Firm-level and country-level determinants of reporting of sustainable development goals

Xia Zheng
July 2023- Jan 2024

A dissertation submitted to
Auckland University of Technology
in partial fulfillment of the requirement for the degree of
Master of Business
under the supervision of
Dr Asheq Rahman

School of Business, Auckland University of Technology

Abstract

Purpose: The purpose of this study is to identify the firm-level and country-level determinants of reporting of sustainable development goals (SDGs) of firms.

Motivation: Prior studies on SDG determinants mainly used single industry, single country, or single geographical region samples, which were limited in size. This study uses large multi-industry and multi-country/region samples to provide more robust, generalisable results about the determinants of SDG reporting that exist at both the firm and country levels.

Method: This research selected a sample of 9,763 public large companies listed on the top 24 indices of stock exchanges of 26 countries from 2018 to 2022. The study was undertaken by identifying potential firm-level and country-level determinants of SDG reporting by firms from the extant literature. The SDG data used in this study are the ones reported by the firms. So, this study's results encompass the reporting of SDGs.

Findings: The results show that firm-level determinants of firm size, company ESG disclosure score, board size, director diversity score, and the country-level determinant social progress index score are the main determinants of SDG reporting.

Practical implications: This study contributes to the current academic research on sustainable development goals reporting worldwide. It enhances and advances the understanding of the SDG and its association with firm and country-level features, and how these features motivate firms to contribute positively. This study provides valuable information for various stakeholders, such as businesses, governments, society, and policymakers for SDG-related decision-making. Based on the features examined in this study, policymakers can create more effective plans for SDG reporting.

Keywords: Sustainable Development Goals (SDGs) Reporting, Firm-level determinants, and Country-level determinants.

Table of Contents

List of Tables & Figures

Lists of Tables

Lists of Figures

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements) nor used artificial intelligence tools or generative artificial intelligence tools (unless it is clearly stated, and referenced, along with the purpose of use), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signature: Xia Zheng

Acknowledgments

I want to express my sincere gratitude to my Primary Supervisor--Dr Asheq Rahman, who consistently guided me throughout this master's research project. Without the helpful advice, support, and guidance of Dr Asheq, my research project would not be possible to finalise. Dr Asheq provided valuable feedback and continually motivated me to improve my research project and dissertation. The meetings and conversations with you were critical in inspiring me to think outside the box and ensure that I work in the right direction.

I also extend my thanks for the help provided by the Database Advisor, undergraduate research team, and technical and support staff in the Accounting Department at the School of Business at Auckland University of Technology. All the considerate guidance and assistance they provided was truly appreciated.

Finally, I am expressing my special thanks to my friends, colleagues, and family for all their unconditional support and strong encouragement to me for working on this project during the compilation of this master dissertation.

Chapter One: Introduction and Overview of the Research

1.1 Introduction to Chapter One

In recent decades, there has been an exponential increase in non-financial information reporting covering different topics, such as corporation social responsibility, sustainability development, and environment, etc from both academic research and business practice ((Belás et al., 2020; Bose et al., 2021b; Emma and Jennifer, 2021; Pizzi et al.,2020). It is noteworthy that corporate social responsibility (CSR) reporting and sustainability reporting have received more attention, as those subjects are now considered globally essential topics. In addition to encouraging an organization to impact society positively, corporate social responsibility also suggests that businesses consider the social and environmental effects of their business decisions on top of maximising their profit to support the community's sustainable development. To put it another way, a company is responsible for the social effects of its business decisions. Therefore, internal and external stakeholders expect a company to report financial and non-financial performance information related to economic, social, and environmental matters.

Sustainability management and reporting have become essential information tools connecting companies and stakeholders. It is used to communicate the organisation's financial activities' social, environmental, and natural impact on different stakeholders. External investors, internal shareholders, political parties, NGOs, consumers, and employers are the primary stakeholders who are participants in the sustainability reporting process, and they are the stakeholders who demand comparable, relevant, and reliable corporate sustainable information. Disclosing sustainability reporting by companies would have lots of benefits; it includes not only being able to access better capital or identification of new investors through providing transparency of information but also encouraging investors' confidence, the loyalty of employees, gaining a positive reputation in a competitive environment (Petrescu et al., 2020).

In 2015, the United Nations General Assembly proposed the 2030 Agenda for Sustainable Development. It consists of seventeen Sustainable Development Goals (SDGs) and 169 targets to attain a more sustainable, peaceful, and prosperous world by 2030 (United Nations, 2015). Those targets are built on the Millennium Development Goals (MDGs) of the United Nations. Those seventeen SDGs goals are not only unifying and encompassing the three dimensions of sustainable development: economic, social, and environmental, but also addressing worldwide sustainability issues, such as poverty, inequality, health and education challenges, and climate alteration. Successfully achieving the SDGs will require a strategic

process involving multiple actors, including private and public sectors, governments, multinational enterprises, non-governmental and philanthropic organisations, and individuals, who must work collaboratively and collectively. From a business perspective, the SDGs aim to create a "sustainable, innovative, and people-centred" economy that improves employment opportunities, especially for the younger generation and women. The organisation's mission is to ensure that its workforce is healthy and well-educated, develops the necessary awareness and competencies, and creates productive employees and motivated citizens who contribute to society. Investors are specifically urged to direct funding toward finding solutions to these environmental, unemployment, education, and other social issues, as there are insufficient resources and funding provided by governments and charities to address those issues (Yaşar, 2021). Before the outbreak of COVID-19, the United Nations confirmed there were serious shortfalls in developing nations' capabilities to meet the Sustainable Development Targets and expressly encouraged "…. companies, huge and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle" (Pizzi et al., 2020). With this call, there has been an increase in the total number of non-financial reports published by global firms as a proxy for SDG fulfilment (Pizzi et al.,2020). Therefore, sustainable development goals and their reporting are considered essential research topics. The relationship between organisations' SDG reporting and various determinations has attracted increasing attention over the past decade to ensure SDG achievement (Rasul, 2016; Bose & Khan, 2021; Pizzi et al., 2021).

1.2 Research Motivation

Although several studies on SDG involvement and reporting have been conducted over the past years, those studies focused on the degrees of adoption or non-adoption of SDG around 2016-2017, which was the first few years after the 2030 Agenda for Sustainable Development set in 2015. At that time, many companies were not engaging in SDG reporting because sustainability reporting was optional, and SDGs were new. Although relatively few companies issued sustainability reports, most companies' sustainability information was produced and published on stand-alone reports. The information provided was not comparable across the same industry and different periods. While there is growing academic interest in SDG involvement and reporting, existing academic research mainly concentrates on only a few influences of internal organisational factors of adopting sustainability reporting, such as company size, financial performance, etc. In addition, most prior studies usually focus on collecting data from a single industry, country, or geographical region with a relatively small sampling size. Furthermore, there is a relatively small body of literature that focuses on cross-country or multiple-country studies and comparative analysis of the determinants of SDG. Therefore, this highlights the need to conduct a cross-country study to understand the cross-country and firm-specific drivers of a company's involvement in

SDG and its reporting. Furthermore, conducting a cross-country analysis on this topic would provide insights into the determinants of SDGs by companies in different countries, thereby providing generalisable and country-specific results. This would allow researchers to understand SDG reporting country drivers. Moreover, following the increasing demand for more sustainability information needs by investors and the financial markets, the International Sustainability Standards Board (ISSB) not only develops an international baseline of sustainability disclosure standards but also promotes sustainability disclosure reporting initiatives that include the Task Force for Climate-related Financial Disclosures (TCFD), World Economic Forum's Stakeholder Capitalism Metrics and so on. This is a cross-country study to analyse the firm-level and country-level features that influence SDG reporting and enhance the understanding of the sustainable disclosures being pursued by the ISSB.

To narrow this gap, the key objective of this dissertation is to investigate and discover potential determinants for companies' reporting for SDGs at both firm and country levels. This study involves quantitative research with the key objective of finding potential firm-level and country-level determinants of SDG reporting. The difference between this study and other studies is that this study uses the reported data of large companies from the top indices of the global stock exchanges. From the selected sample of this study, an analysis will be conducted to ascertain both firm and country determinants that drive SDG reporting.

1.3 Contribution

This dissertation makes significant contributions to the existing literature on engagement with SDGs and sustainability reporting and enhances the understanding of the determinants of SDGs from the firm-level and country-level perspective by using a multi-national and multi-sectors study. In addition, by providing evidence about eight firm-level and two country-level factors that influence SDG involvement, this research offers new generalisable evidence on SDG reporting. Also, this research extends the relevant studies about motivating companies to contribute to SDGs, providing further evidence of the connection between the firm-level and country-level determinants of SDG adoption, involvement, and reporting. A better understanding of other factors that impact the adoption of SDGs would encourage companies to engage with them. Engaging with the SDGs would allow firms access to new talent, partnerships, investments, and market opportunities, and adopting the SDGs encourages businesses to create value that benefits all parties, including their communities, shareholders, employees, and customers. Furthermore, this study provides more insight into the companies' engagement in corporate social responsibility. It encourages companies to become more involved in socially responsible activities, the support of governmental and regulatory institutions, and more active cooperation with businesses as necessary.

1.4 Structure of the Dissertation

This dissertation entails five sections. The starting segment of this paper provides the theoretical foundations of the study and summarizes the existing literature review. The second section of this paper explains the hypotheses and research questions. Then, the information about the research design, the scope of the research, and the method used in the current study are illustrated in the methodology section. Following this, the findings of the analysis are presented, and these results are discussed. The final part of this paper concludes this research.

Chapter Two: Literature and Past Research Review

2.1 Introduction to Chapter Two

Chapter Two starts with a conceptual overview of the 17 Sustainable Development Goals and the background for Sustainable Development Goal reporting, followed by a discussion on the theoretical framework for CSR. Finally, a literature review of past academic research papers is provided with a focus on the study of sustainable development.

2.2 The Conceptual Overview of the17 Sustainable Development Goals

At the September 2000 United Unitions Millennium Summit in New York, 189 member states of the United Nations announced the adoption of a global development framework known as the Millennium Development Goals (MDGs), which aim to build a worldwide partnership to reduce international levels of extreme poverty (Halkos & Gkampoura, 2021). A set of 8 specific and measurable global development goals (Table 1) aims to address various social, economic, and environmental problems and were agreed upon by all countries participating at the meeting as part of their national development and commitment plan to find solutions for issues that are essential to fulfilling human rights and freedoms (Diouf, 2019). The target achievement deadline for those goals is no later than 2015. After MDGs were operated and adopted for fifteen years from 2000, the Millennium Development Goals Report 2015 highlighted that dramatic results have been achieved (United Nations, 2015a). However, there are unfinished goals and targets, and several issues and challenges are still facing worldwide. On 25th September 2015, the Sustainable Development 2030 Agenda was announced by the United Nations General Assembly as a concept and development framework, which is not only be used as the continuity of MDGs for achieving unaccomplished goals but also consider additional challenges to ensure the alignment with the notably global circumstances that have occurred worldwide since 2000 about the deflation of natural resources, the damage of environmental, the growing importance of climate change, social protection, food and energy security and development that is more pro-poor (Diouf, 2019). The 2030 Agenda for Sustainable Development consists of seventeen Sustainable Development Goals (SDGs) and 169 targets to attain a more sustainable, peaceful, and prosperous world by 2030 (United Nations, 2015). A detailed description of seventeen SDGs is provided in Table 2. Those targets are built on the Millennium Development Goals (MDGs) and aim to achieve their unaccomplished objectives. Those seventeen SDG goals unify and encompass the three aspects of sustainable development: economic, social, and environmental, but also address worldwide sustainability issues, such as poverty, inequality, health and education challenges, and climate alteration.

Table 1: The Millennium Development Goals (MDGs) and Description:

Millennium Development Goals	Descriptions
1: Eradicate extreme poverty and hunger	To eliminate extreme poverty and hunger
2: Achieve universal primary education	To achieve universal primary education for boys and girls.
3: Promote gender equality and empower women	To eliminate gender disparity in primary and secondary education by 2005 and in all levels of education and empower women by 2015.
4: Reduce child mortality	To reduce the under-five mortality rate by two-thirds.
5: Improve maternal health	To reduce maternal mortality by 75 per cent and achieve universal access to reproductive health.
6: Combat HIV/AIDS, Malaria, and other major diseases	To combat HIV/AIDS, Malaria, and other significant diseases.
7: Ensure environmental sustainability	To ensure that the natural resources and ecosystems are managed sustainably.
8: Develop a Global Partnership for Development	To develop a global partnership for development and avail benefits of new technologies.

Source: Millennium Development Goals Monitor, Category: Millennium Development Goals

(https://www.mdgmonitor.org/millennium-development-goals)

Table 2. 17 Sustainable Development Goals and Descriptions:

Sustainable Development Goals	Descriptions
1. No poverty	End poverty in all its forms everywhere
2. Zero hunger	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.
3. Good health and well-being	Ensure healthy lives and promote well-being for all at all ages.
4. Quality Education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
5. Gender equality	Achieve gender equality and empower all women and girls.
6. Clear water and sanitation	Ensure availability and sustainable management of water and sanitation for all.
7. Affordable and clean energy	Ensure access to affordable, reliable, sustainable, and modern energy for all.
8. Decent work and economic growth	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all
9. Industry, innovation, and infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialisation, and foster innovation.
10. Reduced inequality	Reduce inequality within and among countries.
11. Sustainable cities and communities	Make cities and human settlement inconclusive, safe, resilient, and sustainable
12. Responsible consumption and production	Ensure sustainable consumption and production patterns
13. Climate action	Take urgent action to combat climate change and its impacts
14. Life below water	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
15. Life on land	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss.
16. Peace, justice, and a strong institution	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels.
17. Partnership for goals	Strengthen the means of implementation and revitalise the global partnership for sustainable development.

Source: United Nations, Department of Economic and Social Affairs, Sustainable Development, 17

SDGs. (https://sdgs.un.org/goals)

2.3 Background of Sustainable Development Goal Reporting

After the introduction of sustainable development goals by the United Nations General Assembly in 2015, companies have adopted the sustainable development goals to demonstrate their commitment to sustainable development, which due to sustainable development goals, positively contributed to the company's business outcomes (Lashitew, 2021). Therefore, more and more companies have chosen to disclose their commitment to sustainable development on their company reports since the introduction of sustainable development goals (Datta & Goyal, 2022). According to Van Zanten and van Tulder (2018), the Sustainable Development Goals is a more narrowly focused and unique version of the Millennium Development Goals, but with an emphasis on and restricted to "developing countries". As stated by Scheyvens et al. (2016), the noteworthy difference between sustainable development goals and Millennium Development goals is that sustainable development goals provide a summary of the critical driver of success ultimately determined by business, which aligns with the Millennium Development Goals priorities of governments globally. Organizations are expected to engage in economic progress, even though economic growth facilitates collaboration among development agents to create a better future (Datta & Goyal, 2022). On top of that, the United Nations has pushed its 193 country members to develop relative regulations for non-financial reporting. As regulatory organizations and governments are increasingly prioritizing the requirement for mandatory or voluntary disclosure of sustainable initiatives worldwide, companies are releasing an increasing number of sustainability reports to respond to this requirement (Datta & Goyal, 2022). Reporting on the Sustainable Development Goals in sustainability reporting, also known as integrated reports combining financial and non-financial data, is the primary way to demonstrate how well companies progress toward Agenda 2030 (Datta & Goyal, 2022). Rosati and Faria (2019) define sustainable development goal reporting as publicly reporting on how a company reports sustainable development goals. After the acknowledgment made by The United Nations Global Compact (UNGC) and Global Reporting Initiative (GRI) for the importance of sustainable development goals in encouraging private companies to become more responsive and conscious of sustainability concerns, a platform named "Business Reporting on the SDGs" had been developed by those two organization's to empower companies to process and integrate for SDG reporting (Datta & Goyal, 2022). As per the statement made by Izzo et al. (2020a), Sustainability Reporting (SR) outlines a company's sustainability initiatives and actions, which are used to measure how a company is aligned toward UN SDGs. According to GRI (2018), SR helps with "measuring, understanding, driving and communicating organization's SDG efforts, setting internal goals and managing the transition towards more sustainable development."

2.4 Sustainable Development Goals Involvement and Reporting

Sustainable Development Goals Involvement means that firms take action to commit and engage with Stakeholders and ensure their company's working progress toward the 17 Sustainable Development Goals. In contrast, Sustainable Development Goal Reporting means companies choose to start publishing and disclosing their commitment to 17 SDGs information on their company's non-financial report. The current research used the SDG data that large firms reported to investigate and study the critical firm-level and country-level drivers of firms' SDG reporting. This illustrates that we are studying SDG reporting. Therefore, the SDG data in this study are relevant for-SDG reporting. The following section will provide a detailed summary of the previous literature review for SDG reporting. As the importance of international accounting, reporting, and non-financial reporting grows dramatically, academic researchers have attempted to use different firm and country-specific characteristics to investigate the differences in corporate disclosure practices of firms from other countries. Evidence from prior studies suggests various firm-level factors influence corporate disclosure, including firm size, financial listing status, financial leverage, multinational performance, and financing systems (Dong & Stettler, 2011). However, prior findings indicate that firm size is the only factor that has a consistent association with corporate disclosure. In contrast, the other firm-level factors have a less consistent association with corporate disclosure (Dong & Stettler, 2011). With regards to the country-level factors, prior studies have used several variables, including the cultural values of a country (Zarzeski, 1996), economic development (e.g., Archambault & Archambault, 2003), the legal system of country (Jaggi & Low, 2000), inflation level and political systems (e.g., Archambault & Archambault, 2003), to examine their association with the influence of corporate disclosure (Dong & Stettler, 2011). Dong and Stettler (2011) stated that countries' accounting practices and disclosure behaviour would change to align with a country's different economic development stages, and the country's financial system might affect corporate disclosure practices. Jaggi and Low (2000) stated that companies in countries with high cultural values are likely to provide more information on their corporate disclosure report. Dong and Stettler (2011) stated that a country's legal system influences corporate disclosure because the legal system can lead to different firms from around the world complying with the accounting regulations and disclosure requirements. Therefore, this justifies the current study of firm-specific and country-specific determinants of SDG reporting and disclosure.

