the same line, in India, a significantly positive association was found between firm size and SDGs practices, while there was a strong and favourable association between MBA and SDGs declaration in Japan. Finally, a significant and favourable correlation existed among TQ, CR, firms' size, and SDGs practices in all countries.

4.6. The unit root test

The Augmented Dickey-Fuller (ADF) test was employed to assess the presence of stationarity in the data. The test findings indicate that the variables are stationary at the 1% and 5% significance levels, even when there is no difference between them. This discovery refutes the null hypothesis for all variables in all countries. Table 9 displays the P-Values obtained from the ADF Test for all variables at their original levels. The significance level for these tests was set to zero, indicating a strict threshold for detecting unit roots.

4.7. Regression analysis

In order to give equal chances for every company included in the sample, we believe that balanced panel data is preferable to unbalanced panel data. Prior to choosing between a random or a fixed-effects model when employing a panel data set, the Breusch-Pagan and the Hausman test should be run. The Breusch-Pagan test obtained PV < 0.05 (i.e., significant), which indicates the preference for the fixed or random

Table 5
Descriptive statistics.

Variable	China		India		Indonesia		Japan	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
SDGS	1.194	3.568	3.38	5.569	3.853	5.59	4.99	6.314
ROA	4.289	7.531	5.594	6.858	3.253	7.865	4.307	5.517
ROE	9.538	54.533	16.292	22.741	4.925	32.397	9.72	10.267
EPS	1.138	3.268	20.573	23.5	82.369	176.283	1.014	2.412
TQ	0.955	1.612	3.567	6.196	1.685	1.575	1.844	1.898
MVA	3.171	43.98	4.196	7.406	1.889	2.445	2.452	4.24
lev	16.951	16.885	0.795	2.438	0.627	0.721	21.164	15.018
Cr	1.117	0.782	1.165	0.929	1.581	1.637	1.046	0.798
FSIZE	7.739	0.671	4.497	0.773	10.249	0.624	7.515	0.668
Variable	**Malaysia**		**Singapore**		**Saudi Arabia**		**All Countries**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
SDGS	3.803	5.411	4.747	6.114	1.268	3.916	4.367	5.387
ROA	5.733	9.829	3.986	8.06	6.088	7.086	4.107	7.078
ROE	10.86	17.346	7.281	13.685	16.396	11.674	8.808	38.013
EPS	0.676	3.197	0.372	3.096	3.273	3.231	8.563	35.538
TQ	1.916	5.222	0.546	0.797	3.412	2.883	1.365	2.823
MVA	1.631	3.6	1.415	3.261	3.694	3.31	2.886	29.274
lev	25.77	16.729	27.267	18.826	32.945	13.743	2.818	7.068
Cr	2.058	1.536	1.533	1.324	1.364	1.398	12.915	16.631
FSIZE	2.529	0.677	5.956	0.783	7.299	0.787	1.116	1.637

Table 6
ANOVA.

Total		Sum of Squares	df	Mean Square	F	Sig. (p-value)
		810.443	5847			
SDGs	Between Groups	17420.374	6	2903.396	111.353	0.000
	Within Groups	152297.278	5841	26.074		
	Total	169717.652	5847			

effects model for all models except for the overall model. The result obtained was PV > 0.05 (i.e., insignificant), which indicates that the Ordinary Least Squares regression (OLS) is preferable to the fixed or random effects model. When compared to the random effects model, the fixed-effects model assumes a unique intercept for each organisation. These typical intercepts of any business also differ randomly. The Hausman test for the null hypothesis indicates that adequate random effects exist. According to the Hausman test results in Table 10, the alternative hypothesis is accepted, and the null hypothesis is rejected (p > 0.05). In light of this, the panel fixed-effects model is applied in all countries except Saudi Arabia in which the random effects model is used. As depicted in Table 8, the VIF values and the correlation matrix were used to check for the presence of multicollinearity between the independent variables. It is obvious from the results (Table 8) that the models do not exhibit multicollinearity (VIF <9) (Hair et al., 2014). Additionally, the residuals' skewness values and histogram demonstrate that the residuals are normally distributed. Table 10 shows that the Durbin-Watson values (~2) reveal that there is no serial correlation in

Table 7
LSD-post hoc tests.

