Impact of Sustainability Reporting on Saudi-Listed Firms Performance under the Moderating Effect of Corporate Governance

By

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Abstract

With the increasing preference for transparency in economic, environmental and social issues, sustainability reporting (SR) has become a broadly accepted practice for enterprises worldwide. Although SR is not a new concept, research focusing on the potential financial and non-financial benefits of SR is still limited, especially in the context of developing countries such as the Kingdom of Saudi Arabia (KSA). This research adopts a multi-theoretical perspective to examine how SR impacts corporate financial and non-financial performance. Since corporate governance (CG) is considered a potential method for improving SR transparency and efficacy, this research also investigates how specific CG mechanisms moderate this relationship. Although previous studies have examined SR and firm performance, they did not include a focus on Islamic items in SR. Additionally, the role of CG as a moderator in the relationship between SR and firm performance in the context of KSA remains unexplored. Therefore, the present research extends the literature by introducing a new framework through which to investigate CG mechanisms as moderating effects between SR and firm performance of KSA listed firms.

This research adopted a quantitative approach and developed a modified global reporting initiative (GRI) disclosure index to collect secondary data through the manual content analysis technique from 121 listed firms. The present research also sourced the annual and sustainability reports for the data collection. The research's variables included 1) the independent variables of total SR (TSR), economic SR (ECO), environmental SR (ENV) and social SR (SOC); 2) the dependent variable of financial performance, which is proxied by return on assets (ROA), return on equity (ROE) and Tobin's Q (TQ), with non-financial performance being proxied by market share (MS) and internal business perspective (IBP); and 3) the moderating variable, which comprised the CG mechanisms of board size (BS), independent directors (ID), audit committee size (ACS), independence member of audit committee (IMAC), audit committee quality (ACQ), board gender diversity (BDG), government ownership (GOV) and foreign ownership (FOR). To test the research hypotheses, both univariate statistics (t-test) and fixed effect panel regression analysis were performed for two-panel datasets: 1) pre-COVID-19 (2015–2019, 596 firm–year observations and 2) including COVID-19 (2015–2020, 690 firm–year

observations). Robustness testing was performed by employing the generalised method of moments (GMM) on the balanced panel data.

The findings indicated that in KSA, the modified GRI index is more effective than the traditional GRI index. The research also found that SR and its three components (ECO, ENV, SOC) significantly and positively impact the financial performance indicators in the periods before COVID-19 and including COVID-19. Similarly, SR and its components demonstrated a positive significant relationship with non-financial performance in both data periods (pre and including COVID-19). Further, the findings associated with the moderating variables demonstrated that the CG mechanisms mostly did not moderate the nexus between SR and financial performance. Notably, GOV and ACQ demonstrated a significant moderating impact between SR and financial performance (ROA, ROE, TQ). The results further revealed that BS, ACS and GOV significantly affected SR and MS before COVID-19, while ID and BGD performed a similar role in the period including COVID-19. Similarly, the moderating variables BS and BGD were identified as significant moderators of SR on IBP both pre and including COVID-19.

The results from this research offer insights for policymakers, practitioners and key stakeholders in KSA to achieve higher sustainability ratings and subsequently improve the financial and non-financial performance of listed firms. It also illuminates the moderating role of CG on the nexus of SR and firm performance. Practical and policy implications arising from this study include 1) strengthening the role of the board of directors; 2) highlighting the benefits of SR for profitability in KSA companies; 3) implementing comprehensive SR guidance and compliance for KSA listed firms; and 4) increasing the number of IDs, improving ACQ and encouraging the adoption of the International Financial Reporting Standards for effective SR.

Declaration of Authenticity

I, Mahdi Alhamami declare that the PhD thesis entitled *Impact of sustainability reporting on Saudi-listed firms performance under the moderating effect of corporate governance* is no more than 80,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

I have conducted my research in alignment with the Australian Code for the Responsible Conduct of Research and Victoria University's Higher Degree by Research Policy and Procedures.

Date
14July 2023

Dedication

I dedicate this thesis to my family, friends and my beloved country, Saudi Arabia, whose constant support has enabled me to achieve this goal.

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List of Abbreviations

ACS	Audit Committee Size
BGD	Board Gender Diversity
BS	Board Size
BSC	Balanced Scorecard
CG	Corporate Governance
CMA	Capital Market Authority
CSR	Corporate Social Responsibility
CSRD	Corporate Social Responsibility Disclosure
ECO	Economic Sustainability Reporting
ENV	Environmental Sustainability Reporting
ESG	Environmental, Social and Governance
FA	Firm Age
FE	Fixed Effects
FOR	Foreign Ownership
FP	Financial Performance
FS	Firm Size
GCC	Gulf Cooperation Council
GMM	Generalised Method of Moments
GOV	Government Ownership
GRI	Global Reporting Initiative
G1	First GRI Guidelines
G2	Second GRI Guidelines
G3	Third GRI Guidelines
G4	Fourth GRI Guidelines
IASB	International Accounting Standards Board
IBI	Islamic Business Institution
IBP	Internal Business Perspective
ID	Independent Directors
IFRS	International Financial Reporting Standards
IMAC	Independent Member of the Audit Committee
ISA	International Organisation for Standardisation