2.5 Literature Review

The previous literature conducted by Schramade (2017) examined what the SDGs are and why we should invest in them. Shramade (2017) explored the sustainable development goals from both an investor and a corporate perspective. Ali et al. (2017) conducted a survey and contest analysis of 76 empirical academic papers to investigate the elements influencing Corporate Social Responsibility (CSR) disclosure in developed and developing countries. The results showed that firm-specific characteristics, such as firm size, industrial sector, profitability, and corporate governance systems, are the main factors of corporate governance reporting disclosure. Furthermore, the political, social, and cultural considerations influence CSR disclosure. Ali et al. (2017) found that the factors influencing CSR disclosure in developed and developing nations are significantly different.

Rasul (2016) determines how Malaysian businesses were involved in the SDGs and investigates the variables that motivate Malaysian firms to participate in SDGs. A sample of 219 publicly held companies was used in this study's content analysis of corporate annual reports. The four independent factors analysed in the study were board size, corporate size, board independence, and the presence of women on the board. Rasul's (2016) findings suggested that Malaysian corporations' overall involvement in the SDGs was modest, and this involvement was associated with the corporation's size, the composition of the board, and the proportion of women on the board.

The study conducted by Ariyani and Hartomo (2018) examines the effect of company characteristics proxied by company size and financial performance, including profitability ratios, liquidity, and leverage ratios, liquidity, leverage, and governance committee on sustainability reporting based on the GRI (Global Reporting Initiative) G4 standard. GRI standard is a standard developed or sustainability report guideline outlining the overall standards that organizations should adopt. Ariyani and Hartomo (2018) used the secondary data derived from the organization's annual report on the Indonesia Stock Exchange covering from 2014 to 2016 to examine the selected sample companies that applied GRI to the SRI registered Sustainability Reporting during those 3 three years. The result of this study indicates that the factors of leverage and the Governance Committee have a significant association with SR disclosure. In contrast, there is no significant association between firm size, profitability, liquidity, and type of industry and SR disclosure.

Another study by Rosati and Faria (2019) explored the relationship between SDG reporting in the early adopting stage and the various company factors from three aspects, including 1) organization size, economic performance, and intangibility; 2) sustainability committed and external assurance and 3)

organization governance attributes. Rosati and Faria (2019) selected data from 408 companies globally that published sustainability reports in 2016 and combined data from both GRI and Orbits databases to access the factors of companies that address the SDGs in their company's sustainability reports. The results highlight that firm size, level of intangible assets, the level of commitment to sustainability frameworks and external assurance, and the percentage of women directors are positively associated with SDG reporting (Rosati and Faria, 2019)

Similar research was done by Jha and Rangarajan (2020) to assess the Indian corporate world's progress toward sustainable development by proposing the Corporate Sustainability Performance Framework based on the elements proposed by SDGs. Jha and Rangarajan (2020) applied this framework to investigate the sustainability performance of Indian companies to identify the gaps in their commitment to sustainability. This paper used a mixed method and applied content analysis to analyze the disclosure of reports of the top 100 Indian companies for the fiscal years of 2016 -2017, and the impact factors such as company size, ownership structure, and environmental sensitively were statistically tested (Jha and Rangarajan, 2020). This study's result shows significant differences in performance based on environmental sensitivity and fixed size. However, no differences between companies based on ownership identity and concentration could be found (Jha and Rangarajan, 2020).

Most of the recent SDG literature investigates the scope, improvement, and variation of SDG reporting at the country level (Bose & Khan, 2021). Bose & Khan (2021b) employ 17 SDG indicators created by the United Nations (UN) as its SDGs reporting index, using a sample of 6942 company-year observations in thirty (30) nations covering four years from 2016 to 2019 to examine whether firms' SDGs would differ by country-level factors. The results show relatively little overall SDG reporting from the sample companies and SDG reporting changes for businesses in nations with stronger national sustainability laws and higher UN-evaluated SDG achievement scores. SDGs reporting rates are more significant for firms in shareholder-oriented nations than those in stakeholder-oriented nations (Bose & Khan, 2021). Pizzi et al. (2021b) study examined firm-level, government-level, and report-level factors that affect how businesses report on the SDGs; the finding proved that a firm SR is positively associated with independent directors on the board and the report's length.

Islam and Rahman (2023) draw connections between the SDGs and the impact investment deals currently on the market to ascertain how likely each agreement is to contribute to the SDGs' vision of a sustainable and prosperous world. Islam & Rahman (2023) examined the impact of investment deals at the primary SDG level, where each investment deal was linked to one primary SDG. Then he analysed

the impact of investment deals at the secondary SDG level. The finding indicated that most deals are primarily centred in two geographical areas and have a direct or indirect connection to only four of the 17 SDGs. Islam and Rahman (2023) commented that while many impact investment deals try to solve significant global difficulties, a major imbalance exists between impact investing and sustainability development goals.

Therefore, the above literature review on previous studies of SDG shows that there is a relatively limited cross-national comparable study of firm involvement in SDG practices with examining critical drivers from both firm-level and country-level perspectives, the current dissertation primarily conducts a cross-country study and seeks to extend previous studies on investigating the critical firm-level and country-level determinants of SDG reporting of firm by analyzing the SDG data reported by selected worldwide large public companies that listed on the primary capital markets. Though a multiple-country study on the critical drivers of SDG reporting from firm-level and country-level perspectives, current research extends the relevant studies to provide better insight into understanding the drivers that influence corporation SDG reporting. This can motivate firms to contribute to sustainable development goals and encourage corporations to engage more with SDGs. Furthermore, this will also provide further evidence of the connection between the firm-level and country-level determinants of SDG adoption, involvement, and reporting.

Chapter Three: Theoretical Framework, Research Question and Hypotheses Development

3.1 Introduction to Chapter Three

Chapter Three starts with a discussion of the theoretical framework and the research questions, followed by the development of the hypotheses of this research. The hypotheses are classified into two categories, which are firm-level and country-level determinants hypotheses, respectively.

3.2 Theoretical Framework

Despite the increasing interest and the emphasis on Sustainable Development Goals Reporting, from a theoretical point of view, sustainability reporting and CSR have been examined from various perspectives over the past decades, mainly including signaling theory (Connelly et al., 2010), stakeholder theory (Freeman,1994), and legitimacy theory (Deegan, 2002). Signaling theory describes communication behaviour between two parties, where one party determines how to communicate the information and interpret the signal to a second party (Connelly et al., 2010). Stakeholder theory suggests that the corporation needs to consider the different stakeholders' perspectives and expectations to conduct its business (Freeman, 1994). Legitimacy theory states that a company needs to obtain legitimacy from the community and society to operate successfully in its relative business environment (Deegan, 2002). The theories of stakeholders, legitimacy, and signaling were used in past scholarly study papers to examine several firm factors, including firm size (Reverte, 2009), economic and financial outcome (Sotorrío and Sánchez, 2010), and the commitment to social and environmental activities (O'Donovan, 2002) are most likely to contribute to sustainability development goals and corporation sustainability reporting (Ali et al., 2017).

The current study uses the stakeholder theory to examine firm-level and country-level drivers of firms' SDG reporting. This is due to the theory of stakeholders emphasizing that adding value for stakeholders is very important to business success and suggesting that corporate managers consider the demand and identify trends among internal and external stakeholders (Freeman,1994). Over the past decades, the company's reaction to the increasing global demands on sustainability development issues is considered the most notable trend worldwide, which requires corporations to contribute more to the involvement and commitment of SDGs. Therefore, there are increasing expectations from the company's internal and external stakeholders to implement company management strategies that advance social and environmental progress. The implementation of those company commitments should be disclosed in

their company report due to organizations should publish standards of reporting on information that matters to parties other than creditors and shareholders (Benjamin et al., 2020). Mitchell et al. (2016) have applied the Stakeholder theory to non-financial reporting, such as sustainability reporting, to ensure sufficient information has been provided to stakeholders for decision-making purposes. Stakeholder theory also suggests corporations consider the interests of their stakeholders from moral or ethical aspects, and organisations should support specific social activities because all stakeholders have rights that should be managed appropriately for the benefit of all parties involved (Garriga & Melé, 2004).

3.3 Research Questions and Hypothesis

Through the literature review of previous studies on the reporting of SDG, various factors that influence corporate involvement in SDG and its reporting have been identified and found in prior studies, which are mainly relative to firm characteristics that include corporate size, leverage ratio, financial performance, board size, independence of board, percentage of women on board, and so on. However, there are still limited studies on the country-level features influencing organizations' reporting on sustainable development goals. The only country-level factor that influences SDGs is whether the companies are operated in developing or developed countries. Therefore, the findings from the prior research might not be able to provide a standardized and general trend and information for SDG reporting worldwide. The following section will discuss the hypothesis development from firm and country-level features.

a) Firm size and SDG reporting

Research Question 1: what is the relationship between firm size and the firm's participation in SDG?

Firm size is the most common factor in investigating the relationship between company involvement and reporting in sustainable development matters. According to Van der Waal and Thijssens (2020), there is a positive correlation between company size and sustainable development goals after examining the 2000 largest stock-listed organisations in the global Forbes Global 2000 universe. This aligns with similar research undertaken by Van Zanten and Van Tulder in 2018, who examined 81 multinational companies across Europe and North America. This research concluded that larger companies tend to engage more with SDGs, and the authors also stated that larger companies are more involved with sustainability reports than smaller companies because larger corporations are more noticeable and significant and focus more on stakeholder interests.

According to research on non-financial and sustainability development reporting, the company's size is continuously positively linked to the degree and scope of financial and non-financial reporting disclosure (Cormier et al., 2011). Previous research conducted by Buniamin et al. (2011) and Gallo & Christensen (2011) confirmed that more information tends to be included and published in large organisations' financial reporting. This suggests that corporations with large sizes are involved more in SDG reporting.

Furthermore, companies with more total assets and higher return on equity are in a better position to commit to sustainability development goals and are involved more in SDG reporting because they have greater resource availability to fulfil their social and environmental responsibility. Companies with higher total assets will have a better financial position on the market due to the competitive advantages generated by their strong competencies; this can encourage more achievement of sustainability development goals and ultimately lead to a higher number of activities and involvement in SDG reporting and disclosure. Therefore, the first proposed hypothesis is:

H1. There is a positive relationship between the size of the company and its SDG reporting and disclosure.

b) Company earning, profitability, and SDG reporting

Research Question 2: what is the relationship between the return of equity of total percentage and the firm reporting of SDG?

In general, the primary objective for an organization is to generate profitability and create more earnings. However, as the company's profitability and earnings increase, the organization's environmental and social responsibility demands are also growing. Suppose a firm with higher and strong profitability is not balanced by taking more social and environmental reasonability and involving more with SDG reporting. In that case, their competitors will utilize the environmental issue to pull the company out of the market (Ariyani & Hartomo, 2018) because the Stakeholder theory suggests corporations consider their stakeholders' interests from moral or ethical aspects. Organizations should support specific social activities because all stakeholders have rights that should be managed appropriately for the benefit of all parties involved (Garriga & Melé, 2004). Therefore, it is a common expectation that companies with higher profitability and earnings would more widely and voluntarily implement and engage with SDG reporting and disclosure, according to GRI (Ariyani & Hartomo, 2018), as this will help the company to create a positive and better reputation. As a result, investors and the public will see the positive side of the company, which will help the company generate even more profitability in the longer term. The extent to which a corporation voluntarily implements and expresses its sustainable reporting and engages with

SDG depends on its profitability. The stronger the corporation's profitability, the higher the company's earnings, which will positively promote SDG reporting. Research done by Ehsan and Kaleem (2012) also confirmed the positive impact of profitability on sustainability reporting disclosure. Another study by Nguyen and Nguyen (2020) supported Ehsan and Kaleem's (2012) argument. It confirmed that return on equity (ROE) significantly positively influenced the disclosure of sustainable development information for manufacturing companies in Vietnam. The research conducted by Maryana and Carolina in 2021 confirmed that the company's profitability positively contributes to sustainability reporting disclosure by examining the company's return on asset ratio (ROA). Thus, the second hypothesis is developed as follows:

H2. Return of equity of total percentage is positively related to the corporation's SDG reporting.

c) Company leverage and SDG reporting

Research Question 3: What is the relationship between the firm leverage and the SDG reporting?

Higher financial leverage firms will typically provide more information to creditors, suppliers, and investors to increase the confidence of creditors so that the firm can meet its financial obligations and expand opportunities (Maryana & Carolina, 2021). This is especially true in countries where third parties or creditors are the primary source of corporate capital. Leverage determines how much total debt can be financed with the company's assets. It is a common phenomenon that companies use leverage to fund their normal business and operations. Higher-leverage companies are more likely to permit other companies to breach credit agreements to increase their profit, reflecting a solid financial position and ultimately positively impacting their stock price (Maryana & Carolina, 2021). Therefore, companies with higher leverage can publish sustainability reports to influence stakeholders and obtain more credit loans from them in the long term. Based on Nguyen & Nguyen's research done in 2020, it indicated that a company's sustainability reporting is positively affected by its leverage level. However, this was not in line with the previous study findings by Maryana and Carolina (2021), who indicated that the equity ratio had a significant and negative impact on sustainable reporting disclosure. This suggested that companies can use sustainability reporting to obtain more loans from their stakeholders (Maryana & Carolina, 2021). Thus, the third hypothesis is developed as:

H3. The company's total debt percentage of total equity is positively related to the corporation's SDG reporting.

d) ESG disclosures and SDG reporting

Research Question 4: What is the relationship between the company's ESG disclosure and the reporting of SDG?

Environmental, social, and governance (ESG) issues have become increasingly important to organizations and investors over the past decades, especially in emerging markets. Increasing attention has been put on how the firm-level ESG disclosure impacts the United Nations Sustainable Development Goals, as it is the general view that companies with high awareness of ESG disclosure can promote and translate into higher sustainable development goals scores, indicating a higher involvement in SDG reporting. Soni (2023) investigated the relationship between firm-level ESG disclosures and the SDG scores by analyzing 1,500 top-listed firms for three emerging countries, including India, China, and Brazil, over ten years; the investigation results showed that ESG disclosures are significantly positively associated with SDG scores. Radu et al. (2023) also analyzed the relationship between corporate ESG performance and the SDGs and the contribution of company ESG indicators to sustainability by examining two Romania companies, mainly in the largest oil and gas and financial service sector in the financial year 2021. The study results showed that companies' ESG performance is linked to the SDGs for companies in both the oil and gas and non-financial sectors. Therefore, the following hypothesis is proposed:

H4. Companies' ESG score is positively associated with sustainable development goals and SDGs reporting.

e) Organization's board committee and SDG reporting

Research Question 5: What is the relationship between the company's board size and the SDG reporting?

An organization's board size can be described as the total number of directors on the business board. It is a standard view that larger boards frequently have a more comprehensive range of experience, financial knowledge, expertise, and problem-solving skills, which can enhance and improve the reputation and image of the organization. Large boards are characterized by higher and greater diversity and would fairly represent various interests and stakeholders. Large board committees can balance the different expectations between different stakeholders and social capital by considering the company's other stakeholders' perspectives and lead to high-quality board decision-making. Company boards should be sizeable, experienced, and knowledgeable enough to carry out their duties and accommodate individuals more effectively. The same reasoning holds: diversified large boards may include members educated more about social and environmental concerns and emphasising social and environmental challenges. In

other words, the company's large board size not only encourages the company to engage in CSR-related activities and enhance the achievement of sustainable development goals but also promotes the publication of sustainable development reporting.

Masud et al. (2018) discovered and confirmed a positive correlation between board size and sustainability reporting by examining a sample of 88 companies from three South Asian Countries, including Bangladesh, India, and Pakistan, and the sampling period of this study covered from 2009 to 2016. Similar findings were made by Mudiyanselage (2018), who used a sample of 100 publicly traded Sri Lankan companies to assess the role of directors in corporate sustainability from 2012 to 2016 and concluded that companies with sustainability disclosure policies have larger boards. This indicated that larger boards of companies have a favorable and notable positive impact on sustainability reporting. Conversely, Githaiga and Kosgei's (2022) research examined the board characteristics' influence on sustainability reporting by using a sample of 79 listed firms drawn from East African securities exchanges in the period of 2011-2020; the study revealed that the board size of a company is significant negative associated with impact on sustainability reporting. Therefore, based on the above literature reviewed and evidence, this study hypothesizes that:

H5. There is a positive relationship between a company's board size and its SDG reporting.

Research Question 6: Will female board members have any influence on the reporting of SDG?