Country	Mean Difference (I-J)	Std. Error	Sig.	Country	Mean Difference (I-J)	Std. Error	Sig.		
India	Saudi	2.112*	0.716	0.003	Malaysia	India	0.423	0.383	0.268
	Singapore	−1.368*	0.343	0.000		Saudi	2.535*	0.751	0.001
	Malaysia	−0.0423	0.383	0.268		Singapore	−0.944*	0.411	0.022
	China	20.186*	0.240	0.000		China	2.609*	0.330	0.000
	Japan	−10.611*	0.248	0.000		Japan	−1.187*	0.336	0.000
	Indonesia	−0.474	0.435	0.276		Indonesia	−0.050	0.490	0.918
Saudi Arabia	India	−20.112*	0.716	0.003	China	India	−2.186*	0.240	0.000
	Singapore	−30.479*	0.732	0.000		Saudi	−0.074	0.690	0.914
	Malaysia	−20.535*	0.751	0.001		Singapore	−3.554*	0.283	0.000
	China	0.074	0.690	0.914		Malaysia	−2.609*	0.330	0.000
	Japan	−30.723*	0.692	0.000		Japan	−3.797*	0.155	0.000
	Indonesia	−20.585*	0.779	0.001		Indonesia	−2.660*	0.390	0.000
Singapore	India	10.368*	0.343	0.000	Japan	India	1.611*	0.248	0.000
	Saudi	30.479*	0.732	0.000		Saudi	3.723*	0.692	0.000
	Malaysia	0.944*	0.411	0.022		Singapore	0.243	0.290	0.402
	China	30.554*	0.283	0.000		Malaysia	1.187*	0.336	0.000
	Japan	−0.243	0.290	0.402		China	3.797*	0.155	0.000
	Indonesia	0.894	0.460	0.052		Indonesia	1.137*	0.395	0.004
			Country		Sig.	95% Confidence Interval			
						Lower Bound	Lower Bound		
			Indonesia	India	0.276	−0.38	1.33		
				Saudi	0.001	1.06	4.11		
				Singapore	0.052	−1.80	0.01		
				Malaysia	0.918	−0.91	1.01		
				China	0.000	1.90	3.42		
				Japan	0.004	−1.91	−0.36		

Table 8
Country-wise correlation matrix.

China									
VARIABLES	SDGS	ROA	ROE	EPS	TQ	MVA	LEV	CR	FSIZE
SDGs	1								
ROA	−0.033	1							
ROE	−0.007	−0.02	1						
EPS	0.067**	0.014	0.000	1					
TQ	0.000	0.002	0.001	−0.03	1				
MVA	−0.003	−0.08	0.000	−0.01	−0.008	1			
LEV	−0.19**	0.019	−0.01	0.009	0.018	−0.010	1		
CR	−0.012	0.000	0.014	−0.03	−0.02	0.004	−0.20**	1	
FSIZE	−0.16**	−0.04*	0.005	0.040*	−0.03	0.022	0.146**	−0.05**	1
VIF		1.00	1.00	1.00	1.00	1.06	1.00	1.04	1.02

India									
SDGS	ROA	ROE	EPS	TQ	MVA	LEV	CR	FSIZE
1								
0.016	1							
−0.041	0.013	1						
−0.018	−0.024	0.177**	1					
0.039	0.060	0.035	0.002	1				
0.044	0.024	0.085*	−0.05	0.582**	1			
0.038	−0.046	−0.081	−0.04	−0.011	−0.017	1		
0.006	0.042	−0.009	0.016	−0.019	0.004	−0.022	1	
0.084*	0.030	0.038	0.099*	0.013	−0.011	−0.12**	0.063	1
1.00	1.04	1.04	1.52	1.52	1.02	1.00	1.02	

Indonesia									
VARIABLES	**SDGS**	**ROA**	**ROE**	**EPS**	**TQ**	**MVA**	**LEV**	**CR**	**FSIZE**
SDGs	1								
ROA	0.017	1							
ROE	−0.068	0.049	1						
EPS	0.008	0.142	0.198**	1					
TQ	−0.105	0.024	0.081	−0.015	1				
MVA	−0.070	0.009	0.004	−0.050	0.446**	1			
LEV	0.081	0.082	−0.047	−0.047	0.130	−0.053	1		
CR	0.128	0.021	0.119	−0.040	0.222**	0.087	0.087	1	
FSIZE	0.011	0.072	0.013	0.212**	−0.051	−0.031	0.030	0.015	1
VIF		1.03	1.06	1.16	1.36	1.27	1.05	1.06	1.13

Japan								
SDGS	**ROA**	**ROE**	**EPS**	**TQ**	**MVA**	**LEV**	**CR**	**FSIZE**
1								
0.005	1							
−0.022	0.158**	1						
0.014	0.063**	0.088**	1					
0.001	0.118**	0.136**	0.061**	1				
0.047*	0.095**	0.073**	0.021	0.324**	1			
−0.005	−0.105**	−0.083**	−0.037	−0.147**	−0.07**	1		
0.007	0.056*	0.053*	0.099**	0.213**	0.07**	−0.21**	1	
0.034	−0.05*	−0.038	0.159**	−0.18**	−0.18**	0.23**	−0.13**	
1.04	1.03	1.05	1.04	1.11	1.07	1.13	1.04	

Malaysia									
VARIABLES	**SDGS**	**ROA**	**ROE**	**EPS**	**TQ**	**MVA**	**LEV**	**CR**	**FSIZE**
SDGs	1								
ROA	0.022	1							
ROE	−0.021	0.658**	1						
EPS	−0.067	0.266**	0.447**	1					
TQ	0.088	0.155*	0.004	−0.069	1				
MVA	−0.025	−0.358**	−0.116	0.000	−0.420**	1			
LEV	−0.050	0.098	0.085	0.011	−0.026	−0.077	1		
CR	−0.131*	0.241**	0.247**	0.326**	0.046	−0.22**	0.154*	1	
FSIZE	−0.111	−0.12*	−0.068	−0.036	−0.011	0.226**	0.037	0.058	1
VIF		2.07	2.10	1.03	1.36	1.24	1.53	1.24	1.08