As required by the 2030 Agenda, SDG 5.5 suggests that women should participate more in companies' managerial processing and business operations, as well as at the board level. The percentage of females involved in the company board is used as a possible proxy to evaluate the achievement of this sustainability goal (Pizzi et al., 2021). Given that females and males act differently from tradition, culturally and socially perceptively, gender diversity is considered a characteristic of board diversity. The presence of female directors can illustrate gender differences within the company, as female and male boards of directors think things and exchange opinions from many different perspectives (Juwita & Honggowati, 2021). Women tend to be more detail-oriented and careful about their actions, focusing more on avoiding risks upfront while they make decisions. Therefore, Female board members and directors positively impact the organization's business operations (Juwita & Honggowati, 2021) and the companies' socially responsible behaviour. Furthermore, women present on the company board will also guide the company to comply more with regulations and standards and promote more engagement in SDG reporting. Fernandez-Feijoo et al. (2014) demonstrated that a higher percentage of female board members can produce higher and better quality corporate social responsibility reporting because females tend to have high levels of sustainability (Rosati & Faria, 2019). Based on the above explanation, this

summary of the following hypothesis is as follows:

H6. Companies with a higher proportion of female members on the board are more likely to engage with SDG reporting.

Research Question 7: Will gender-diverse workforce and board member cultural diversity impact the firm's reporting in SDG?

Research demonstrates that a diverse board is more productive and deeply comprehends the business's activities and operations. Therefore, it is argued that gender diversity will enhance performance and competitive advantage as it is a strategic asset that connects the internal and external environments. Academic research also suggested that gender-balanced boards can ensure effective decision-making and enhance the quality of governance by providing the integrity of financial reporting. Given that sustainability reporting is an essential part of financial reporting, it is also suggested that board diversity could positively impact sustainable development goals and involvement in sustainable development goals reporting. The study conducted by Wahid (2019) found that companies with gender-diverse boards have lower fraud and financial reporting inaccuracy rates. According to Herremans et al. (2016), businesses use sustainability reporting as a tool to engage stakeholders and validate the company's ethics. Ntim and Soobaroyen (2013) suggest that a diverse board may strengthen a company's legitimacy by reaching various stakeholders and cultivating deeper ties with stakeholders. Based on the above explanation, the following hypothesis is proposed:

H7. A positive association exists between commitment toward maintaining the gender-diverse workforce and board member cultural diversity and SDG reporting.

Research Question 8: Will the level of education and academic background of company board members influence the firm's SDG reporting?

This research aims to examine whether the level of the board member's education and skillset is related to SDG engagement and reporting. It is argued that board members with higher education levels and skills present higher moral reasoning and take more social responsibility. Therefore, higher-educated board members and directors will encourage the company not only to focus on generating profitability but also to emphasize the social, environmental, and natural impact of the company's financial and business activities. Thus, higher-educated board members are more likely to promote SDG involvement and encourage publishing more information on SDG reporting. As per Ahmad et al. (2018) statement, board members with a strong finance background would better comprehend social and environmental issues because of their superior expertise in social accounting knowledge, which would promote the company's

engagement with sustainable development goals and reporting. The scholarly research conducted by Naheed et al. (2021) demonstrated a significantly positive association between board members' financial expertise and social responsibility reporting, which was not consistent with the finding presented by Wijayanti and Setiawan (2023), who concluded that the financial knowledge of the board members had non-significantly association with corporate sustainability reporting. With this explanation, the following hypothesis is developed:

H8. **There is a positive association between higher education and academic backgrounds, especially in the finance aspect for board members, as well as SDG reporting.**

3.3.1 Country-level determinants

This sub-section discusses the country-level determinants that drive SDG reporting.

Research Question 9: Will the economic growth indicator of the country where the firm is located influence the firm's in reporting in SDG?

Gross Domestic Product (GDP) is one of the standard relevant measures and indicators of economic performance across countries. Therefore, this can be used to measure economic sustainability worldwide. In general, economic growth and development of a firm's home country are associated with the development of SDG reporting. There is an argument that developed countries will have more capacity to engage in non-financial reporting issues, including CSR and sustainability reporting, because developed countries would have more incredible economic wealth and more substantial financial resources available (Bose & Khan, 2021). Therefore, firms in developed countries are expected to have more resources to contribute to sustainability development goals. Evidence has been provided by Busco et al. (2019) to confirm that a country's economic development is correlated with companies' involvement in SDG. SDG reporting are published more by companies in countries with higher economic development than in countries with lower economic development. Companies in better economic development countries have better financial positions and the ability to contribute to SDGs. On the other hand, the SDGs might not be realistic and achievable for nations with weak economic growth and development; this is particularly true for developing nations where their governments might have other priorities and commitments to their citizens rather than meeting SDGs targets (Bose & Khan, 2021). There is a high chance that companies in developing countries will prioritize doing business more than the SDG's involvement and reporting. Therefore, SDG targets and reporting become less essential and active in developing countries. In line with the above discussion and explanation, firms in developed countries are expected to report more

SDGs and engage more with SDG reporting than firms in developing countries (Bose & Khan, 2021).

Bose and Khan (2021) examined the extent of SDG reporting by companies around the world to understand the country-level institutional determinants that influence SDG reporting; the authors found that companies in developed countries pay more attention to SDG reporting and tend to report higher SDGs at corporate level than developed countries. Based on this evidence, the current study formulates the following two hypotheses:

H9. Firms' SDG reporting is positively associated with higher GDP per capita of the country where the firm is located.

Research Question 10: Will the social progress index of the country where the firm is located influence the firm's SDG reporting?

In addition, social progress can be considered as another country-level factor that might impact SDG reporting. Social progress is defined by Porter & Green (2014) as the capacity of a society to meet people's basic human needs and create the foundations that enable people and communities to improve and sustainably maintain their quality of life, and make the conditions in which everyone can achieve their goal and reach their full potential. Social progress is also considered a critical drive of economic development, education, health, and a sense of opportunity. There is a hot debate that SDG reporting are published more in countries with higher social progress index scores than countries with lower social progress index scores. In general, countries with better economic development and social progress (Çağlar & Gürler, 2021) would mean they have better financial positions and better capacity to meet their society's needs, which will promote their society to improve and sustainably develop toward the 2030 Agenda for Sustainable Development. With this explanation, the following hypothesis is formulated:

H10. Firms in countries with higher social progress indexes will be more committed to sustainable development reporting, which positively correlates to SDG reporting.

Chapter Four: Research Design, Method, Sample Selection, and Data Collection

4.1 Introduction to Chapter Four

Chapter Four provides the detailed process of gathering the data and the composition of the determination of the final sample. This Chapter starts by illustrating how the current research is designed and discusses the research method, followed by the discussion of sample selection, and finally outlines how the raw data is extracted and collected from Refinitiv to ensure using more meaningful information to conduct regression analyses in the SPSS platform. The sample size and list of variable tests are also discussed in this Chapter.

The data analysis is conducted in five steps. First, a large sample of large public companies listed on the primary capital markets was identified. Secondly, data relative to the variables identified in the current study model are downloaded from Refinitiv for the selected companies and then categorised by firm sectors, equity exchange market, and geographical location. Subsequently, the collected raw data was grouped into relative variables, such as firm size, leverage, diversity, SDG score, etc. Fourthly, a correlation and regression analysis is performed using SPSS. Finally, the result of the regression analyses will be interpreted to conclude which variables drive SDG reporting.

4.2 Research Design, Method, and Model.

This research will be conducted with a quantitative research method to identify and evaluate the significant firm determinants and country-level determinants for SDG reporting. This study uses a linear regression test analysis to ascertain the key factors influencing companies' SDG in reporting and disclosure. Regression analysis is the most common statistical approach used to discover the relationship between cause-and-effect variables, including univariate and multilinear regression (Uyanık & Güler, 2013). Sen & Srivastava (1997) stated that one or more variables, namely independent variables or predictor variables, will affect the primary variable dependent variables. A regression model with one dependent variable and one independent variable is known as the univariate regression model. In contrast, multilinear regression has one dependent variable and more than one independent variable (Uyanık & Güler, 2013).

The dependent variable of this research is the corporate SDGs reporting for the 17 SDGs, which is the total number of SDGs the firm participates in and reports for. The independent variable of this research represents two different levels of analysis, including firm-level and country-level determinants. There are

eight firm-level independent variables, which include the firm size, return on equity, total debt percentage of total equity, environment, social and governance disclosure, the board size, board gender and cultural diversity, and board background and skills. In line with Dang et al. (2018) study, the standard natural logarithm of the total assets was used in current research as a proxy for the organisation's size. Furthermore, we use the natural log of the total debt of the total equity as a proxy to measure the firm's leverage to ensure its skewness and kurtosis sit within the reasonable range. The ESG score is used as a measure for companies' environmental, social, and governance disclosure. The number of company board members is used to measure the board size. The board gender diversity percentage indicates the percentage of female board members, which is used to measure board gender diversity. The diversity Inclusion Rating (DIR) diversity score measures commitment toward maintaining a gender-diverse workforce and board member culture. The board-specific skill percentage measures board background and skills, which shows the percentage of board members with financial or industry-specific backgrounds. Regarding the country-level determinants, the country-level independent variables are the country's level of development measured in GDP and social progress index. Moreover, also included two control variables, namely the industry sector and years, in the study to ensure the reliability of the analysis. The classification of the analysis variables in the current research study is listed in Table 3.

Regarding industry sector classification, selected firms were classified based on the company's General Industry Classification in the Refinitiv data screen, as shown in Table 6. The data source for this research was extracted from the Refinitiv database. The data analyses were undertaken with descriptive, bivariate, and regression analysis by using IBM Statistical Package for Science Social (SPSS).

Table 3: Variables list and classification:

Dependent Variables	Independent Variables	Control Variables
SDG: A total of 17 Sustainable Development Goals	**Firm Level:**	Years
	Total Asset	General Industry
	Total Debt of the total equity	
	Return on equity %	
	ESG score	
	Board Size	
	Board Gender Diversity %	
	DIR Diversity Score	
	Board Specific Skill %	
	Country-Level:	
	GDP per capita (Current US$)	
	Social Progress Index	

The following regression models are designed as below equation, and the study is set up to run against total SDG [dependent variable] on IBM SPSS:

$SDG = \beta 0 + \beta i \sum Firm\ Determinants + \beta j \sum Country\ Determinants + \beta k \sum Controls + \varepsilon$

Where,

SDG = SDG reporting for the 17 SDGs as reported in the Refinitiv database. The presence of SDG reporting of a firm as reported in Refinitiv will also be regarded as reporting of SDG because the reporting data are drawn from the data reported by the firm.

Firm Determinants = Firm-level determinants of a firm's SDG reporting identified in prior studies such as Pizzi et al. (2021) and variables such as firm size, firm's ESG, gender, and cultural diversity scores, etc. available from Refinitiv database. In the current study, the firm determinants include firm size, total debt of the total equity, return on equity percentage, ESG score, board size, board gender diversity percentage, DIR diversity score, Board specific skill percentage. The current study uses the natural log of total assets as a proxy of firm size and the natural log of total debt of the total equity as a measure of total debt of the total equity. The DIR diversity score measures commitment toward maintaining a gender-diverse workforce and board member culture.

Country Determinants = Country-level determinants of a firm's SDG reporting, such as a country's level of development measured in GDP (World Bank) and Social Progress Index (www.socialprogress.org). In the current study, the country-level determinants mainly include the country's GDP per capita and social progress index. In the current study, other countries' level determinants, such as the country's regulation and GDP (current US$), were originally used as independent variables in the model. However, after being tested, the result indicated that they are highly correlated with the country's GDP per capita variable. Therefore, the current study only selected two country-level determinants, which are GDP per capita and social progress index.

The details of the variables, variable category, and measurement of variables in the current study are summarised in Table 4.

4.3 Sample and data collection:

To test the above hypotheses, this study is conducted with an analysis of a sample selected because the sample of large companies listed on the primary capital markets are more likely to have reported and published SDG data as they will have a higher chance to engage with SDG. The indices of global stock exchanges used in current research include S&P500, S&P400, FTSE100, FTSE250, Euronext100,

EuroNnex150, ASX200, NZX50, Straits Times Index, Hang Seng Index, Shanghai Composite Index, Sensex and Nifty (India), Indonesia Inx Composite Index, NIKKEI225, TSX60, MDAX50, FESE/JSE ALL Share, Brazil Bovespa Index, KOSPI200, MICEX-RTS200, FTSE BURSA MALAYSIA KLCI30 covered by the Refinitiv Academy ESG database (Table 5). The data was collected across five years, from 2018 to 2022, to ensure more comparative analysis. In addition, to conduct a current analysis on a set of comparable companies, the population of this study mainly focuses on large publicly listed companies; this is due to the most significant size origination would expect to have more reporting on social and environmental activities (Du & Vieira, 2012). Companies listed on above selected indices of the global stock exchange were randomly chosen across the US, UK, Euro, Australia, New Zealand, Singapore, Hong Kong, Shanghai, India, Indonesia, Japan, Canada, Germany, South Africa, Brazil, Korea, Russia, Malaysia stock exchange markets based on the organisation's ranking at the markets. The data source for this research was extracted from the Refinitiv database.

Table 4: Detailed variables, variables category, and measurement of variables:

Variable No.	Description	Variable Name	Measurement Detail	Variable Category	Expected relationship	Previous Studies
1	Sustainable Development Goals Score	Total of 17 SDGs	Sum total of the 17 SDGs Score	Dependent Variable		
2	Firm Size	Total asset	Size of company as viewed from its total assets. Size =Ln Total Assets (The Natural logarithm of the firm total asset)	Firm-level Variable	Positive	• Van Zanten & Van Tulder in 2018; • Van der Waal and Thijssens (2020); • Buniamin et al.(2011);Gallo & Christensen (2011)
3	Financial Performance	Return on equity total %	• Profitability Ratio; • Return on equit total % = (Net income- bottom line - preferred dividend requirement) / Average of Last Year's and Current Year's Common Equity*100	Firm-level Variable	Positive	• Ehsan and Kaleem (2012); • Nguyen & Nguyen (2020); • Maryana & Carolina (2021);
4	Leverage	Total Debt of the total equity	• Leverage=Ln Total Debt of the total equity (The nature lograithm of total debt of the total equity); • Total Debt % of the total equity= (Long Term Debt+ Short Term Debt & Current Portion of Long Term Debt)/Common Equity*100	Firm-level Variable	Positive	• Nguyen & Nguyen (2020); • Maryana & Carolina (2021);
5	ESG Disclosure	ESG Score	An overall company score based on the self-reported information in the environmental, social and corporate governance pillars.	Firm-level Variable	Positive	• Soni (2023); • Radu et al. (2023);
6	Board Committee and Governance	Board Size	The number of the company's board members	Firm-level Variable	Positive	• Masud et al.(2018); • Mudiyanselage (2018); • Githaiga and Kosgei (2022);
7	Board Committee and Governance	Board Gender Diversity %	Percentage of female on the board	Firm-level Variable	Positive	• Fernandez-Feijoo et al. (2014); • Juwita & Honggowati, (2021);
8	Board Committee and Governance	Diversity Inclusion Rating (DIR) Diversity Score	Diversity category measures a company's commitment and effectiveness towards maintaining gender diverse workforce and board member cultural diversity	Firm-level Variable	Positive	• Ntim and Soobaroyen (2013)
9	Board Committee and Governance	Board Specific Skills %	Percentage of board members who have either an industry specific background or a strong financial background.	Firm-level Variable	Positive	• Naheed et al. (2021); • Wijayanti & Setiawan (2023);
10	Economic growth and development indicator	GDP per capital (Current US $)	• Gross domestic product (GDP) Per Capita- an econimic metric that measure a country's economic output in person; • Gross domestic product (GDP) Per Capita in the United States in current prices. It is caulculated by dividing the GDP of a nation by its population.	Country-Level Variable	Positive	• Bose and Khan (2021)
11	Country's Social Progress Index Indicator	Social Progress Index Score	A measurement that show how well a country meets its citizens' requirement for the social and environmental demands.	Country-Level Variable	Positive	N/A

Note: SDGs: Sustainable Development Goals; ESG: Environmental, social and Governance

The total original sample selected in this study from the top global stock exchange was 18,540 across five years from 2018 to 2022. The list of companies and their sustainability-related data had been collected from Refinitiv Data Scream. In contrast, other data for other variables related to country-level factors, including GDP per capita and social progress score, were extracted from the World Bank and Social Progress Index, respectively. However, quite a few companies still do not have financial and sustainability-related data information available in the Refinitiv DataStream, which might be either due to those selected companies not providing SDG information in the Refinitiv database or not reporting SDGs have To minimise possible sampling bias, e.g. missing data and data collected that did not accurately represent the correct information, those samples that did not have financial and sustainability-related data were mainly from Indonesia, India, and Russia. The current research excluded those selected samples from the analysis to narrow the data pool. Furthermore, during the data collection stage, we found a list of selected companies with system-missing data for SDG information. The system-missing data had been recoded into zero to indicate no reporting for SDGs, and this system-missing data is mainly for the year 2018. The sum-total score of 17 sustainable development goals is added for each selected company by adding the individual scores for each of the 17 goals in each year.

After this, the sample size was further narrowed by filter criteria, including 1). only selected cases with the natural log of total assets, the natural log of the total debtor of the total equity, the board size, diversity score, GDP per capita, social progress index score, and the total sum of 17 SDGs are more significant and not equal to zero. In the data cleaning section, we used the natural log of total assets and the natural log of total debtor of total equity as the proxies to measure the company's size and leverage rather than the total asset and debtor of the total equity. This allows obtaining more constant and normal distributed data and ensures current research modelling of data falls in the linear regression curved pattern; 2) excluding system missing data for return on equity total variable, board gender diversity percentages. Cases that fit the above criteria were only shortlisted and selected in the current analysis. This led to the exclusion of 8,777 cases from the original dataset chosen, leaving us with a final clean sample size of 9,763 across 26 countries. Among these observations of 9,763, 32.36% are United States firms, 9.98% are United Kingdom companies, 9.22% are Chinese companies, 7.18% are Indian companies, 4.66% are Australian companies and 4.02% are South African companies. The remaining 25.02% are companies from other countries (Table 5 and Figure 1). The sample of 9,763 includes 6,723 companies operating in the industrial sector, representing 68,9% of the observed population (Table 6), whereas the balance of 31.1% of the observed companies operating across other financial industries (9.70%), utility (7.40%), bank/saving & loan (7.0%), insurance (3.9%), transportation (3.10%), and non-classification industry (0%) respectively.

Table 5: Sample Companies Selected from Top Indices of the Global Stock Exchange Market:

Country/Exchange Market	Indices of the Global Stock Exchange	Count	Column N %
Australia	S&P/ASX 200	474	4.86%
Brazil	Brazil Bovespa Index	151	1.55%
Canada	TSX 60	212	2.17%
China	Shanghai Composite Index	900	9.22%
Germany	MDAX Index	181	1.85%
Hong Kong SAR, China	Hang Seng Index	180	1.84%
India	Sensex and Nifty	701	7.18%
Indonesia	Indonesia Inx Composite Index	84	0.86%
Japan	NIKKEI225	739	7.57%
Malaysia	FTSE BURSA MALAYSIA KLCI30	132	1.35%
New Zealand	S&P/NZX 50	201	2.06%
Russia	MICEX - RTS	79	0.81%
Singapore	Straits Times Index	87	0.89%
South Africa	FESE/JSE All Share	392	4.02%
South Korea	KOSPI 200	171	1.75%
United Kingdom, Belgium, France, Ireland, Italy, Luxembourg, Netherlands, Portugal	Euronext 150	497	5.09%
United Kingdom, Canada, Ireland, Spain	FTSE100	419	4.29%
United Kingdom, Belgium, France, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal	Euronext 100	429	4.39%
United Kingdom, Bermuda, Germany, Netherlands	FTSE250	575	5.89%
United States of America	S&P 400	1,307	13.39%
United States of America	S&P 500	1,852	18.97%
Total		**9,763**	**100.00%**

Figure 1: Sample Size Pie Chart of 26 Countries

Samples N %

- Australia 4.66%
- Belgium 0.95%
- Bermuda 0.05%
- Brazil 1.55%
- Canada 2.22%
- China 9.22%
- France 3.92%
- Germany 1.87%
- Hong Kong SAR, China 1.84%
- India 7.18%
- Indonesia 0.86%
- Ireland 0.44%
- Italy 2.09%
- Japan 7.59%
- Korea 1.75%
- Luxembourg 0.17%
- Malaysia 1.35%
- Netherlands 1.31%
- New Zealand 2.25%
- Norway 0.32%
- Portugal 0.32%
- Russia 0.81%
- Singapore 0.89%
- South Africa 4.02%
- Spain 0.04%
- United Kingdom 9.98%
- United States 32.36

Table 6: General Industry Classification

Industry Code	General Industry Classification Description	Count	%
01	Industrial	6,723	68.9%
02	Utility	723	7.4%
03	Transportation	298	3.1%
04	Bank/Saving & Loan	686	7.0%
05	Insurance	379	3.9%
06	Other Financial	950	9.7%
N/A	Non-classification	4	0.0%
Total		**9,763**	**100.0%**

Chapter Five: Data Analysis

5.1 Introduction to Chapter Five

The fifth Chapter discusses and presents the study's results to identify the significant determinants of sustainable development goals (SDGs) reporting across firm-level and country-level variables. The research results below aim to show whether the data support the hypothesis. This chapter is organized into six sections, which include 1) descriptive statistics analysis, 2) assumption test, 3) bivariate correlation analysis, and 4) Durbin-Watson Test for autocorrelation. 5) regression analysis and results, 6) discussion.

5.2 Descriptive Statistics & Univariate Analysis

Descriptive statistics for this study are shown in Table 7 to Table 14 and Figures 2 and 3. As presented in Table 7, the natural log of the total assets of the firm and the natural log of the total debt over total equity were used as a proxy to measure the size of the firm and the leverage of the firm respectively, due to those two variables had high skewness and kurtosis if the natural log figures were not used. The standard deviations for the natural log of total assets and the natural log of total debt of the total equity are 2.65 and 1.25, respectively. The result indicated that the data are closer to the means of 17.41 and 4.16. On average, the total reporting for 17 SDGs is only 4.58, revealing that most of the firms were not involved with 17 SDGs and reporting. This can also be seen in Table 8, which shows that 54.23% of the current research companies were not engaged with 17 SGDs or SDG reporting. On average, the lntotal asset for the sample companies was 17.41, this shows approximately 17.41% of the sample companies are involved with SDG. On average, the return on equity percentage for the sample companies is 22.04%, which indicates that around 22.04% of sample firms are engaged with SDG reporting. On average, the lntotal debt of total equity for the sample companies was 4.16%, which indicates the sample company's involvement with SDG reporting is only 4.16%. On average, the ESG score reporting for the sample companies was 58.29%; this result showed that approximately 58.29% of the sample companies self-reported and published information related to environmental, social, and corporate governance pillars on their company non-financial reports. Furthermore, the sample companies had an average of 10.50 members on the board, and 25.85% were female. The average value for the Diversity Including Rating (DIR) diversity score is 31.89%, indicating the sample company commit and maintains a gender-diverse workforce and board member cultural diversity was only 32%. On average, the board-specific skill percentage is 50.85% in the sample firms, which indicates that more than 50% of selected companies' board members have an industry-specific or financially solid background. On average, the study

Table 7: Descriptive Statistical Analysis:

Variable	Sample N	Minimum	Maximum	Mean	SD (σ)	Median	Skewness	Kurtosis
Total of 17 SDGs	9763	0.00	17.00	4.58	5.71	0.00	0.80	-0.81
lnTotal asset	9763	9.87	28.31	17.41	2.65	16.95	0.86	0.72
Return on equity %	9763	-625.68	31560.00	22.04	361.37	11.91	74.89	6189.40
lnTotal Debt of the total equity	9763	0.00	10.65	4.16	1.25	4.25	-0.46	1.15
ESG Score	9763	4.19	95.91	58.29	18.37	60.30	-0.40	-0.52
Board Size	9763	2.00	138.00	10.50	3.39	10.00	8.32	261.05
Board Gender Diversity %	9763	2.56	75.00	25.85	12.07	25.00	0.41	-0.36
DIR Diversity Score	9763	0.00	81.00	31.89	14.36	31.00	0.24	-0.42
Board Specific Skills %	9763	0.00	100.00	50.85	19.18	50.00	-0.15	-0.14
GDP per capita (Current US$)	9763	1913.22	133,590.15	42,831.95	23,593.49	45,850.43	-0.37	-0.85
Social Progress Index Score	9763	56.26	92.73	81.18	10.16	85.71	-1.14	-0.25

Table 8: Frequency of subtotal of 17 SDGs

A total of 17 SDGs		
Valid	**Frequency**	**Per cent**
0	5294	54.23%
1	44	0.45%
2	35	0.36%
3	129	1.32%
4	173	1.77%
5	273	2.80%
6	383	3.92%
7	363	3.72%
8	342	3.50%
9	366	3.75%
10	371	3.80%
11	349	3.57%
12	337	3.45%
13	305	3.12%
14	236	2.42%
15	201	2.06%
16	136	1.39%
17	426	4.36%
Total	**9763**	**100.00%**

Figure 2: The distribution of Subtotal 17 SDGs:
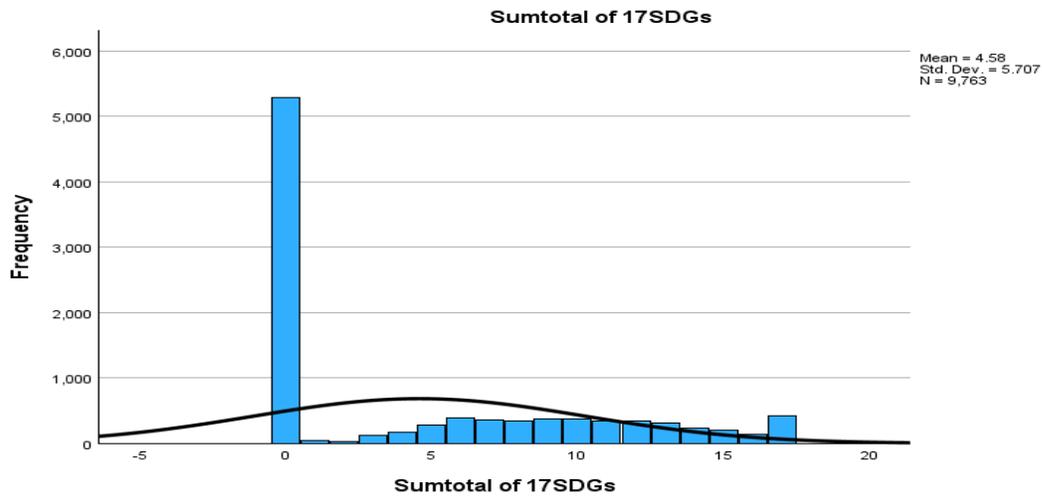
observations had 81.18% for the social progress index score, meaning that the selected countries in the current research provided their citizens' social and environmental needs were significantly high.

Table 9 presents a detailed analysis of SDGs in corporate reporting against each goal. In Table 9, SDGs' detailed information is listed in the first column, and the frequency of firms that reported or did not publish the SDG information and its associated percentage of the total sample are presented in the following two columns. The final column, "SDG report %", presented the percentage for reporting SDG information for each SDG. The result showed that only 44,722 observations out of the total 165,971 reported relevant SDG information across each of the 17 SDGs, representing 27% of the total samples. The reporting percentage across those 17 SDGs was around 5.90%. The result of this table proved that SDG 13, focused on climate action, is the most popular SDG being reported by selected sample companies, representing 8.8% of the total reporting sample of the research. This result was inconsistent with Izzo et al. (2020a) and Buniamin et al. (2020), who reported that SDG 8, concerned with economic growth and improvement, was the most reported SDG in their research. SDG 8, which is concentrated on decent work and economic development, is the second most popular SDG goal being reported by selected sample companies, representing 8.7 % of the total reporting sample of the research. The third most reported SDG was SDG 12, which relates to responsible consumption and production and accounts for 7.9% of the total reported sample. SGD3, focused on good health and well-being, and SDG 5, focused on gender equality, were the fourth and fifth most reported SDGs, accounting for 7.4% and 7.3% of the total reported sample, respectively. Following this, SDG7 affordable and clean energy, SDG9 industry, innovation, and infrastructure, and SDG4 quality education were the next three most engaged and reported SDG goals, representing 6.80%, 6.60%, and 6.40% of the total sample, respectively. The rest of the 9 SDGs' reporting percentages are below 6%, ranging from 2.90% to 5.7%. The three lowest SDGs reported were SDG 14, life below water (2.9%), SDG 2, zero hunger (3.1%), and SDG 1, no poverty (3.7%), this is partially in line with the research finding published by Buniamin et al. (2020) who confirmed SDG14 and SDG 2 were the lowest involvement of SDG goals, and the reporting percentage was also similar at 3%. In addition, our results show that there is priority being placed most focus on SDG 13, 8, and 12 but less on SDG 14 and 1,2, which aligns with the findings presented by Hatayama (2022). Furthermore, our findings supported Islam & Rahman's (2023) research that there is an imbalance in development and focus across 17 sustainability development goals.

Table 10 represents the total sum of 17 SDG reporting in different industries from 2018 to 2022. This table shows an increasing trend for the 17 SDG reporting for most industries from 2018 to 2022, except

for the banking, saving, and loan industries. The 17 SDG reporting for the Bank, saving, and Loan industry increased from 2018 to 2019, remained unchanged from 2019 to 2021, and decreased in 2022.

Table 9: Frequency of individual 17 SDGs reporting

SDGs Detail	Frequency		Total N	Percentage		Total %	SDG Report %
	0	1		0	1		
SDG 1 No Poverty	8,100	1,663	9,763	83%	17%	100%	3.7%
SDG 2 Zero Hunger	8,380	1,383	9,763	86%	14%	100%	3.1%
SDG 3 Good Health and Well-being	6,446	3,317	9,763	66%	34%	100%	7.4%
SDG 4 Quality Education	6,892	2,871	9,763	71%	29%	100%	6.4%
SDG 5 Gender Equality	6,508	3,255	9,763	67%	33%	100%	7.3%
SDG 6 Clean Water and Sanitation	7,603	2,160	9,763	78%	22%	100%	4.8%
SDG 7 Affordable and Clean Energy	6,714	3,049	9,763	69%	31%	100%	6.8%
SDG 8 Decent Work and Economic Growth	5,866	3,897	9,763	60%	40%	100%	8.7%
SDG 9 Industry, Innovation, and Infrastructure	6,814	2,949	9,763	70%	30%	100%	6.6%
SDG 10 Reduced Inequality	7,272	2,491	9,763	74%	26%	100%	5.6%
SDG 11 Sustainable Cities and Communities	7,201	2,562	9,763	74%	26%	100%	5.7%
SDG 12 Responsible Consumption and Production	6,222	3,541	9,763	64%	36%	100%	7.9%
SDG 13 Climate Action	5,823	3,940	9,763	60%	40%	100%	8.8%
SDG 14 Life Below Water	8,460	1,303	9,763	87%	13%	100%	2.9%
SDG 15 Life on Land	7,687	2,076	9,763	79%	21%	100%	4.6%
SDG 16 Peace and Justice Strong Institutions	7,733	2,030	9,763	79%	21%	100%	4.5%
SDG 17 Partnerships to Achieve the Goal	7,528	2,235	9,763	77%	23%	100%	5.0%
Total		**44,722**	**165,971**				**100.0%**

Table 10: Total of 17 SDGs reporting from 2018 to 2022

Sub Total of 17 SDGs					
General Industry Classification Description	**2018 Mean**	**2019 Mean**	**2020 Mean**	**2021 Mean**	**2022 Mean**
Bank/Savings & Loan	0	7	7	7	-
Industrial	0	4	6	7	7
Insurance	0	3	5	7	8
Other Financial	0	4	6	7	8
Transportation	0	2	4	5	6
Utility	0	4	6	8	10

Table 11: 17 SDGs report in the different industries

SDG	Report or not	Industrial	Utility	Other Financial	Bank, Savings, Loan	Transportation	Insurance
SDG1	Yes	3%	4%	3%	6%	2%	6%
SDG2	Yes	3%	2%	2%	3%	1%	3%
SDG3	Yes	8%	6%	8%	6%	8%	9%
SDG4	Yes	6%	7%	6%	8%	6%	6%
SDG 5	Yes	7%	7%	8%	7%	8%	8%
SDG 6	Yes	5%	4%	4%	3%	3%	3%
SDG 7	Yes	6%	9%	8%	8%	7%	7%
SDG 8	Yes	9%	9%	9%	9%	9%	9%
SDG 9	Yes	6%	9%	6%	7%	8%	6%
SDG 10	Yes	5%	5%	6%	7%	6%	6%
SDG 11	Yes	5%	7%	8%	7%	7%	6%
SDG 12	Yes	8%	7%	8%	6%	7%	6%
SDG 13	Yes	9%	9%	10%	8%	9%	9%
SDG 14	Yes	3%	3%	1%	2%	4%	2%
SDG 15	Yes	5%	5%	3%	3%	5%	4%
SDG 16	Yes	5%	4%	5%	5%	4%	5%
SDG 17	Yes	5%	5%	4%	4%	5%	5%
Total		**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 12: The number of Individual SDGs reported by firms in different countries

Country/Region	SDG1	SDG2	SDG3	SDG4	SDG5	SDG6	SDG7	SDG8	SDG9	SDG10	SDG11	SDG12	SDG13	SDG14	SDG15	SDG16	SDG17	Total
	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	
Australia	42	27	116	84	133	59	103	154	87	75	97	137	154	23	80	80	69	1520
Belgium	12	11	51	48	33	27	51	55	41	31	37	51	58	18	26	26	36	612
Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	57	46	77	70	75	63	78	91	74	71	56	88	89	36	63	63	60	1157
Canada	34	36	78	62	105	48	77	107	70	61	62	72	104	18	54	54	54	1096
China	182	117	219	186	192	118	172	220	202	146	168	209	216	86	113	113	181	2840
France	94	67	184	176	211	124	175	214	166	160	145	215	233	92	153	153	133	2695
Germany	15	9	66	68	69	39	53	84	70	43	35	89	100	17	36	36	52	881
HK, China	46	31	74	73	56	52	82	93	72	58	75	84	94	35	48	48	50	1071
India	181	153	252	236	240	221	216	260	218	206	172	236	238	70	144	144	157	3344
Indonesia	40	36	54	56	34	35	41	52	46	39	39	40	44	26	40	40	33	695
Ireland	11	13	17	11	11	10	16	15	16	11	16	15	17	9	9	9	9	215
Italy	63	38	96	115	117	64	117	134	98	82	98	126	125	45	60	60	82	1520
Japan	160	165	399	306	374	261	413	428	425	305	387	426	462	240	313	313	349	5726
Korea	65	41	106	112	101	61	102	120	80	75	62	105	118	38	56	56	70	1368
Luxembourg	2	2	12	10	11	10	9	10	12	6	11	11	11	8	6	6	6	143
Malaysia	39	23	60	71	54	33	54	80	65	49	40	74	72	26	36	36	33	845
Netherlands	10	12	53	24	33	13	44	59	45	16	23	62	56	9	18	18	17	512
New Zealand	6	3	60	25	43	15	35	63	41	27	36	62	65	21	19	19	24	564
Norway	7	8	8	13	16	4	13	21	18	14	6	16	20	16	5	5	15	205
Portugal	13	9	14	18	22	3	22	24	15	12	12	20	24	10	19	19	16	272
Russia	13	10	38	41	22	30	36	49	41	21	28	43	42	7	28	28	34	511
Singapore	17	19	53	41	29	23	58	68	59	31	44	50	63	19	33	33	37	677
South Africa	99	74	141	147	134	121	112	177	117	100	95	136	164	37	82	82	106	1924
Spain	0	0	3	3	3	0	3	3	3	0	3	3	3	0	0	0	0	27
United Kingdom	152	118	365	271	372	182	289	452	263	290	259	395	459	135	228	228	205	4663
USA	303	315	721	604	765	544	678	864	605	562	556	776	909	262	407	407	407	9685