Singapore								
SDGS	**ROA**	**ROE**	**EPS**	**TQ**	**MVA**	**LEV**	**CR**	**FSIZE**
1								
−0.093	1							
−0.022	0.63**	1						
−0.043	0.10*	0.10*	1					
−0.027	0.26**	0.28**	−0.030	1				
−0.033	0.17**	0.187**	−0.008	0.51**	1			
−0.006	−0.30**	−0.17**	−0.047	−0.24**	−0.057	1		
0.054	0.16**	0.100	0.021	0.20**	0.014	−0.43**	1	
−0.13**	−0.06	−0.009	0.161**	−0.12*	0.043	0.146**	−0.15**	1
1.82	1.74	1.05	1.56	1.40	1.28	1.15	1.07	

Saudi Arabia									
VARIABLES	**SDGS**	**ROA**	**ROE**	**EPS**	**TQ**	**MVA**	**LEV**	**CR**	**FSIZE**
SDGs	1								
ROA	0.294*	1							
ROE	0.091	0.223**	1						
EPS	0.104	0.267**	0.447**	1					
TQ	−0.016	0.258	0.389**	0.176	1				
MVA	−0.080	0.46**	0.486**	0.400**	0.462**	1			
LEV	−0.040	−0.31*	−0.130	−0.30*	−0.003	−0.046	1		
CR	0.126	0.375**	0.000	0.289*	−0.134	−0.061	0.008	1	
FSIZE	−0.097	−0.117	−0.229	0.109	−0.371**	−0.175	0.100	0.125	1
VIF		4.33	2.52	2.82	2.17	1.79	1.22	1.36	1.33

All countries									
SDGS	**ROA**	**ROE**	**EPS**	**TQ**	**MVA**	**LEV**	**CR**	**FSIZE**
1								
−0.011	1							
−0.011	0.039**	1						
0.015	0.023	0.033*	1					
0.040**	0.087**	0.049**	0.040**	1				
−0.004	0.003	0.004	0.000	0.046**	1			
0.000	−0.016	0.005	−0.024	0.051**	−0.007	1		
0.041**	0.023	0.010	0.036**	0.021	0.000	0.003	1	
−0.07**	−0.07**	−0.03**	0.083**	−0.15**	0.002	−0.41**	−0.05**	1
1.01	1.00	1.01	1.03	1.00	1.21	1.00	1.26	

Table 9
Unit root test.

Variables	China	India	Indonesia	Japan	Malaysia	Singapore	Saudi Arabia	All countries
SDGs	−18.395	−8.824	−4.984	−10.671	−7.177	−6.600	−2.871	−6.855
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.006)	(0.000)
ROA	−49.671	−25.215	−12.89	−42.88	−15.847	−19.309	−6.768	−75.256
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROE	−50.140	−21.576	−15.787	−43.504	−16.448	−20.307	−8.206	−75.79
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EPS	−49.186	−21.247	−4.573	−17.234	−16.13	−18.4	−7.842	−11.193
	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TQ	−32.706	−23.528	−13.344	−27.778	−5.055	−19.234	−7.201	−10.881
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MVA	−53.029	−21.649	−14.756	−41.655	−17.684	−19.772	−7.417	−10.881
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEV	−21.717	−23.376	−15.286	−40.35	−16.829	−19.960	−6.330	−4.817
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CR	−45.017	−14.836	−15.364	−40.147	−15.938	−18.829	−7.195	−7.056
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FSIZE	−8.050	−14.203	−11.992	−6.042	−14.114	−13.277	−6.973	−4.613
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)

Notes: Figures in parentheses indicate p-values.

Table 10
Country-wise.

Variable	China	India	Indonesia	Japan	Malaysia	Singapore	Saudi Arabia	All Countries
C	1.214	3.357	2.918	4.600	4.766	4.473	1.992	3.380
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.749)	(0.011)
ROA	−0.003	−0.000	−0.001	0.000	0.089	−0.030	0.421	−0.012
	(0.008)	(0.096)	(0.809)	(0.001)	(0.000)	(0.000)	(0.008)	(0.04)
ROE	−0.092	0.000	0.001	−0.001	−0.034	0.020	−0.076	−0.001
	(0.968)	(0.391)	(0.711)	(0.019)	(0.000)	(0.000)	(0.157)	(0.004)
EPS	0.004	−0.000	0.000	−0.006	0.006	−0.029	−0.147	0.005
	(0.041)	(0.029)	(0.333)	(0.002)	(0.866)	(0.404)	(0.211)	(0.008)
TQ	0.001	0.001	−0.024	0.009	0.013	−0.096	0.133	0.039
	(0.001)	(0.141)	(0.606)	(0.000)	(0.000)	(0.225)	(0.393)	(0.11)
MVA	0.000	0.001	−0.007	0.001	−0.198	0.012	−0.443	0.000
	(0.042)	(0.39)	(0.802)	(0.295)	(0.001)	(0.328)	(0.000)	(0.013)
LEV	0.000	0.000	0.082	−0.021	0.003	0.000	0.048	−0.017
	(0.182)	(0.398)	(0.117)	(0.009)	(0.617)	(0.098)	(0.000)	(0.000)
CR	0.002	0.009	0.072	0.053	0.278	0.029	−0.448	−0.002
	(0.000)	(0.046)	(0.001)	(0.000)	(0.072)	(0.059)	(0.030)	(0.019)
FSIZE	−0.003	0.003	0.078	4.600	−0.558	0.034	−0.187	−0.300
	(0.000)	(0.093)	(0.354)	(0.000)	(0.014)	(0.120)	(0.840)	(0.019)
R^2	0.50	0.59	0.54	0.65	0.65	0.72	0.27	0.24
Adj. R^2	0.34	0.45	0.36	0.53	0.52	0.61	0.15	0.23
F-statistic	3.07	4.18	2.96	5.55	4.90	6.97	2.21	18.24
Model type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Random	OLS
Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.0430	0.00
D-W stat	1.94	1.47	1.33	1.52	1.53	1.49	1.66	1.84
H Test	0.00	0.04	0.01	0.00	0.00	0.02	0.09	N/A