Table 13: The percentage of individual SDGs reported by firms in different countries

Country/Region	SDG1	SDG2	SDG3	SDG4	SDG5	SDG6	SDG7	SDG8	SDG9	SDG10	SDG11	SDG12	SDG13	SDG14	SDG15	SDG16	SDG17	
	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	Total
Australia	3%	2%	8%	6%	9%	4%	7%	10%	6%	5%	6%	9%	10%	2%	5%	5%	5%	**100%**
Belgium	2%	2%	8%	8%	5%	4%	8%	9%	7%	5%	6%	8%	9%	3%	4%	4%	6%	**100%**
Bermuda	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**
Brazil	5%	4%	7%	6%	6%	5%	7%	8%	6%	6%	5%	8%	8%	3%	5%	5%	5%	**100%**
Canada	3%	3%	7%	6%	10%	4%	7%	10%	6%	6%	6%	7%	9%	2%	5%	5%	5%	**100%**
China	6%	4%	8%	7%	7%	4%	6%	8%	7%	5%	6%	7%	8%	3%	4%	4%	6%	**100%**
France	3%	2%	7%	7%	8%	5%	6%	8%	6%	6%	5%	8%	9%	3%	6%	6%	5%	**100%**
Germany	2%	1%	7%	8%	8%	4%	6%	10%	8%	5%	4%	10%	11%	2%	4%	4%	6%	**100%**
Hong Kong SAR, China	4%	3%	7%	7%	5%	5%	8%	9%	7%	5%	7%	8%	9%	3%	4%	4%	5%	**100%**
India	5%	5%	8%	7%	7%	7%	6%	8%	7%	6%	5%	7%	7%	2%	4%	4%	5%	**100%**
Indonesia	6%	5%	8%	8%	5%	5%	6%	7%	7%	6%	6%	6%	6%	4%	6%	6%	5%	**100%**
Ireland	5%	6%	8%	5%	5%	5%	7%	7%	7%	5%	7%	7%	8%	4%	4%	4%	4%	**100%**
Italy	4%	3%	6%	8%	8%	4%	8%	9%	6%	5%	6%	8%	8%	3%	4%	4%	5%	**100%**
Japan	3%	3%	7%	5%	7%	5%	7%	7%	7%	5%	7%	7%	8%	4%	5%	5%	6%	**100%**
Korea	5%	3%	8%	8%	7%	4%	7%	9%	6%	5%	5%	8%	9%	3%	4%	4%	5%	**100%**
Luxembourg	1%	1%	8%	7%	8%	7%	6%	7%	8%	4%	8%	8%	8%	6%	4%	4%	4%	**100%**
Malaysia	5%	3%	7%	8%	6%	4%	6%	9%	8%	6%	5%	9%	9%	3%	4%	4%	4%	**100%**
Netherlands	2%	2%	10%	5%	6%	3%	9%	12%	9%	3%	4%	12%	11%	2%	4%	4%	3%	**100%**
New Zealand	1%	1%	11%	4%	8%	3%	6%	11%	7%	5%	6%	11%	12%	4%	3%	3%	4%	**100%**
Norway	3%	4%	4%	6%	8%	2%	6%	10%	9%	7%	3%	8%	10%	8%	2%	2%	7%	**100%**
Portugal	5%	3%	5%	7%	8%	1%	8%	9%	6%	4%	4%	7%	9%	4%	7%	7%	6%	**100%**
Russia	3%	2%	7%	8%	4%	6%	7%	10%	8%	4%	5%	8%	8%	1%	5%	5%	7%	**100%**
Singapore	3%	3%	8%	6%	4%	3%	9%	10%	9%	5%	6%	7%	9%	3%	5%	5%	5%	**100%**
South Africa	5%	4%	7%	8%	7%	6%	6%	9%	6%	5%	5%	7%	9%	2%	4%	4%	6%	**100%**
Spain	0%	0%	11%	11%	11%	0%	11%	11%	11%	0%	11%	11%	11%	0%	0%	0%	0%	**100%**
United Kingdom	3%	3%	8%	6%	8%	4%	6%	10%	6%	6%	6%	8%	10%	3%	5%	5%	4%	**100%**
United States of America	3%	3%	7%	6%	8%	6%	7%	9%	6%	6%	6%	8%	9%	3%	4%	4%	4%	**100%**

Table 11 presents the 17 individual SDGs reported in different industries. This result shows that firms in the Industrial Sector report more information on SDG 8-decent work and economic growth (9%), SDG 12- responsible consumption and production (8%), and SDG 13-climate action (9%), compared to other individual goals. Firms in the Utility Sector report more on SDG 8 (9%), SDG 9-industry, innovation, and infrastructure (9%), and SDG 13 (9%) compared to other individual goals. Firms in the Other Financial Sector focus more on SDG (9%), SDG 11 (8%), and SDG 13 (10%). Companies in the Bank, savings, and loan sectors report more information on SDG 4 quality education (8%), SDG 8 (9%), and SDG 13 (9%). Companies in the Transportation Sector report more information on SDG 5-Gender equality (8%), SDG 8- (9%), and SDG 13 (9%). Companies in the Insurance Sector report more information on SDG 3, good health, and wellbeing (9%), SDG 8 (9%), and SDG 13 (9%). Thus, SDG 8-decent work, economic growth, and SDG 13-climate action, are the common top two goals across 17 SDGs, which all industries have reported.

Tables 12 and 13 represent how the firms in different countries report across the 17 individual SDGs. The finding shows that most of the firms in different countries tend to focus on SDG 8 decent work and economic growth and SDG 13 climate action, except for the firms in India and Indonesia. The average for the reporting and involvement in SDG 8 and SDG 13 is around 9%. Compared to firms in other countries, companies in India focus on SDG 3, good health and well-being, and SDG 8- decent work and economic growth, whereas companies in Indonesia tend to focus on SDG 3 and SDG 4 -quality education. Therefore, developing countries tend to focus on the basic SDGs, such as good health and quality education, whereas developed countries focus more on decent work, economic growth, and climate action.

5.3. Assumption Test

The skewness and kurtosis statistics of the variables were tested. The variables included total assets, total debt of the total equity, return on equity total percentage, subtotal of 17 SDGs, ESG score, board size, board gender diversity, DIR diversity score, board-specific skills percentage, GDP per capital and social progress index score, to ensure the performance of a normality test. The skewness and kurtosis test was conducted to see whether the skewness and kurtosis guidelines were within the acceptable limitations. In a general view, a violation of normality is typically considered within acceptable limits if the skewness and kurtosis values are ±2.0 (Hair et al., 2010; Trochim & Donnelly, 2006; Field, 2000; Gravetter & Wallnau, 2014).

The skewness is a measure that describes the degree of asymmetry of the probability distribution compared to its mean, whereas the kurtosis is a measurement that represents the degree of presence of outliers, and it measures the peakness of the distribution relative to a normal distribution. There are three types of skewness, which are positive skewness, negative skewness, and undefined or normal skewness. Positive skewness occurs when a distribution skewed to the right has a longer tail on the right-hand side of the curve than its left, and the distribution's mean is higher or more significant than its mode. Negative shew occurs when a distribution skewed to the left has a longer tail on the left-hand side of the curve than its right, and the distribution's mean is lower than its mode. Undefined or normal skewness occurs when the tails of a distribution are exactly balanced on both sides of the curve. Generally, normal skewness has a zero skewness value, and the distribution means equal to its mode and median., and is symmetric around its mean.

Table 7 shows the skewness and kurtosis statistics for all variables relative to sustainable development goals in the current research. The skewness and kurtosis for subtotal 17 SDGs are +0.80 and -0.81, respectively. It indicates that the subtotal of 17 SDGs has a long-right tail, meaning its positive skewness, due to its mean of 4.58 being more significant than the median of zero. The kurtosis for subtotal 17 SDGs indicates it is platyturtic kurtosis, due to its kurtosis value being -0.81, meaning it has fewer observations with lower values below the sample average. Since skewness and kurtosis are within the acceptable limitation range ±2.0, the data shows that this distribution is considered normal. For the variable of total assets, the skewness and kurtosis are +0.86 and +0.72, respectively, indicating the total asset variable is positive skewness and playtykurtic, which shows this distribution for total assets is normal due to both skewness and kurtosis are within the acceptable limitation range ±2.0. The total debt of the equity's skewness and kurtosis are -0.46 and +1.15, respectively, and they are within the acceptable limitation of normality of ±2.0. The results indicate that the total debt of the total equity has a long left tail, meaning its negative skewness, due to its mean of 4.16 being slightly more significant than the median of 4.25. The kurtosis for a total debt of the total equity is platyturtic kurtosis due to its kurtosis value of 1.15 being less than 2.0. For the variable of return on equity percentage, the skewness and kurtosis are +74.89 and +6189.40, respectively, indicating the total asset variable is positive skewness and leptokurtic due to both skewness and kurtosis are higher than the acceptable limitation range ±2.0. This tells that it has more value above the sample average for both skewness and kurtosis. This characteristic is reflected in the return on equity percentage by showing a maximum value of 31,560 but a mean value of 22.04. Board size is another variable that has positive skewness and leptokurti. Board size's skewness and kurtosis are +8.32 and +261.05, respectively, which are higher than its mean value of +3.39 and the normalised acceptable limitation range ±2.0. This might be because this variable has a maximum value of 138,

whereas its mean value is only 10.00. Given the return of equity and board size are highly skewed, the log nature of ROE and board size was to re-test the skewness and kurtosis in the regression. Quatiantively, the results do not change. Furthermore, this characteristic can be seen in Table 14 and Figure 3. From Figure 3, the reason for the higher kurtosis of the data would be that more than 46.8% of the observations have board sizes that are higher than the size 10.00. The result of current tests indicates GDP per capita's skewness and kurtosis is within -0.37 and -0.85, ESG score is within -0.40 and -0.52, board-specific skills percentage is within -0.15 and -0.14, and social progress index score is within -1.14 and -0.25, all those results show those distributions were normal. For the board gender diversity percentage and DIR diversity score, the skewness and kurtosis for the former variable are +0.41 and -0.36, whereas the skewness and kurtosis for the latter are +0.24 and -0.42, respectively. They are all positive skewness and playturtic.

In summary, the result of the test for the skewnesses of the variables indicates that variables including sub-total 17 SGDs, total asset, return on equity percentage, board size, board gender diversity percentage, and DIR diversity score appear to be significantly skewed to the right with a positive skewness. In contrast, the rest of the tested variables, including the total debit of the total equity, ESG score, board-specific skills percentage, GDP per capita (current US $), and social progress index score, were significantly skewed to the left with negative skewness. Regarding the kurtosis for all variables, the data shows that most of the variables are playturtic kurtosis except for four variables, including total asset, total debt of the total equity, return on equity percentage, and board size, due to their kurtosis values are lower than the normal distribution. If the variables' skewness and kurtosis values are high, we can compute the natural logs of the variables to ensure their figures are set within the normal distribution range. In the current study, we computer the natural logs for the total asset and total debt of the total equity.

Table 14: Frequency of Board Size:

Board Size		
Valid	**Frequency**	**Per cent**
2.0	2	0.02%
3.0	13	0.13%
4.0	38	0.39%
5.0	164	1.68%
6.0	433	4.44%
7.0	776	7.95%
8.0	1016	10.41%
9.0	1453	14.88%
10.0	1289	13.20%
11.0	1371	14.04%
12.0	1143	11.71%
13.0	755	7.73%
14.0	465	4.76%
15.0	332	3.40%
16.0	211	2.16%
17.0	126	1.29%
18.0	66	0.68%
19.0	37	0.38%
20.0	28	0.29%
21.0	12	0.12%
22.0	11	0.11%
23.0	6	0.06%
24.0	2	0.02%
25.0	1	0.01%
27.0	1	0.01%
28.0	3	0.03%
29.0	1	0.01%
30.0	3	0.03%
34.0	1	0.01%
39.0	1	0.01%
70.0	1	0.01%
98.0	1	0.01%
138.0	1	0.01%
Total	**9763**	**100.00%**

Figure 3: The distribution of Board Size:
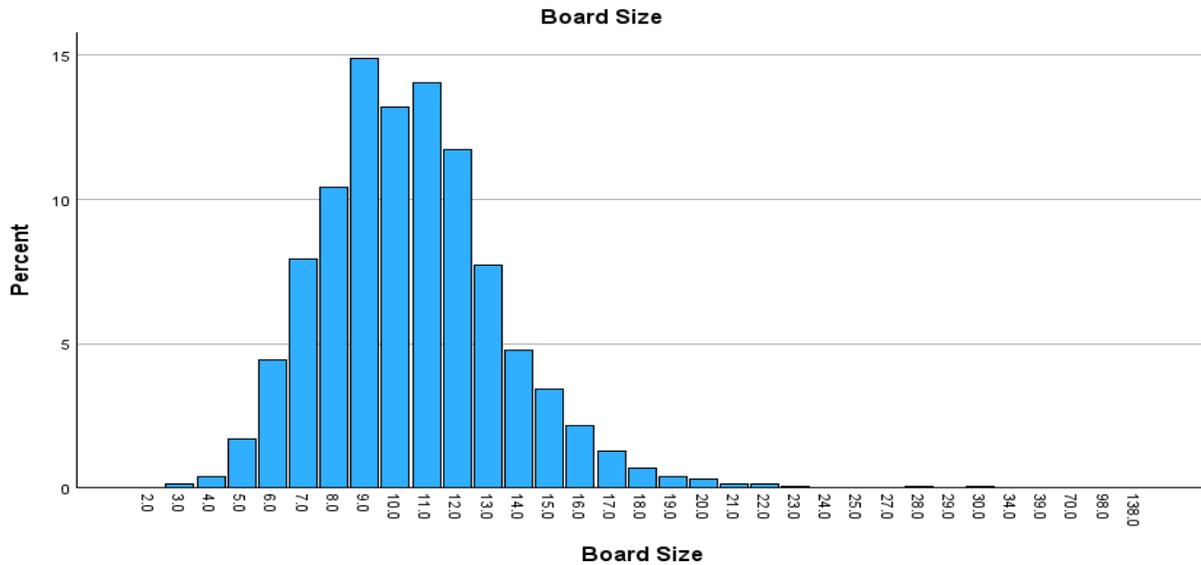
5.4. Bivariate Correlation Analysis

In regression analysis, it is evident that there are associations between the dependent variable and one or more independent variables. However, a high association between one independent variable and one or more additional independent variables would lead to a significantly sizeable standard error with other things being unchanged. This is mainly because the partial regression coefficient is unstable and will change dramatically between samples. This would cause problematic issues and produce unreasonable results due to the unreliability of the regression data from the observation samples. When there is a strong link between one independent variable and one or more additional independent variables in the multiple regression equation, this phenomenon is widely known as multicollinearity (Shrestha, 2020). There are many techniques in the regression analysis for detecting multicollinearity, including using 1) Correlation coefficient, 2) Variance inflation factor (VIF), and 3) Eigenvalue method (Shrestha, 2020).

5.4.1 Bivariate Correlation Coefficients

Table 15 presents the detailed correlation coefficient between all the tested variables and the total of 17 sustainable development goals. Bivariate correlation studies can demonstrate the relationship between two variables. Creating a correlation table is an essential first step in conducting a successful regression analysis, as the correlation table presents the correlation matrix used to measure the relationship between two variables (Field, 2013). In the Linear Regression, the correlation coefficients between the model's independent variables are determined by the correlation matrix, and the correlation coefficients typically

vary between -1 and +1 (Field, 2013). If the correlation coefficient is 0, it means there is no relationship exists between the two variables (Field, 2013). This means that one variable will stay the same as the other changes. If the correlation coefficient is +1, it indicates a positive correlation between two variables (Field, 2013). This means that one variable will increase as the other increases. If the correlation coefficient is -1, it indicates a negative correlation between two variables (Field, 2013). This means that one variable will decrease as the other increases.

Table 15 shows that total 17 SDG is significantly positively correlated with total asset (r=.27, p<.01), total debt of the total equity (r=.05,p<.01), ESG score (r=.42, p<.01), and board size (r=.09, p<.01), board gender diversity percentage (r=.07, p<.01), DIR diversity score (r=.31, p<.01), and social progress index score (r=.04, p<.01) in this research, as they are at the p<.01 level. While the total 17 SDG was not significantly correlated with the return on equity percentage (r=-.01, non-significant), it is at the p<.01 level. Furthermore, the total of 17 SDG is significantly negatively correlated with board-specific skills (r=-.07,p<.01) and GDP per capita (current US $) (r=-.09, p<.01) in this study, as they are at the p<.01 level.

Regarding the individual 17 SDGs, Table 16 shows the correlation between individual SDGs with film-level and country-level determinants. The results show that total asset, ESG score, board size, and DIR diversity score are significantly positively correlated to all 17 individual SDGs, and all other determinants are not consistently correlated with each SDG. Therefore, it is noted that not all SDGs are impacted in the same manner.