Notes.

the models (autocorrelation). Additionally, the Breusch-Pagan/Cook-Weisberg test results were conducted. The results show that the p-value is higher than 0.05 for all countries, and the results confirmed the absence of any problems arising from heteroscedasticity.

By educating the board about the SDGs agenda and incorporating the agendas of the SDGs into designing business processes to support the realisation of the SDGs and their core values and corporate value chains, organisations may play an important role in implementing the SDGs (Ern, 2017). Table 10 shows the impact of firm specifics on SDGs practices. The results reveal that ROA negatively and significantly affects SDGs disclosure in China and Singapore with −0.033 and −0.093 coefficients, respectively, with the P-Value of 0.0076 and 0.00, respectively. The result shows that a one standard deviation rise in ROA leads to a 1.7% and 7.7593% decrease in SDGD in China and Singapore {(−0.00275 × 7.531)/1.94} and {(−0.03002 × 9.829)/3.803}, respectively. In other words, one unit increase in ROA leads to a decrease in SDGs disclusre by 0.093. This result is in accordance with Preston and O'Bannon (1997), and Ho and Taylor (2007) who found that practicing social responsibilities in companies has a negative influence on financial performance. Thus, Chinese and Singaporean companies should reconsider their current corporate strategy to reduce the impact while also ensuring that the SDGs are achieved by 2030. This can be achieved by improving firms' resource utilisation, technology, and innovation, and reducing emissions, then SDGs can be enhanced in terms of their environmental performance. However, a notable positive interaction between ROA and SDGs practices in Japan, Saudi Arabia, and Malaysia indicates that the companies supported and invested in the environmental activities of the SDGs. In terms of the whole sample, the findings demonstrate that ROA has a detrimental and considerable significant effect on Asian corporations' disclosure of the SDGs; the P-Value is 0.04. The fact that businesses attempt to increase their ROA at the expense of sustainable practices may help to explain these findings. The result shows that a one standard deviation rise in ROA leads to a 1.9% decrease in SDGD {(−0.0118 × 7.078)/4.367}. In other words, one unit increase in ROA leads to a decrease in SDGs disclosure by 0.0118.

The results show that ROE has a favourable and considerable

influence on the disclosure of SDGs in Singapore (the P-Value is 0.000), while it has an insignificant impact on SDGs practices in Saudi Arabia, India, and Indonesia. The result shows that a one standard deviation rise in ROE leads to a 1.05% increase in SDGD {(0.020 × 7.078)/13.685}. Which means if ROE increases by one unit, SDGs disclosure will increase by 0.020. This could be due to the fact that ROE is a measure of profitability, and companies in Japan, Malaysia, and Singapore may be more inclined to focus on both profitability and sustainability. In contrast, companies in Saudi Arabia, India, and Indonesia may be more focused on profitability, and less on sustainability. The findings also show that ROE has a higher impact on SDGs practices in Japan than in Malaysia and Singapore. This may be due to the fact that Japan is a developed economy and that companies in this country are more likely to be informed of the advantages of sustainability and have more chance of making sustainability a part of their overall business strategy. In comparison, Saudi Arabia, India, and Indonesia are developing countries, and companies in these countries may be more concerned with profitability than sustainability.

The results of the whole sample reveal that ROE negatively and significantly affects SDGs practices; the P-Value is 0.004 with a −0.0006 coefficient. The result shows that a one standard deviation rise in ROE leads to a 0.5% decrease in SDGD {(−0.0006 × 38.013)/4.367}. This result indicates that one unit increase in ROE leads to a decrease in SDGs disclosure by 0.0006. This result could be explained by the agency theory as firms' management try to increase the return on equity shareholders by any means that negatively affects SDGs disclosure. This outcome is in line with Jensen's (2002) claim that businesses engaging in sustainability in their management would decrease the goal of firm value maximisation.

Regarding the effects of EPS on the outcomes of SDGs practices, Table 10 demonstrates that EPS has a favourable and significant influence on SDGs practices disclosure by Chinese firms; the P-Value is 0.0409 with 0.004132 coefficient, which is significant at the 0.05 level, which means that when EPS increases by one unit SDGs disclosure will increase by 0.040. The result shows that a one standard deviation rise in EPS leads to a 1.13% increase in SDGD {(0.004132 × 3.268)/1.194}. In contrast, EPS has a detrimental and significant effect on SDGs practices by Japan and India in terms of how EPS affects the results of SDGs practices; Table 10 shows that EPS has a positive and significant impact on SDGs practices. This result means that the increase in the earnings per share leads to an increase in the SDGs practices by firms in Asian nations. This output could be explained by the fact that investors are more concerned about sustainable practices. Thus, when the practices increase, the investors would have more information to judge which firm is more sustainable.

The results in Table 10 reveal that the impact of TQ on the business disclosure of SDGs is favourable and considerable for businesses located in China, Japan, and Malaysia with 0.00581, 0.0091, and 0.0126 coefficient, respectively, which is significant at the 0.05 level of significance. The result shows that a one standard deviation rise in TQ leads to a 0.078%, 0.35% and 1.73% increase in SDGD in China, Japan, and Malaysia respectively. In other words, an increase in TQ by one unit leads to 0.078%, 0.35% and 1.73% increase in SDGDs disclosure in China, Japan, and Malaysia respectively. by Similarly, Table 10 shows that TQ an insignificant impact on SDGs disclosure by firms in Asian countries. The findings are consistent with Muhmad's (2020) finding that 96% of publications observed a favourable association between sustainable business practices and organisations' financial success.

Regarding MVA, the results in Table 10 demonstrate a beneficially significant effect of MVA on SDGs practices by firms located in China; the P-Value is 0.0418 with 0.000128 coefficients. The result shows that a one standard deviation rise in MVA leads to a 0.47%, increase in SDGD in China. Comparably, there is a detrimentally significant impact for MVA on the SDG practices by firms operating in Saudi Arabia and Malaysia; the P-Values are 0.000 and 0.001 with −0.4426 and −0.1978 coefficient, respectively, which is significant at the 0.01 level of significance. The result shows that a one standard deviation rise in MVA leads to a 0.4426 and 0.1978 decrease in SDGD in Saudi Arabia and Malaysia. However, the same results are found in the overall sample. The results in Table 10 show a negative influence and significant impact of MVA on SDGs disclosure by Asian firms. These results imply that when the MVA of firms increases, SDGs practices decrease. This could be because higher MVA companies prioritise financial achievement over social and environmental performance. This suggests that firms with higher MVA are less likely to disclose SDGs practices. The results in Table 10 also demonstrate that the effect of MVA on SDGs practices is more pronounced for Chinese firms than for firms in Saudi Arabia and Malaysia. This could be due to the fact that Chinese firms are more likely to disclose SDGs practices because of the increasing pressure from the Chinese government to do so. Additionally, Chinese firms might be more likely to embrace and adopt SDGs principles because of the increasing public awareness and scrutiny of corporate social responsibility in the country. In conclusion, the results of the study suggest that MVA has a negative effect on SDGs practices in Asian firms. However, the effect is more pronounced for firms located in China than for firms in Saudi Arabia and Malaysia. These findings may provide insights for policymakers, investors, and firms to better understand the role of MVA in promoting SDGs practices and sustainability performance.

In terms of leverage, the results in Table 10 show that LEV positively and significantly impacts the SDGs practices made by firms that are located in Saudi Arabia with 0.0484 coefficient, which is significant at 0.01 level of significance. The result shows that a one standard deviation rise in LEV leads to a 52% increase in SDGD in Saudi Arabia {(0.0484 × 13.743)/1.268}. In other words, one unit increase in LEV will lead to 0.0484 increase in SDGs disclosure in Saudi Arabia. In contrast, the results in Table 10 reveal that LEV negatively and significantly imp acts the SDGs practices made by firms that are located in Japan. Similarly, the results in Table 10 show that LEV has a negative and significant impact on SDGs practices made by Asian firms (p-value <0.01); the coefficients −0.0166. This result indicates that when MVA increases, the SDGs practices decrease, which means that one unit increase in LEV lead to −0.0166 decrease in SDGs disclosure in Asia The result shows that a one standard deviation rise in LEV leads to a 2.68% decrease in SDGD {(0.0166 × 7.068)/4.367}. This could be due to the fact that firms with higher leverage have fewer resources to invest in activities that would be beneficial to the SDGs, thus leading to lower SDGs disclosure. Additionally, firms with higher leverage may be more focused on their financial objectives, and thus may not be as dedicated to their social objectives, leading to lower SDGs practices.

Regarding liquidity ratio, Table 10 demonstrates that CR has a favourable and significant impact on the SDGs practices by companies in China, Japan, India, and Indonesia with 0.001841, 0.053, 0.009021, and 0.07223 coefficient, respectively (p-value <0.05). This result could be attributed to the fact that financially sound firms have the ability to spend more on sustainable practices. In contrast, CR has a negative and significant impact on SDGs practices by firms operating in Saudi Arabia. Similarly, in terms of the whole sample, the results in Table 10 show that CR has a negative and significant impact on SDGs practices by firms located in Asia (p.v < 0.05), the coefficient is −0.002. The result shows that a one standard deviation rise in CR leads to a 0.76% decrease in SDGD {(0.002 × 16.631)/4.367}. This means one unit increase in CR leads to an increase in SDGs disclosure by 0.002. This result could be attributed to the fact that financial institutions are not securing sustainability practices for granting loans to firms.