Table 15: Correlation Coefficients:

No.	Variable Name	M	SD (σ)	1	2	3	4	5	6	7	8	9	10	11
1	Total 17 SDGs	4.58	5.71	1										
2	lnTotal asset	17.42	2.65	0.27**	1									
3	Return on equity %	22.04	361.37	-0.01	-0.01	1								
4	lnTotal Debt of the total equity	4.16	1.25	0.05**	0.19**	0.06**	1							
5	ESG Score	58.29	18.37	0.42**	0.21**	0.02*	0.12**	1						
6	Board Size	10.5	3.39	0.09**	0.26**	0.00	0.16**	0.18**	1					
7	Board Gender Diversity %	25.85	12.07	0.07**	-0.34**	0.01	0.05**	0.30**	-0.03*	1				
8	DIR Diversity Score	50.85	19.18	0.31**	0.01	0.00	0.08**	0.58**	0.07**	0.48**	1			
9	Board Specific Skills %	31.89	14.36	-0.07**	-0.04**	0.01	-0.07**	-0.03**	-0.07**	-0.09**	-0.09**	1		
10	GDP per capita (Current US$)	42,831.95	23,593.49	-0.09**	-0.34**	0.02*	0.08**	0.20**	0.01	0.25**	0.17**	0.17**	1	
11	Social Progress Index Score	81.18	10.16	0.04**	-0.27**	0.01	0.07**	0.29**	-0.03**	0.31**	0.38**	0.04**	0.75**	1

Note: N= 9,763;

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

Table 16: Correlations for individual 17 SDGs.

Detail	lnTotal asset	lnReturn on equity %	Total Debt of the total equity	ESG Score	Board Size	Board Gender Diversity %	DIR Diversity Score	Board Specific Skills %	GDP per capita (Current US$)	Social Progress Index Score
SDG 1	0.25**	-0.01	0.05**	0.24**	0.08**	0.02	0.16**	-0.05**	-0.15**	-0.10**
SDG 2	0.18**	-0.01	0.04**	0.21**	0.05**	0.00	0.13**	-0.01	-0.09**	-0.06**
SDG 3	0.20**	-0.01	0.00	0.35**	0.06**	0.07**	0.26**	-0.05**	-0.07**	0.04**
SDG 4	0.24**	-0.01	0.04**	0.33**	0.09**	0.06**	0.24**	-0.09**	-0.11**	-0.01
SDG 5	0.18**	0.00	0.06**	0.37**	0.08**	0.13**	0.31**	-0.07**	-0.04**	0.07**
SDG 6	0.18**	-0.01	0.00	0.32**	0.06**	0.03*	0.19**	-0.03**	-0.08**	-0.03**
SDG 7	0.25**	-0.01	0.07**	0.35**	0.08**	0.06**	0.27**	-0.05**	-0.05**	0.06**
SDG 8	0.20**	-0.01	0.04**	0.40**	0.07**	0.10**	0.32**	-0.07**	-0.06**	0.07**
SDG 9	0.24**	-0.01	0.04**	0.33**	0.07**	0.02*	0.23**	-0.06**	-0.07**	0.03**
SDG10	0.21**	-0.01	0.05**	0.33**	0.07**	0.08**	0.25**	-0.05**	-0.06**	0.02*
SDG11	0.23**	-0.01	0.07**	0.31**	0.07**	0.04**	0.23**	-0.02*	-0.04**	0.05**
SDG12	0.16**	-0.01	0.03**	0.39**	0.06**	0.10**	0.29**	-0.08**	-0.05**	0.07**
SDG13	0.20**	-0.01	0.05**	0.42**	0.09**	0.13**	0.34**	-0.07**	-0.02*	0.10**
SDG14	0.18**	-0.01	0.05**	0.24**	0.06**	0.01	0.17**	-0.03**	-0.03**	0.05**
SDG15	0.19**	0.00	0.03**	0.29**	0.06**	0.04*	0.22**	-0.04**	-0.07**	0.05**
SDG16	0.21**	-0.01	0.04**	0.27**	0.07**	0.02	0.20**	-0.07**	-0.07**	0.02*
SDG17	0.23**	-0.01	0.03**	0.30**	0.08**	0.03*	0.22**	-0.07**	-0.09**	0.02

Note: N= 9,763;

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

Table 17: Model Summary:

<table>
<tr><th colspan="11">Model Summary</th></tr>
<tr><th rowspan="2">Model</th><th rowspan="2">R</th><th rowspan="2">R Square</th><th rowspan="2">Adjusted R Square</th><th rowspan="2">Std. Error of the Estimate</th><th colspan="5">Change Statistics</th><th rowspan="2">Dubin-Watson</th></tr>
<tr><th>R Square Change</th><th>F Change</th><th>df1</th><th>df2</th><th>Sig. F Change</th></tr>
<tr><td>1</td><td>0.633[a]</td><td>0.400</td><td>0.399</td><td>4.424</td><td>0.400</td><td>325.381</td><td>20</td><td>9742</td><td><.001</td><td>1.840</td></tr>
<tr><td colspan="11">a. Predictors: (Constant), Y2022, Bank_Savings_Loan, Board Specific Skills, Percent score, Return on equity- Total (%), Transportation, Insurance, ESG Score, Utility, Other_Financial, Y2018, Board Size, GDP per capita (current US$), lnTotalDebtofthetotalequity, Y2019, Board Gender Diversity, Percent, Y2021, DIR Diversity Score, lnTotalAsset, Social Progress Index Score, Industrial;
b. Dependent Variable: Total of 17SDGs</td></tr>
</table>

Table 18: ANOVA Table:

<table>
<tr><th colspan="7">ANOVA[a]</th></tr>
<tr><th>Model</th><th></th><th>Sum of Squares</th><th>df</th><th>Mean Square</th><th>F</th><th>Sig.</th></tr>
<tr><td>1</td><td>Regression</td><td>127351.644</td><td>20</td><td>6367.582</td><td>325.381</td><td><.001b</td></tr>
<tr><td></td><td>Residual</td><td>190647.423</td><td>9742</td><td>19.570</td><td></td><td></td></tr>
<tr><td></td><td>Total</td><td>317999.067</td><td>9762</td><td></td><td></td><td></td></tr>
<tr><td colspan="7">a. Dependent Variable: total of 17SDGs</td></tr>
<tr><td colspan="7">b. Predictors: (Constant), Y2022, Bank_Savings_Loan, Board Specific Skills, Percent score, Return on equity- Total (%), Transportation, Insurance, ESG Score, Utility, Other_Financial, Y2018, Board Size, GDP per capita (current US$), lnTotalDebtofthetotalequity, Y2019, Board Gender Diversity, Percent, Y2021, DIR Diversity Score, lnTotalAsset, Social Progress Index Score, Industrial</td></tr>
</table>

5.4.2 Variance inflation Factor (VIF)

Multicollinearity will exist when one independent variable is associated with one or more other independent variables in the multiple regression equation. As a result, the standard error of independent coefficients will rise, and the coefficient variable will increase. Daoud (2017) stated that the variance inflation factor is the measurement tool to show how much the variance of the predicted regression coefficient is inflated when the independent variances are relative in the multiple regression equation. The calculation of VIF is listed as follows:

$$VIF = 1/(1-R^2) = 1/\text{Tolerance}$$

Where the tolerance is the opposite value of VIF, which highlights that the lower the tolerance value, the more likely multicollinearity exists among the independent variables (Shrestha, 2020). AnnMaria (2012) mentioned that a multicollinearity issue exists when the tolerance value is below 0.20, which means the R squared value is above 0.80. When VIF =1, this means all the independent variables are not linked to each other. When the VIF value is more significant than one and less than 5 (1 < VIF < 5), the independent variables are moderately associated. When the VIF value is greater than 5, it indicates that the independent variables are highly correlated (Daoud, 2017).

Table 17, model summary, presents the results for R and R-squared values, respectively. From this table, we can tell that the value of R is 0.633, whereas the adjusted R-squared is 0.400. Given that the adjusted R squared is less than 0.80, it indicates a good level of prediction and shows no multicollinearity problem here. In addition, R= 0.633 means independent variables had a positive correlation. The R^2=0.400 illustrates that the independent variables can only account for 40.0% of the changes in the dependent variable of the total sum of 17 SDGs, whereas the remaining 60.0% could not be explained. There was a slightly 0.1% (=40.0%- 39.9%) discrepancy between the R^2 value and the adjusted R^2 value, showing that roughly 0.1% less variance in the result would be explained if the model derived from the population oppositive to a sample. The f-value in an ANOVA indicates the model's statistical significance. It is shown in Table 18. The F-value of 325.38 in this case is considered statistically significant since p < 0.001, and it is evident that the analysis of these results was not the result of random chance. Thus, the overall regression was statistically significant (R^2 = 0.400, F (20, 9742) = 325.38, p = < .001).

Furthermore, from the regression coefficients Table 19, the values of VIF across all the independent variables, including lnTotal Assets, lnTotal Debt of the total equity, return on equity total percentage, ESG score, board size, board-specific skills percentage score, board gender diversity percentage, DIR

diversity score were range between 1.0 and 2.87, which are more significant than one and less than 5, indicating those independent variables were moderately associated with each other. Those small values for VIF and the standard error of coefficients corresponding to the variables specify that the collinearity problem does not exist.

5.4.3 Eigenvalue Method

Multicollinearity can also be detected by using the eigenvalue method. Shrestha (2020) stated that the eigenvalue represents the variance of the linear combination of the variable, and the eigenvalue is usually shown as the dimension and determined by the condition index. Shrestha (2020) commented that a multicollinearity problem will exist if the eigenvalue condition index exceeds 15. The results of the eigenvalue and condition index for the current research indicate they are all less than 15. Therefore, no evidence showing multicollinearity might exist for this research model.

5.5. Durbin-Watson Test for autocorrelation

The Durbin-Watson Test measures the autocorrelation in residuals during regression analysis. The low autocorrelation in residuals in the current analysis means that some underlying reason is not driving the dependent and independent variables, e.g. SDG score and an independent variable are being caused by a variable omitted from the research model. In general, Durbin-Watson test values typically range from 0 to 4. When the Durbin-Watson value is equal to 2, it indicates no autocorrelation on the regression model. When the Durbin-Watson value is less than two and greater than 0 ($0 < DW < 2$), it indicates a positive autocorrelation. When the Durbin-Watson value is more significant than two and less than 4 ($2 < DW < 4$), it means there is a negative autocorrelation on the regression model. If the Durbin-Watson test value is in the range of 1.50 to 2.50, it is considered normal. Field (2009) stated that the Durbin-Watson test value of less than one or more than three can cause a concern. In the current study model, the Durbin-Watson value is 1.84 in Table 17, suggesting there might be a slightly positive autocorrelation in our research model. However, given that the Durbin-Watson value is close to 2, this is something that we do not need to be concerned about.

Table 19: Regression Coefficients Table:

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-11.244	2.308		-4.871	0.000		
lnTotalAsset	0.303	0.023	0.141	12.892	0.000	0.518	1.931
Return on equity- Total (%)	0.000	0.000	-0.008	-1.077	0.281	0.993	1.007
lnTotalDebtof the total equity	0.049	0.039	0.011	1.266	0.205	0.861	1.162
ESG Score	0.091	0.003	0.292	27.780	0.000	0.556	1.800
Board Size	0.037	0.014	0.022	2.638	0.008	0.870	1.149
Board Gender Diversity, Percent	-0.028	0.005	-0.059	-5.876	0.000	0.605	1.652
DIR Diversity Score	0.033	0.004	0.083	7.516	0.000	0.504	1.984
Board Specific Skills, Percent score	-0.005	0.002	-0.017	-2.048	0.041	0.920	1.087
GDP per capita (current US$)	0.00	0.000	-0.156	-11.729	0.000	0.350	2.859
Social Progress Index Score	0.066	0.007	0.118	8.858	0.000	0.349	2.868
Industrial	1.791	2.215	0.145	0.809	0.419	0.002	524.973
Utility	2.029	2.221	0.093	0.913	0.361	0.006	168.773
Other_Financial	1.030	2.220	0.053	0.464	0.643	0.005	215.944
Bank_Savings_ Loan	0.599	2.222	0.027	0.270	0.787	0.006	160.961
Transportation	1.770	2.230	0.053	0.794	0.427	0.014	73.425
Insurance	1.153	2.226	0.039	0.518	0.604	0.011	92.259
Y2018	-4.889	0.140	-0.335	-34.868	0.000	0.668	1.497
Y2019	-1.985	0.135	-0.142	-14.668	0.000	0.653	1.531
Y2021	1.248	0.134	0.091	9.306	0.000	0.641	1.561
Y2022	1.867	0.155	0.115	12.082	0.000	0.684	1.462

5.6. Regression Analysis and Result

To test the hypotheses, a multiple linear regression was analyzed at 95% confidence intervals to predict the dependent variable of the total sum of 17 SDGs from eleven independent variables of total assets, total debit of the total equity, return on equity total percentage, EGS score, board size, board gender diversity percentage, DIR diversity score, board-specific skills percentage, GDP per capita (current US $), and social progress index score with additional two control variables of year and industry classification. The results suggested a statistically significant model for this perdition for total SDG reporting, since $F_{(20, 9,742)} = 325.38$, $p < 0.001$, $R^2 = 0.400$, adjusted $R^2 = 0.399$. Moreover, the $R^2 = 0.400$ shows that the model explains 40.0% of the variance for a total of 17 SDGs. All the eleven variables added statistically significantly to the prediction, $p < 0.001$. The results of the value inflation factor (VIF) and tolerance statistical values showed no evidence of multicollinearity in the dataset for the current research model. In contrast, the Durbin-Watson test value of 1.84 suggested no evidence of autocorrelation in the regression residuals in the present study model.

The current study hypothesized that both firm-level-specific factors and country-level factors would impact SDG reporting. Regarding the firm-level factors, SDG reporting hypothesized to be affected by firm size, total debit of the total equity, return on equity total percentage, EGS score, board size, board gender diversity percentage, DIR diversity score, and board-specific skills percentage. Regarding the country-level factors, SDG reporting was hypothesized to be impacted by GDP per capital and social progress index score. Table 20 shows the summary of findings in detail.

Table 20: Regression and hypothesis results in summary

Hypothesis	Regression Detail	Beta Coefficient	t-value	p-value	Hypothesis Supported	Hypothesised Relationship	Result Correlation
H1	Firm size	0.303	12.892	0.000	Yes	Positive	Positive
H2	ROE %	0.000	-1.077	0.281	No	Positive	Non-significant
H3	Total debt % of total equity	0.049	1.266	0.205	No	Positive	Non-significant
H4	ESG Score	0.091	27.780	0.000	Yes	Positive	Positive
H5	Board Size	0.037	2.638	0.008	Yes	Positive	Positive
H6	Board Gender Diversity (female)	-0.028	-5.876	0.000	No	Positive	Negative
H7	DIR diversity score	0.033	7.516	0.000	Yes	Positive	Positive
H8	Board members with higher education and specific skill	-0.005	-2.048	0.041	No	Positive	Negative
H9	GDP Per capita	0.000	-11.729	0.000	No	Positive	Negative
H10	Social progress index score	0.066	8.858	0.000	Yes	Positive	Positive
R	0.633[a]						
R^2	0.400						
F-Value (20, 9, 742)	325.38						
Note: p <.05, SDG: Sustainable development goals							

H1 illustrated the association between the variable of firm size and total assets and corporate SDGs reporting and disclosure. The result showed that total assets positively affected SDG reporting ($\beta = 0.30$, t = 12.89, p < 0.001), indicating that Hypothesis 1 is supported.

H2 illustrated the association between the variable of return of equity of total percentage and the corporate SDGs reporting and disclosure. The result suggested there was no evidence that the return of equity of total percentage had a positive effect on SDG reporting ($\beta = 0.00$, t = -1.08, p =0.28) due to its p-value being more significant than 0.05. This indicates that Hypothesis 2 is not statistically significant. Thus, Hypothesis 2 is not supported.

H3 hypothesized that the variable of total debt as a percentage of total equity is positively associated with corporate SDGs reporting and disclosure. The result suggested the return of equity of total percentage had not made a statistically significantly unique contribution to the predicted outcome for SDG reporting and engagement due to its p-value being more significant than 0.05 ($\beta = 0.05$, t = 1.27, p =0.21). Thus, this indicates that Hypothesis 3 is not statistically significant. Therefore, the hypothesis is not supported.

H4 hypothesized that the variable of company ESG score is positively correlated with corporate SDG reporting and disclosure. The results showed that the company's ESG score positively affected SDG reporting ($\beta = 0.09$, t = 27.78, p < 0.001), indicating that Hypothesis 4 is supported.

H5 predicted a positive relationship between the company's board size and corporate SDGs reporting and disclosure. The result showed that total assets positively affected SDG reporting ($\beta = 0.04$, t = 2.64, p < 0.001), indicating that the company's board size had made a statistically significantly unique contribution to the prediction for SDG reporting. Thus, Hypothesis 5 is supported.

H6 predicted that the higher percentage of female board members would positively contribute to the corporation's SDG reporting. The result showed that there is a negative correlation between the percentage of female board members and corporate's SDG reporting ($\beta = -0.03$, t = -5.88, p < 0.001), indicating that a higher percentage of female board members would not make a positive contribution on produce higher and better quality corporate social responsibility reporting. Therefore, Hypothesis Six was not supported.