Regarding how a firm's size affects the disclosure of its SDGs, the results in Table 10 reveal that firms' size positively and significantly affects the SDGs practices by firms located in Japan with 4.6003 coefficient; this is significant at the 0.01 level of significance with a P-Value of 0.000. The result shows that a one standard deviation rise in FSIZE leads to a 61.58% increase in SDGD {(4.6003 × 0.668)/4.99}. in other words, one unit increase in firm size leads to 4.6003 increase in SDGs disclosure. These findings are in line with those of Wang et al., (2022),

who discovered an association between a business's attributes (ratios of export revenue, foreign ownership percentages, fixed asset staleness, and company growth) and the reporting on sustainability practices. However, the disclosure of SDGs by companies based in China and Malaysia is negatively and significantly impacted by the size of the firm. Similarly, the results in Table 10 demonstrate a negative and significant impact of firms' size on SDGs practices by Asian countries with −0.2999 coefficient, which is significant at the 0.01 level of significance; the P-Value is 0.0185. Which means that when firms' size increases by one unit SDGs disclosure in Asian countries will decrease by 0.2999 unit. The result shows that a one standard deviation rise in FSIZE leads to a 11.242 % decrease in SDGD {(0.2999 × 1.637)/4.367}. The findings contrast with Githaiga and Kosgei's (2022) idea, which contends that larger corporations might enhance their reputation through social activities and ratings that boost corporate social disclosures. These results could be due to the fact that most business have established themselves in the market and have their connections to escape the rules and regulations. It is found that MVA in Saudi Arabia has the largest economic impact on SDGs practice and has the largest economic impact on SDGs practices with −0.4426 coefficient and P-Value of 0.001.

4.8. Robustness analysis

Table 11 provides a robust analysis based on subsamples. At the initial stage, the observations related to Saudi Arabia were excluded from the data to analyse whether the results persist. This is because the observations from Saudi Arabia are few compared to other countries. The results show that the overall significance and the coefficients of the variables are similar to the findings of the overall sample. This indicates that the results are not changed by excluding the data from Saudi Arabia. Further, in the other stage, the sample was divided based on SDGs. The average of SDGs was calculated for the entire sample, which yielded an average of 3.025. Accordingly, the sample was divided into two samples that take "1" for companies that have an average of SDGs greater than the sample mean and "0" otherwise. The results exhibit that companies that have higher SDGs are affected by financial performance; however, companies with low SDGs are more likely to be influenced by their poor financial performance, as indicated by negative financial performance. Overall, the results reveal robust findings with the earlier findings presented in Table 10.

5. Discussions and implications

The findings highlight the varying levels of adherence to SDGs among the selected countries and the influence of the economic performance indicators, such as ROA, ROE, and EPS, on SDGs disclosure. The results suggest the need for countries with lower adherence to implement policies and regulations to promote SDGs, and for businesses to balance sustainability and financial performance. Additionally, the impact of factors like market value added, leverage, liquidity, and firm size on SDGs practices is discussed, providing insights into the relationship between these variables and sustainability performance. The following is a discussion of the findings.

Adherence to SDGs by selected countries: The analysis reveals that Japan and Singapore have shown better adherence to the UN SDGs compared to other countries in the sample. Japan's high compliance can be attributed to the policies implemented by the Japanese government, such as the establishment of the Sustainable Development Goals Promotion Headquarters and the development of "SDGs Implementation Guiding Principles" (Japan SDGs Promotion Headquarters; Ikuta & Fujii, 2022). Similarly, Singapore has made significant progress by establishing the Inter-Ministry Committee on Sustainable Development Goals (IMC-SDG) for Voluntary National Review (VNR) to ensure greater congruence with SDGs. On the other hand, Saudi Arabia and China have lower adherence to SDGs, suggesting the need for more regulations and policies to ensure compliance with the 2030 Agenda and SDGs (Ajina et al., 2019; Li et al., 2019). The adherence of Indonesian, Malaysian, and Indian companies to SDGs was found to be 22.67%, 22.38%, and 19.88%, respectively. These countries demonstrate moderate levels of adherence to the goals. Saudi Arabian and Chinese companies showed lower adherence to SDGs, with 7.45% and 7.03% of their companies complying with the goals, respectively. These countries require further implementation of regulations and policies to ensure better adherence to the 2030 Agenda and SDGs. In summary, the findings suggest variations among the countries in terms of their adherence to the UN SDGs. Japan and Singapore demonstrate higher levels of compliance, while Indonesia, Malaysia, and India exhibit moderate adherence. Saudi Arabia and China lag behind and need to implement more regulations and policies to ensure better adherence to the 2030 Agenda and SDGs.

Impact of financial performance on SDGs disclosure: The findings reveal mixed results regarding the impact of financial performance indicators on SDGs practices. The discussion highlights that ROA has a negative and significant impact on SDGs disclosure in China and Singapore, suggesting the need for these companies to reconsider their corporate strategies to balance financial performance and sustainability. Conversely, a positive relationship between ROA and SDGs disclosure is observed in Japan, Saudi Arabia, and Malaysia, indicating that these companies are supporting and investing in environmental activities aligned with the SDGs (Li et al., 2019; Tan, 2022). The overall sample suggests a negative impact of ROA on SDGs practices by Asian firms, indicating a focus on maximising return on equity at the expense of sustainable practices.

Table 11
Robustness analysis.