H7 posited the association between the variable of DIR diversity score and corporate SDGs reporting and disclosure. The result showed that the company's DIR diversity score had a positive effect on SDG reporting ($\beta = 0.03$, t = 7.52, p < 0.001), indicating that the higher the DIR diversity score, the more commitment made effectively toward maintaining the gender diverse workforce and board member cultural diversity by the company, the better SDG engagement and reporting. Therefore, Hypothesis 7 is

supported in the current study.

H8 hypothesized the association between the variable of higher education of board members in the finance aspect and corporate SDGs reporting and disclosure. The result presented that there is a negative effect between the board member's education with specified industry and finance aspects and SDG reporting (β = -0.01, t = -2.05, p < 0.001), showing that the board member's education level in specified industry and finance aspect had not made a significant contribution on SDG reporting. Therefore, Hypothesis 8 is not well supported in the current study. Our finding is contrasted with the statement made by Naheed et al. (2021), which showed a significantly positive association between board members' financial expertise and social responsibility reporting, but is consistent with Wijayanti and Setiawan's (2023) finding indicating there was no significant association between financial expertise of the board and corporate sustainability reporting.

H9 illustrated the association between the variable of GDP per capita and corporate SDG reporting and disclosure. The result showed that the country's GDP per capita negatively impacted SDG reporting (β = 0.00, t = -11.73, p < 0.001). It is surprising to see from the current study that there is a negative correlation between a country's GDP per capita and SDG reporting, which might be due to GDP per capita not being the most critical factor of the social progress index that uses to determine the commitment of SDG report. Another reason could be that the GDP per capita is not the major driver for SDG activities at the country level, but it is a measure of country economic activities. The study result indicates that Hypothesis 9 is not supported.

H10 hypothesized that the country's social progress index score will positively impact corporate SDGs reporting and disclosure. The result suggested that the social progress index score positively affected SDG reporting (β = 0.07, t = 8.86, p < 0.001), indicating that Hypothesis 10 is supported.

In addition, a conclusion could also be drawn by the results of control variables industry sector and years. Regarding the control variable of the industry sector, the results show that we do not have evidence of the effects of the industry sector on the SDG reporting and engagement, since the results across different industry categories are not statistically significant to the prediction as presented in Table 19. In this Table 19, Industrial sector ((β = 1.79, t=0.81, p = 0.42), Utility sector (β = 2.03, t=0.91, p = 0.36), other financial sector (β =1.03, t= 0.46, p =0.64), bank saving and loan sector (β = 0.60, t=0.27, p = 0.79), transportation sector (β = 1.78, t=0.79, p = 0.43), insurance sector (β = 1.15, t=0.52, p = 0.60). Given that their p-values are all greater than 0.05, it can be concluded that the control variables of the industry sector did not add statistically significantly to the prediction of SDG reporting at p < 0.05. For the control

variable of years 2018 to 2022, the results show evidence of the effects of years on SDG reporting and engagement. The results across different industry categories are statistically significant to the dependent variable of SDGs: year 2018 (β = -4.89, t= -34.87, p <0.001), year 2019 (β = -1.99, t= 9.31, p <0.001), year 2021(β = 1.25, t= 9.31, p <0.001), year 2022 (β = 1.87, t= 12.08, p <0.001). Given that their p values are all less than 0.001, it can be concluded that the control variable of years did add statistically significantly to the prediction of SDG reporting at p < 0.001. This indicates that the ESG score is correlated with the control variable of the year; the ESG score increased as the year increased from 2018 to 2019. From Table 21, the result could also suggest that the control variable of the year had a positive correlation with SDG reporting, as the year increased from 2018 to 2022, the SDG values also rose from 2018 to 2021 and slightly decreased from 2021 to 2022. This indicates that as the year progressed, more companies in different countries were committed and reported on SGD from 2018 to 2021, which might be due to companies paying more attention to social sustainable development goals. The SDG values dropped slightly in 2022, most likely due to the COVID-19 global pandemic, which might cause a slight decline in the reporting of SDG.

Table 21: Subtotal of 17 SDGs in different years

		Year				
		2018	2019	2020	2021	2022
	Country/Region	Mean	Mean	Mean	Mean	Mean
SumTotal of 17SDGs New	Australia	0	1	4	6	6
	Belgium	0	6	8	8	7
	Bermuda	0	0	0	0	0
	Brazil	0	6	8	10	4
	Canada	0	4	6	7	4
	China	0	1	2	3	5
	France	0	6	9	10	8
	Germany	0	3	5	7	6
	Hong Kong SAR, China	0	5	6	8	8
	India	0	0	2	3	4
	Indonesia	0	4	5	9	8
	Ireland	0	5	7	7	5
	Italy	0	8	9	10	8
	Japan	0	4	9	10	8
	Korea	0	4	5	5	1
	Luxembourg	0	9	10	13	8
	Malaysia	0	5	8	10	10
	Netherlands	0	2	5	7	5
	New Zealand	0	1	3	4	4
	Norway	0	5	9	10	6
	Philippines	0	0	0	10	10
	Portugal	0	8	12	11	4
	Russia	0	1	2	1	0
	Singapore	0	6	9	10	8
	South Africa	0	2	5	7	7
	Spain	0	9	9	9	0
	United Kingdom	0	2	5	7	6
	United States of America	0	2	4	4	2

5.7 Discussion

The above ten hypothesis tests were aligned with the research questions developed in Chapter Three. In that, the firm-level factors of SDG reporting include total assets, the return of equity percentage, total debt percentage of total equity, ESG disclosure score, board size, board gender diversity, DIR diversity score, and board member-specific skill percentage were hypothesized to positively correlate to both companies' engagement of SDG reporting. In contrast, the country-level factors including country GDP per capita and social progress index score, were hypothesized to correlate with SDG reporting positively. Our regression analysis supported some of the hypotheses. However, there are some exceptions, with a couple of hypotheses not supported by our regression analysis results.

Concerning the firm-level analysis from the financial performance aspects, the study results highlight that the company's firm size positively contributed to its involvement in sustainable development goals and its SDG reporting. This finding aligns with previous literature studies conducted by Buniamin et al. (2011) and Gallo &Christensen (2011), who confirmed that corporations with large sizes are involved more in SDG reporting. For the financial performance of profitability measured by using company return of total equity percentage, in contrast with our expectation, our study results suggest no significant contribution to the company SDG reporting. This result shows that the company's profitability level is not associated with the level of sustainable development information disclosure by the company. Our finding is not consistent with many previous studies undertaken by Ehsan and Kaleem (2012), Nguyen and Nguyen (2020), and Maryana and Carolina (2021), who confirmed that a company's profitability positively contributes to sustainability reporting disclosure. This might be due to the current study using the return of total equity as companies' profitability measurement in our regression model with selected sampling companies across 26 countries for cross-country comparison analysis purposes. In contrast, Nguyen & Nguyen (2020) used ROE measures with small sampling sizes, mainly focusing on the country of Vietnam, and Maryana & Carolina (2021) used return on assets (ROA) in their studies to conduct the analysis. This is one of the reasons that might lead to some inconsistent findings. Another reason could be that the current study showed a cross-national comparative study with a large sample size, while prior studies mainly focused on a single country or region with a relatively small sample size. The small sample size of a single industry and single country in previous studies was only nationally representative of a particular country but would tend to miss companies who were not considered. Thus, the results from the previous studies might not be transferable, making these findings less generalizable to all companies by examining a single country or region with a small sample size. Furthermore, even though the SDGs are global goals established worldwide, their critical significance is at the country level. There is no doubt that each nation will take action to progress in the international sustainable development process. Still,

every nation has its own distinct and unique global dimension, which means each country would have its specific focus area on SDGs. Therefore, firms with higher profitability measurements in a developed country would have a different focus than those with higher profitability measurements in a developing country. For the leverage performance of the total debt percentage of total equity, our finding shows that the total debt percentage of total equity is not accepted in our research to have a positive effect on the involvement of sustainable development goals and sustainable reporting. Our finding indicated no significant correlation between the total debt of total equity to substantial development goals engagement and sustainable reporting. Surprisingly, our finding is in debate with the previous two studies undertaken by both Nguyen & Nguyen (2020) and Maryana and Carolina (2021), who confirmed a positive relationship and negative significant association, respectively, between total debt-to-equity ratio and SDG engagement and sustainable reporting in their studies. Regarding the linkage between ESG disclosure and SDGs, our findings are supported by previous studies conducted by both Soni (2023) and Radu et al. (2023) and conclude that there is a significantly positive correlation between ESG disclosure and SDG engagement and sustainable reporting. In addition, the current study's findings also supported Islam & Rahman's (2023) research that there is an imbalance in development and focus across 17 sustainability development goals.

Concerning the firm-level analysis from the company board committee and governance aspects, current research findings reveal that the board size of the firm makes a positive contribution to SDG engagement and sustainable reporting, which agrees with the previous two studies done by Masud et al.(2018) and Mudiyanselage (2018), and not agree with the study conducted by Githaiga and Kosgei (2022) indicated a significant negative relationship exist between board size of company and impact on sustainability reporting. For the board gender diversity, the finding did not support the hypothesis that board gender diversity is positively associated with the engagement of SDG adoption and reporting. This is contrary to the results of previous scholarly research done by Juwita & Honggowati, (2021) and Fernandez-Feijoo et al. (2014) who both stated that a higher percentage of female board members had a positive impact on the engagement of SDGs and produced higher and better quality corporate social responsibility reporting. For the impact of the DIR diversity score on SDG, the current study finding illustrated that companies DIR diversity score had a positive effect on SDG involvement and reporting, indicating that the higher the DIR diversity score, the more commitment made effectively toward maintaining the gender diverse workforce and board member cultural diversity by the company, the better SDG engagement and involvement. Our results are well supported by a previous study by Ntim and Soobaroyen (2013), who stated that board diversity and sustainable reporting have a strong positive relationship. Regarding the board members with

higher specified industry and finance knowledge, the hypothesized positive impact on the SDG reporting was not supported in the current study.

Regarding country-level analysis, the current study result reveals that the country's economic growth and development indicator of GDP per capita is not positively associated with SDG reporting. Conversely, our results show a significantly negative correlation between economic growth and development indicator of GDP per capita and SDG reporting, which does not agree with the study conducted by Busco et al. (2019), who show that a country's economic development is correlated with companies' involvement in SDG. The potential reasons for such contradiction with prior research are because 1). the current study selected a large multi-industry and multiple region sample of firms over a longer timeframe; 2). the current study is a cross-country study, whereas most of the prior studies on SDGs reporting mainly used single industry, single country, or single geographical region samples, which were limited in size. Our findings also differ from Bose and Khan (2021), who found that companies in developed countries pay more attention to SDG reporting and tend to report higher SDGs at the corporate level than developed countries. However, current research results suggest that a country's social progress index score does make a positive contribution to SDG reporting, which recommends that a country's social progress index plays a more important role in promoting the improvement of sustainable development goals and sustainable reporting compares to the country's economic growth and development. Thus, the country should focus more on improving its social progress index score instead of improving only its economic growth and development indicators.

Regarding the individual 17 SDGs, it is evident that individual 17 SDGs are not impacted by the firm-level and country-level factors in the same manner. Only four firm-level factors, including total asset, ESG score, board size, and DIR diversity score, are significantly positively correlated to all 17 individual SDGs, and all other six determinants are not consistently correlated with each SDG. This finding brings attention to the fact that different approaches to SDG disclosure might be required for some of the individual SDGs. Furthermore, there is an imbalance of reporting across individual 17 SDGs. Developing countries tend to concentrate more on economic SDG 8 growth and decent work and SDG 13 climate action. In contrast, developed countries prioritize the fundamental SDGs such as SDG 3, good health and well-being, and SDG 4, quality education.

Chapter Six: Conclusion

6.1 General Findings

This study investigates the key determinants of SDG reporting from both firm-level and country-level perspectives through an analysis of the data of 9,763 large public companies listed on the top 24 indices of global stock exchange markets across 26 countries over five year-periods from 2018 to 2022. The findings in current research show that the firm-level factors including firm size, companies ESG disclosure scores, board size, and DIR diversity score, are positively and significantly correlated with the engagement of sustainable development goals and sustainability reporting. However, contrary to our expectation, the firm-level factors of board gender diversity and board members with specific industry and financial expertise are negatively and significantly correlated with the engagement of sustainable development goals and sustainability reporting. Furthermore, the findings also show that the firm-level determinants for return on equity percentage and total debt percentage of total equity have not been significantly associated with the sustainable development goals and sustainability reporting. With regards to the country-level determinants perspective, the result of the current study suggests there is a negative significant association between a country's GDP growth per capita and the country's sustainable development goals and sustainability reporting, whereas a positive significant correlation between the country's social progress index score to country sustainable development goals and sustainability reporting can be found in the current study. Thus, this study recommends that listed companies in the major capital markets should consider large board sizes, increase the board cultural diversity, and encourage companies to disclosure more ESG information to improve sustainability reporting, whereas the different countries around the world should focus more on improving its social progress index scores rather than the growth in GDP per capita to achieve more sustainability development and meeting the UN SDG 2030 agenda. This also highlights the fact that GDP growth may be counterproductive for SDG involvement and reporting.

6.2. Contribution of this research

The evidence provided in the current study would have several implications in academic literature, managerial, policy, and theory.

Firstly, from the academic literature perspective, the key contribution of this research would positively contribute to the current academic research not only on the concept of corporate social responsibility but also on the sustainable development goals reporting worldwide. While prior studies have separately investigated the firm-level factors and country-level factors of SDG reporting for a single industry or a

single country, the findings of this dissertation contribute to the current academic literature by examining how both firm-specific and country-specific characteristics influence the corporation reporting. Using a multi-national and multi-sector comparison analysis study context, this study documents associations between 17 SDGs and firm-level and country-level determinants that impact the corporation's SDG reporting. These findings have significant implications for advancing our understanding of corporative reporting and disclosure of SDG information by examining the major international companies' SDG reporting commitment in five years. Moreover, by providing evidence about eight firm-specific and two country-specific determinants that influence SDG reporting, the current study has not only provided new generalizable evidence or theme on this topic of SDG reporting but also has facilitated an advanced comprehension of how companies and national differences in characteristics can influence SDGs and improve SDG reporting, respectively.

In addition, from a corporate governance and management perspective, this research examined the key firm-level and country-level factors for sustainable development goals and their contribution to SDGs reporting. This can motivate organizations to make positive commitments and contribute to sustainable development goals through a better understanding of the true driver of SDGs, the findings inform shareholders and managers on what the key dimensions, assumptions, and areas should be considered to improve their engagement on sustainable development goals. This would not only encourage companies to involve themselves more in socially responsible activities but also actively support with government and associated regulatory institutions to improve the achievement of the UN Sustainable Development Goal 2030 agenda. This will eventually make a positive impact on meeting the UN SDG 2030 agenda. The current study's findings also illustrate the importance of having cultural and gender diversity on board in the company.

Moreover, from a cross-country perspective, this study is of value in increasing knowledge about the cross-country strengths and weaknesses of SDG reporting. The evidence from current research suggests and supports the previous studies that the development and concentration on the 17 sustainability development goals are unbalanced. National public policymakers and regulators could use this evidence to understand the involvement of the firms in the 17 goals and set up a framework for improving the achievement of those goals that have less involvement. Also, the findings reported here shed new light on that GDP growth is counterproductive for SDG reporting. National public policymakers should focus more on improving the social progress index scores rather than the growth in GDP per capita to achieve more sustainability development and meet the UN SDG 2030 agenda.

Regarding to policy perspective, this study on the factors that influence SDG reporting could enhance the International Sustainability Standards Board's disclosure initiatives about sustainability disclosures. A better understanding of key determinants of SDG reporting and disclosure can not only help to understand the sustainability disclosures being promoted by the ISSB but also develop more standardized guidance for a worldwide baseline of sustainability disclosures. The findings of this study also guide companies to provide the right and comprehensive sustainability information to investors. The current study highlights that the firm-level factors, firm size, ESG score, board size, and DIR diversity score, are positively correlated with all individual 17SDGs. The ISSB should be aware of those factors to encourage sustainability reporting and disclosures for all the SDGs.

Lastly, from a stakeholder theory perspective, this research is important and provides value-adding information for various internal and external stakeholders, such as businesses, governments, society, and policymakers. Based on the features of individual nations and regions, policymakers can create more effective plans for sustainable development and reporting and set up initiatives for it. In addition, the Sustainable Development Goals and associated targets ought to be prioritized differently across national, regional, and cluster-specific by governments, institutions, and other policymakers, because different nations and regions have different socioeconomic and political-cultural structures, and different policies on how to accomplish and implement Sustainable Development Goals (SDGs).

6.3. Limitations and further research.

Undoubtedly, current research is subject to some limitations. Firstly, the current study only concentrated on eight firm-level determinants of SDG reporting and two country-level determinants of such reporting. Future research should investigate other firm-level factors and country-level factors, which may impact SDG reporting and investigate the impact of SDG reporting. Furthermore, the current study only examined the SDG reporting for global companies listed in the major capital markets for 5 years covering from 2018 to 2022. However, with the COVID-19 pandemic outbreak happening globally over three years from 2020 to 2023, this might have had a negative impact on the availability of data for SDGs reporting, such as in developing markets e.g. India, Indonesia, Russia, etc. Therefore, further research should focus on the decision-maker's commitment and SDG reporting engagement in such countries after post-COVID-19 possibly using hand-collected data. Moreover, future studies could focus on investigating the determinants of SDG reporting covering a longer period instead of five years only. In addition, the current study only emphasizes eight firm-level factors and two country-level factors; future research could consider any other firm-level and country-level factors that might correlate with SDG engagement and reporting and investigate whether there are any other possibilities for SDG reporting. A more comprehensive future study could include other potential firm-level and country-level features of SDG

reporting, to enhance the understanding of SDG reporting. Lastly, even though the current study selected sample companies from 26 countries, the United States accounted for most observations, further research could put more attention on other countries as well, and investigate whether the research result of this research would hold in other settings.