Variable	Sample Excluding KSA		Collective Sample		High SDGs		Low SDGs	
	Fixed Effect				Fixed Effect			
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	3.775	0.000	3.3801	0.011	0.389	0.756	0.102	0.000
ROA	−0.017	0.014	−0.0118	0.04	0.040	0.000	0.001	0.240
ROE	−0.001	0.022	−0.0006	0.004	0.011	0.006	−0.003	0.000
EPS	0.020	0.000	0.0054	0.008	0.004	0.000	−0.005	0.000
TQ	0.001	0.531	0.0392	0.11	−0.013	0.000	0.001	0.121
MVA	−0.001	0.089	−0.0003	0.013	0.017	0.048	0.000	0.326
LEV	−0.002	0.589	−0.0166	0.000	0.005	0.536	−0.003	0.021
CR	−0.002	0.008	−0.002	0.0185	0.003	0.179	0.000	0.033
FSIZE	−0.052	0.001	−0.2999	0.0185	0.760	0.000	−0.001	0.807
R-squared		0.583		0.24		0.391		0.303
Adjusted R-squared		0.519		0.23		0.340		0.273
F-statistic		4.182		18.24		1.967		1.826
Prob(F-statistic)		0.000		0.000		0.000		0.000

Notes.

Profitability and sustainability: The discussion emphasises that ROE, as a measure of profitability, has a positive and significant impact on SDGs practices in Japan, Malaysia, and Singapore. This suggests that companies in these countries are more inclined to focus on both profitability and sustainability. In contrast, companies in Saudi Arabia, India, and Indonesia show an insignificant impact of ROE on SDGs practices, indicating a stronger focus on profitability over sustainability (Gunawan et al., 2022; Rahi et al., 2021).

Investor interest and EPS: The findings indicate that EPS has a positive and significant impact on SDGs practices by Chinese firms, suggesting that investors are more concerned about sustainable practices. However, in Japan and India, EPS has a negative impact on SDGs practices. Overall, the increase in EPS leads to increased SDGs practices by Asian firms, possibly due to investors' preference for more information to assess sustainability performance (Yu et al., 2020).

MVA and TQ: The results show that TQ has a positive and significant impact on SDGs practices in China, Japan, and Malaysia. However, the impact of TQ on SDGs practices is insignificant in other countries. Regarding market value added (MVA), the discussion highlights that higher MVA is associated with lower SDGs practices in Asian firms, suggesting a focus on financial performance rather than social and environmental performance (Li et al., 2019).

Leverage and liquidity: The discussion reveals that leverage (LEV) has a positive and significant impact on SDGs practices in Saudi Arabia but a negative impact in Japan. In the overall sample, higher leverage is associated with lower SDGs practices by Asian firms. The discussion suggests that firms with higher leverage may have fewer resources to invest in sustainable practices, and they may prioritise financial objectives over social objectives (Javed et al., 2016).

Firm size and SDGs practices: The findings indicate that firm size has a positive and significant impact on SDGs disclosure in Japan, aligning with previous research. However, in China and Malaysia, firm size has a negative impact on SDGs practices. The overall sample suggests that firm size has a negative impact on SDGs practices by Asian firms, contradicting the notion that larger corporations enhance their reputation through social activities and practices (Ajina et al., 2019; Rahi et al., 2021).

This research has practical implications for non-financial companies in the selected Asian countries. By identifying the firm-specific determinants of SDGs practices, companies can gain insights into the factors that influence their own sustainability practices. This understanding can help companies in developing strategies to enhance their SDGs declarations and integrating the SDGs into their business practices. Additionally, the findings can guide companies in prioritising specific SDGs based on their country-specific contexts and cultural factors, thereby fostering more targeted and effective sustainability initiatives. The research findings have significant policy ramifications for the respective Asian governments and regulatory authorities. Governments can use the insights from this study to design and implement policies that promote SDGs practices among non-financial companies. By establishing rules and regulations that encourage and enforce sustainability reporting practices aligned with the SDGs, governments can play a crucial role in driving corporate engagement and accountability towards sustainable development. This can lead to the creation of a more favourable climate for ethical business conduct and the advancement of the 2030 Agenda. This study adds to the body of knowledge on sustainability reporting and SDGs by concentrating on Asian non-financial firms. The study addresses a research gap by examining the firm-specific determinants of SDGs practices in the context of diverse Asian countries with distinct cultural and country-specific factors. The findings provide valuable insights into the variations in SDGs practices and the effect of firm-specific factors on these practices. This opens up avenues for further research exploring additional determinants and factors that may impact SDGs disclosures in different regions or industry sectors. Additionally, future investigation can assess the effectiveness of policy interventions and sustainability initiatives in promoting SDGs practices and sustainable development outcomes.

6. Conclusions

This research analysed the practices of UN Sustainable Development Goals in Asian countries. Further, it evaluated the influence of firms' specifics on SDGs practices. The specific countries were purposely chosen from Asia because, according to the World Bank, they were the largest economies in Asia in 2022. The research findings present an analysis of the UN Sustainable Development Goal (SDG) reporting by companies in six selected countries: India, Saudi Arabia, Singapore, Malaysia, China, and Japan. The study found that Japan has the highest average score of 29.35, indicating better practices on the overall SDGs by its firms. Singapore follows closely with a score of 27.94. India, Malaysia, and Indonesia have average scores of 19.88, 22.38, and 22.67, respectively, indicating a need for improvement in their progress concerning the practices on SDGs. Saudi Arabia and China have the lowest average score of 7.45 and 7.03, reflecting poor and limited performance of SDGs by their firms.