Word 20,588

References:

Ahmad, N. B. J., Rashid, A., & Gow, J. (2018). Corporate board gender diversity and corporate social responsibility reporting in Malaysia. *Gender, Technology and Development*, *22*(2), 87–108. https://doi.org/10.1080/09718524.2018.1496671

Ali, W., Frynas, J. G., & Mahmood, Z. (2017). Determinants of Corporate Social Responsibility (CSR) Disclosure in Developed and Developing Countries: A Literature Review. *Corporate Social Responsibility and Environmental Management*, *24*(4), 273–294. https://doi.org/10.1002/csr.1410

AnnMaria (2012). Multicollinearity statistics with SPSS. Retrieved from http://www.thejuliagroup.com/blog/?p=1405

Archambault, J. J., & Archambault, M. E. (2003). A multinational test of determinants of corporate disclosure. *The International Journal of Accounting, 38,* 173–194.

Ariyani, A. P., & Hartomo, O. D. (2018). Analysis of key factors affecting the reporting disclosure indexes of sustainability reporting in Indonesia. *International Journal of Business, Economics and Law, 16(1), 15-25.*

Belás, J., Çera, G., Dvorský, J., & Cepel, M. (2020). Corporate social responsibility and sustainability issues of small- and medium-sized enterprises. *Corporate Social Responsibility and Environmental Management, 28(2), 721–730.* https://doi.org/10.1002/csr.2083

Bose, S., & Khan, H. U. (2021b). Sustainable development goals (SDGs) reporting and the role of country-level institutional factors: An international evidence. *Journal of Cleaner Production*, *335*, 130290. https://doi.org/10.1016/j.jclepro.2021.130290

Bose, S., Minnick, K., Shams, S., (2021b). Does carbon risk matter for corporate acquisition decisions? J. *Corp. Finance* 70(5), 1-24.

Buniamin, S., Alrazi, B., Johari, N. H., Raida, N., & Rahman, A. (2011). Corporate Governance Practices and Environmental Reporting of Companies in Malaysia: *Finding Possibilities of*

Double Thumbs Up. Jurnal Pengurusan, 32, 55–71.

Buniamin, S., Jaffar, R., Ahmad, N., & Johari, N. H. (2020). Exploring the Involvement of Malaysian companies in sustainable development goals (SDGs). *Global Business and Management Research,* 12(4), 201-213.

Busco, C., Malafronte, I., Pereira, J., & Starita, M. G. (2019). The determinants of companies' levels of integration: Does one size fit all? *British Accounting Review, 51(3),* 277 298. https://doi.org/10.1016/j.bar.2019.01.002

Çağlar, M., & Gürler, C. (2021). Sustainable Development Goals: A cluster analysis of worldwide countries. *Environment, Development and Sustainability*, *24*(6), 8593–8624. https://doi.org/10.1007/s10668-021-01801-6

Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2010). Signaling Theory: A Review and assessment. *Journal of Management, 37(1), 39-67.* https://doi.org/10.1177/0149206310388419

Cormier, Denis, Ledoux, M.-J., & Magnan, M. (2011). The informational contribution of social and environmental disclosures for investors. *Management Decision*, 49(8), 1276–1304. https://doi.org/10.1108/00251741111163124

Dang, C., Li, Z. F., & Yang, C. (2018). Measuring firm size in empirical corporate finance. *Journal of Banking & Finance*, 86, 159–176. https://doi.org/doi:https://doi.org/10.1016/j.jbankfin.2017.09.006

Daoud, J. I. (2017). Multicollinearity and regression analysis. *Journal of Physics*, *949*, 012009. https://doi.org/10.1088/1742-6596/949/1/012009

Datta, S., & Goyal, S. (2022). Determinants of SDG Reporting by Businesses: A literature analysis and Conceptual model. *Vision*, 097226292210960. https://doi.org/10.1177/09722629221096047

Deegan C. (2002). Introduction: The legitimizing effect of social and environmental disclosures

a theoretical foundation. *Accounting, Auditing & Accountability Journal 15(3): 282–311*. DOI: 10.1108/09513570210435852

Diouf, G. (2019). Millenium Development Goals (MDGs) and Sustainable Development Goals (SDGs) in social welfare. *International Journal of Science and Society*, *1*(4), 17–24. https://doi.org/10.54783/ijsoc.v1i4.144

Dong, M., & Stettler, A. (2011). Estimating firm-level and country-level effects in cross sectional analyses: An application of hierarchical modeling in corporate disclosure studies. *The International Journal of Accounting*, *46*(3), 271–303.https://doi.org/10.1016/j.intacc.2011.07.002

Du, S., & Vieira, E. T. (2012). Striving for legitimacy through corporate social responsibility: Insights from oil companies. Journal of Business Ethics, 110(4), 413–427.

Ehsan, S., & Kaleem, A. (2012). An Empirical investigation of the relationship between corporate social responsibility and financial performance: evidence from the manufacturing sector of Pakistan. *Journal of Basic and Applied Scientific Research*, 2(3), 2909-2922.

Emma, G.-M., Jennifer, M.-F., (2021). Is SDG reporting substantial or symbolic? *An examination of controversial and environmentally sensitive industries.* J. Clean. Prod. 298, 126781.

Freeman RE. (1994). The politics of stakeholder theory: Some future directions. *Business ethics quarterly. JSTOR : 409–421*

Fernandez-Feijoo B, Romero S, Ruiz-Blanco S. (2014). Women on boards: Do they affect sustainability reporting? *Corporate Social Responsibility and Environmental Management 21(6):* 351–364. DOI: 10.1002/csr.1329.

Field, A. (2000). Discovering statistics using SPSS for windows. London-Thousand Oaks-New Delhi: Sage Publications.

Field, A. (2009), Discovering statistics using SPSS, third edn, Sage Publications.

Field, A. (2013). Discovering statistics using IBM SPSS Statistics (4th ed.). Thousand Oaks, CA: Sage

Gallo, P. J., & Christensen, L. J. (2011). Firm size matters: an empirical investigation of organizational size and ownership on sustainability-related behaviors. Business & Society, 50(2), 315–349. https://doi.org/https://doi.org/10.1177/0007650311398784.

Garriga, E., & Melé, D. (2004). Corporate Social Responsibility Theories: Mapping the Territory. *Journal of Business Ethics, 53(1/2),* 51–71. https://doi.org/10.1023/B:BUSI.0000039399.90587.34

Githaiga, P. N., & Kosgei, J. K. (2022). Board Characteristics and Sustainability Reporting: a case of listed firms in East Africa. *Corporate Governance, 23(1),317*. https://doi.org/10.1108/cg-122021-0449.

Global Reporting Initiative (GRI). (2018). Business reporting on the SDGs. Global Reporting Initiative. Retrieved Sep 30, 2023, from https://www.globalreporting.org/information/ SDGs/Pages/Reporting-on-the-SDGs.aspx

Gravetter, F., & Wallnau, L. (2014). Essentials of statistics for the behavioral sciences (8th ed.). Belmont, CA: Wadsworth.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis (7th ed.).* Pearson Prentice Hall, Upper Saddle River: NJ.

Halkos, G., & Gkampoura, E. (2021). Where do we stand on the 17 Sustainable Development Goals? An overview of progress. *Economic Analysis and Policy*, *70*, 94–122. https://doi.org/10.1016/j.eap.2021.02.001

Hatayama, H. (2022). The metals industry and the Sustainable Development Goals: The relationship explored based on SDG reporting. *Resources, Conservation and Recycling*, *178*, 106081. https://doi.org/10.1016/j.resconrec.2021.106081

Herremans, I.M., Nazari, J.A. and Mahmoudian, F. (2016), "Stakeholder relationships, engagement, and sustainability reporting", *Journal of Business Ethics*, Vol. 138 No. 3, pp. 417-435

Islam, S., & Rahman, A. (2023). Impact Investment Deal Flow and Sustainable Development Goals: "Mind the gap?" *Accounting and Finance*. https://doi.org/10.1111/acfi.13068

Izzo, M. F., Ciaburri, M., & Tiscini, R. (2020a). The Challenge of Sustainable Development Goals reporting: The first evidence from Italian listed companies. *Sustainability*, 12(8), 3494

Jaggi, B., & Low, P. Y. (2000). Impact of culture, market forces, and legal system on financial disclosures. *The International Journal of Accounting, 35*, 495–519.

Jha, M. K., & Rangarajan, K. (2020). The approach of Indian corporations towards sustainable development: An exploration using sustainable development goals based model. *Sustainable Development, 28(5), 1019–1032*. https://doi.org/10.1002/sd.2053

Juwita, N., & Honggowati, S. (2021). Corporate Board Diversity and Sustainability Reporting: Empirical Evidence from Indonesia Before and During COVID-19. *Journal of Accounting and Investment, 23(1), 1–15*. https://doi.org/10.18196/jai.v23i1.12767

Lashitew, A. A. (2021). Corporate uptake of the Sustainable Development Goals: Mere greenwashing or an advent of institutional change? *Journal of International Business Policy*, 4(1), 184–200.

Maryana, M., & Carolina, Y. (2021). The impact of firm size, leverage, firm age, media visibility and profitability on sustainability report disclosure. *Journal Keuangan Dan Perbankan*, 25(1). https://doi.org/10.26905/jkdp.v25i1.4941

Masud, M.A.K., Nurunnabi, M. and Bae, S.M. (2018), "The effects of corporate governance on environmental sustainability reporting: empirical evidence from South Asian countries", *Asian Journal of Sustainability and Social Responsibility*, Vol. 3 No. 1, pp. 1-26.

Millennium Development Goals Monitor, Category: Millennium Development Goals. Retrieved August 30, 2023, from https://www.mdgmonitor.org/millennium-development-goals

Mitchell, R. H., Weaver, G. R., Agle, B. R., Bailey, A. D., & Carlson, J. (2016). Stakeholder

agency and social welfare: Pluralism and decision making in the Multi-Objective Corporation. *Academy of Management Review*, *41*(2), 252–275. https://doi.org/10.5465/amr.2013.0486

Mudiyanselage, N.C.S.R. (2018), "Board involvement in corporate sustainability reporting: evidence from Sri Lanka", Corporate Governance: *The International Journal of Business in Society*, Vol. 18 No. 6, pp. 1042-1056

Naheed, R., AlHares, A., Shahab, Y., & Naheed, R. (2021). Board's financial expertise and corporate social responsibility disclosure in China. *Corporate Governance*, *21*(4), 716–736. https://doi.org/10.1108/cg-08-2020-0329

Nguyen, A. H., & Nguyen, L. H. (2020). Determinants of sustainability disclosure: Empirical evidence from Vietnam. *Journal of Asian Finance, Economics and Business, 7(6), 73–84*. https://doi.org/10.13106/JAFEB.2020.VOL7.NO6.073

Ntim, C. G., & Soobaroyen, T. (2013). Corporate Governance and Performance in Socially Responsible Corporations: New Empirical Insights from a Neo-Institutional Framework. *Corporate Governance: An International Review*, *21*(5), 468–494. https://doi.org/10.1111/corg.12026

O'Donovan G. (2002). Environmental disclosures in the annual report: Extending the applicability and predictive power of legitimacy theory. *Accounting, Auditing & Accountability Journal,* 15(3): 344– 371. DOI: 10.1108/09513570210435870.

Petrescu, A. G., Bîlcan, F. R., Petrescu, M., Oncioiu, I., Turkes, M. C., & Capusneanu, S. (2020). Assessing the benefits of the sustainability reporting practices in the top Romanian companies. *Sustainability, 12(8), 3470.* https://doi.org/10.3390/su12083470

Pizzi, S., Caputo, F., Venturelli, A., & Adamo, S. (2020). Achieving sustainable development goals through non-financial regulation. First insights from the transposition of Directive 95/2014/EU in Italy. *Corporate Social Responsibility. Theoretical Analysis and Practical Implications;* FrancoAngeli: Milano, Italy, 11-13.

Pizzi, S., Rosati, F., & Venturelli, A. (2021). The determinants of business contribution to

the 2030 Agenda: Introducing the SDG Reporting Score. *Business Strategy and the Environment*, *30*(1), 404–421. https://doi.org/10.1002/bse.2628

Porter, M. E., Stern, S., & Green, M. (2014). *Social Progress Index 2014*. Washington, DC: Social Progress Imperative.

Radu, O., Dragomir, V. D., & Feleagă, L. (2023). The Link between Corporate ESG Performance and the UN Sustainable Development Goals. *Proceedings of the . . . International Conference on Business Excellence*, *17*(1), 776–790. https://doi.org/10.2478/picbe-2023-0072

Rasul, G. (2016). Managing the food, water, and energy nexus for achieving the Sustainable Development Goals in South Asia. *Environmental Development*, *18*, 14–25. https://doi.org/10.1016/j.envdev.2015.12.001

Reverte C. (2009). Determinants of corporate social responsibility disclosure ratings by Spanish listed firms. *Journal of Business Ethics 88(2)*: 351–366. DOI: 10.1007/s10551-008-9968-9.

Rosati, F., & Faria, L. (2019). Business Contribution to the Sustainable Development Agenda: Organizational factors related to early adoption of SDG reporting. *Corporate Social Responsibility and Environmental Management,* 26(3), 588-597. https://doi.org/10.1002/csr.1705

Sen, A., & Srivastava, M. (1997). Regression analysis: theory, methods, and applications. *Springer Science & Business Media.*1

Scheyvens, R., Banks, G., & Hughes, E. (2016). The private sector and the SDGs: The need to move beyond 'business as usual'. *Sustainable Development, 24(6),* 371–382.

Schramade, W. (2017). Investing in the UN Sustainable Development Goals: Opportunities for Companies and Investors. *Journal of Applied Corporate Finance*, *29*(2), 87–99. https://doi.org/10.1111/jacf.12236

Shrestha, N. (2020). Detecting multicollinearity in regression analysis. *American Journal of Applied Mathematics and Statistics*, *8*(2), 39–42. https://doi.org/10.12691/ajams-8-2-1

Soni, T. K. (2023). Demystifying the relationship between ESG and SDG performance: Study of emerging economies. *Investment Management & Financial Innovations*, *20*(3), 1–12. https://doi.org/10.21511/imfi.20(3).2023.01

Sotorrío LL & Sánchez JLF. (2010). Corporate social reporting for different audiences: The case of multinational corporations in Spain. *Corporate Social Responsibility and Environmental Management* 17(5): 272–283. DOI: 10.1002/csr.215

Trochim, W. M., & Donnelly, J. (2006). *The Research Methods Knowledge Base* (3rd ed.). Atomic Dog, Cincinnati: OH.

United Nations. (2015). *Transforming our world: the 2030 agenda for sustainable development*. New York, NY: United Nations

United Nations. (2015a). The Millennium Development Goals Report 2015 UNDP. Retrieved August 30 202, from: https://www.undp.org/publications/millennium-development-goals-report-2015.

United Nations. 17 Sustainable Development Goals. Department of Economic and Social Affairs, Sustainable Development. Retrieved 10th October, 2023. https://sdgs.un.org/goals.

Uyanık, G. K., & Güler, N. (2013). A study on multiple linear regression analysis. *Procedia – Social and Behavioral Sciences*, *106*, 234–240. https://doi.org/10.1016/j.sbspro.2013.12.027

Yaşar, B. (2021). Impact investing: A review of the current state and opportunities for development. *Istanbul Business Research*, *50*(1), 177-196. https://doi.org/10.26650/ibr.2021.51.0117

Van der Waal, J. W. H., & Thijssens, T. (2020). Corporate involvement in Sustainable Development Goals: Exploring the territory. *Journal of Cleaner Production*, 252, 119625. https://doi.org/10.1016/j.jclepro.2019.119625

Van Zanten, J. A., & Van Tulder, R. (2018). Multinational enterprises and the Sustainable Development Goals: An institutional approach to corporate engagement. *Journal of International Business Policy*, 1(3–4), 208–233. https://doi.org/10.1057/s42214-018- 0008-x

Wahid, A.S. (2019), "The effects and the mechanisms of board gender diversity: evidence from financial manipulation", *Journal of Business Ethics*, Vol. 159 No. 3, pp. 705-725.

Wijayanti, R., & Setiawan, D. (2023). The role of the board of directors and the sharia supervisory board on sustainability reports. *Journal of Open Innovation: Technology, Market, and Complexity*, *9*(3), 100083. https://doi.org/10.1016/j.joitmc.2023.100083

Zarzeski, M. T. (1996). Spontaneous harmonization effects of culture and market forces on accounting disclosure practices. *Accounting Horizons, 10(1*), 18–37.

Appendix-Nomenclature:

CSR: Corporate Social Responsibility;

DIR Diversity Score: Diversity Inclusion Rating (DIR) Diversity Score;

ESG: Environmental, social, and Governance;

GDP: Gross domestic product (GDP) Per Capita;

GRI: Global Reporting Initiative;

ISSB: International Sustainability Standards Board

NGOs: Non-Government Organisations;

SDG: Sustainable Development Goals;

SR: Sustainability Reporting

ROE: Return on equity;

ROA: Return on the asset;

TCFD: Task Force for Climate-related Financial Disclosures;

UNGC: United Nations Global Compact;

UN: United Nations;

VIF: Variance inflation factor