The results show that the return on assets (ROA) has a negative and significant impact on the disclosure of the SDGs in China and Singapore, but a positive impact in Japan, Saudi Arabia, and Malaysia. The results suggest that companies in China and Singapore need to improve their resource utilisation, technology, and innovation to achieve the SDGs while also reducing their environmental impact. The results also suggest that companies in Japan, Saudi Arabia, and Malaysia may be more inclined to focus on both profitability and sustainability. The study also found that the return on equity (ROE) has a positive impact on SDGs practices in Japan, Malaysia, and Singapore, but has a negative impact on SDGs practices in the overall sample. This may indicate that firms are trying to increase their return on equity shareholders at the expense of sustainability practices. In the same context, earnings per share (EPS) had a positive impact on SDGs practices in China, but a negative impact in Japan and India. In the overall sample, EPS had a positive impact on SDGs practices in Asian firms. This may be due to investors being more concerned about sustainable practices, and firms being more likely to disclose information about their sustainability practices when their earnings per share increase. Furthermore, the results showed that Tobin's Q (TQ) had a positive impact on SDGs practices in China, Japan, and Malaysia, but an insignificant impact on the overall sample. Market-to-book value (MVA) had a positive impact on SDGs practices in China, but a negative impact in Saudi Arabia and Malaysia, and the overall sample. This may indicate that company firms with higher market-to-book value are more focused on financial performance and less likely to disclose information about their sustainability practices. Finally, the study found that leverage (LEV) had a positive impact on SDGs practices in Saudi Arabia, but a negative impact in Japan and the overall sample. This suggests that firms with higher leverage have fewer resources to invest in activities that would benefit the SDGs, leading to lower SDGs practices.

This study makes several valuable contributions to the knowledge on sustainable development and corporate sustainability. Firstly, it contextualises the issue of SDGs practices in the Asian context, providing an in-depth comprehension on the practices and challenges faced by firms in the selected areas. Secondly, this research offers a comprehensive analysis of the relationship between firm-specific attributes and SDGs practices, including size, leverage, market capitalisation, and financial performance. This offers crucial information about the variables that affect SDGs practices and companies' contributions to Asia's sustainable development. Additionally, the study contributes to the development of a framework for assessing the sustainability practices of firms in the context of the SDGs and identifies gaps in the current knowledge on the topic, as well as highlights areas for further research.

The study also provides practical implications for both firms and policymakers. The implications of this study are far-reaching and have significant implications for both firms and policymakers in the Asian

region. Firstly, this current study provides a foundation for benchmarking the sustainability practices of firms in Asia, thereby allowing companies to compare their performance against their peers and identify areas for improvement. Secondly, it increases awareness and understanding of the importance of SDGs practices and encourages companies to take more proactive steps towards sustainability. The study also supports the creation of sustainability reporting criteria and frameworks in the region, providing a basis for the standardisation of SDGs practices. Additionally, it informs the development of sustainability policies and regulations at the national and international levels, providing a basis for the creation of effective incentives and support mechanisms for firms that are committed to sustainability.

Finally, the report adds to the larger conversation on business sustainability and sustainable development, highlighting the need for increased engagement and collaboration between firms, policymakers, and other stakeholders in encouraging sustainable development in Asia. For policymakers, the results suggest that regulatory measures and incentives can play an essential impact in building SDGs and sustainability practices in the region. For businesses, the outcomes emphasize the significance of considering the specific characteristics of firms in their sustainability strategies and reporting practices. Overall, this study's implications are significant for promoting sustainable development and the influence of firms in fulfilling the SDGs in the Asian region.

The limitations of the study include the fact that it only focuses on the listed firms in seven Asian countries, and therefore, the results might not apply to other nations or locations. The research also makes use of company self-reported data, which may be partial and have limitations in the quality and accuracy of the information disclosed. Despite these limitations, the study offers an excellent foundation for further study in this field. Future research could explore the impact of cultural and institutional factors on SDGs practices in Asia and examine the role of regulatory measures and incentives in promoting sustainability. Additionally, future research could extend the analysis to other areas, such as Latin America and Africa, to provide a more comprehensive understanding of the practices of SDGs globally. Finally, future research could examine the connection between SDGs disclosure and sustainability results, exploring the extent to which disclosure is associated with improved sustainability outcomes. These future studies will broaden our understanding of the practice of SDGs disclosure and the impact of firms on improving sustainable development.

Author contribution

Conceptualisation, W M. Al-Ahdal and Siti Nurain Muhmad; methodology – W M. Al-Ahdal and N. H. S. Farhan; data curation, W M. Al-Ahdal and N. H. S. Farhan; software, W M. Al-Ahdal, Faozi A. Almaqtari; formal analysis, W M. Al-Ahdal, and N. H. S. Farhan, Faozi A. Almaqtari; validation, Alaa Mhawish, W M. Al-Ahdal; writing—original draft, H. A. Hashim —review and editing, H. A. Hashim; supervision. Alaa Mhawish— Proofreading.

Ethical approval

There are no human subjects in this article and informed consent is not applicable.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declaration of competing interest

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare absence of conflicting interests with the funders.

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