KSA	Kingdom of Saudi Arabia
LM	Lagrange Multiplier
MENA	Middle East and North Africa
MS	Market Share
NFP	Non-Financial Performance
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
OPEC	Organization of the Petroleum and Exporting Countries
PLCs	Public Limited Companies
PLS-SEM	Partial Least Squares Structural Equation Model
QAC	Quality of Audit Committee
RE	Random Effects
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
RQ	Research Question
SCGC	Saudi Corporate Governance Code
SDGs	Sustainable Development Goals
SMEs	Small-to-Medium Sized Enterprises
SOC	Social Sustainability Reporting
SOCPA	Saudi Organisation for Certified Public Accountant
SR	Sustainability Reporting
SSE	Sustainable Stock Exchange
TBL	Triple Bottom Line
TQ	Tobin's Q
TSR	Total Sustainability Reporting
UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNEP	United Nations Environment Programme
US	United States
VIF	Variance Inflation Factor

Chapter 1: Introduction

1.1 Background of the study

Recent research has revealed that firm performance risks have transitioned from financial risks to sustainability risks, such as social and environmental risks (Qazi & Al-Mhdawi, 2023; Shah et al., 2022). Sustainability risks are amplified in countries where businesses heavily use natural resources—such as the Kingdom of Saudi Arabia (KSA), which uses more natural resources in the form of oil exploration. To overcome these risks, business organisations are encouraged to engage in sustainability practices and disclose them to stakeholders through sustainability reporting (SR; Ellili & Nobanee, 2022; Lai et al., 2021).

Governments, stock market authorities, the media and academics have all called for increased corporate disclosure and transparency in evaluating performance in several potentially risky industries (Al-Shaer & Hussainey, 2022). Popa, Blidişel and Bogdan (2009) argued that corporate disclosures and transparency are more beneficial when they are combined with SR. Since SR provides data that improves a company's economic, environmental and social transparency and accountability (Al-Shaer & Hussainey, 2022), key stakeholders rely on SR to obtain more insights regarding the company's economic, social and environmental activities (Ebaid, 2023a). However, the efficacy of SR depends on corporate governance (CG; Gerwing et al., 2022), which can affect a firm's disclosure and transparency practices; this is because the firm can use SR to generate, shield, enhance value and hold people accountable for the outcome of the activities in response to its stakeholders (Dewi et al., 2023). This reinforces the relevance of CG in terms of contributing to both corporate success and responsibility (Khan et al., 2019).

According to Jan et al. (2021), SR is associated with the triple bottom line (TBL) concept. This is an accounting performance measurement approach that extends beyond only reporting financial information to also reporting on how an organisation affects the planet and its inhabitants. The 'planet' and 'people' dimensions of organisational effectiveness are frequently overlooked in company accounting. For example, value-added statements were previously used to report a firm's generation and distribution of value to shareholders, employees, the government and the community. However, more recent approaches incorporate the social and environmental performance of organisations into

corporate reports. Moreover, TBL reporting aims to communicate an organisation's financial, social and environmental performance. Previous studies have demonstrated that some firms consider environmental and social aspects an extra cost for shareholders, which explains why they are often ignored in a firm's reporting (Shad et al., 2020).

The COVID-19 outbreak has made implementing SR activities difficult for many firms. However, some organisations have devised solutions to achieve their SR goals throughout this pandemic (García-Sánchez & García-Sánchez, 2020; Magd & Karyamsetty, 2021). The pandemic has also offered firms new insights and opportunities to evaluate SR operations in developing nations (He & Harris, 2020; Popkova et al., 2021). SR is considered an effective instrument for achieving sustainable development because it provides a win–win situation (Mahmud et al., 2021). Further, it helps firms perform better financially and non-financially while simultaneously providing numerous social advantages that can push people to persevere through the COVID-19 epidemic and weather disasters (Bapuji et al., 2020; Kucharska & Kowalczyk, 2019).

Similar to SR, CG is another major driver of firm success (Aras et al., 2010; Jan et al., 2021; McWilliams et al., 2006; Tarquinio & Rossi, 2017). CG highlights SR's vital role in ensuring a firm's long-term sustainability and in promoting its continuous existence and acceptability (Gerwing et al., 2022; Jan et al., 2019). By implementing CG into their business practices, companies can enhance their corporate ethics and their openness and accountability (Gibbins et al., 1990; Tibiletti et al., 2021). One crucial internal process of CG is the role of the board of directors, which can affect a firm's corporate performance (Al-Matari, 2020).

These issues are further highlighted by KSA's unique social, cultural and business contexts, as this nation is distinct from other emerging and developed nations. This is because KSA is a predominantly Muslim nation that implements sharia law in every aspect of life. Following the implementation of new CG codes in 2012, KSA now operates under the influence of Islamic shariah principles of governance (Albassam & Ntim, 2017). These principles regulate the extent and type of SR disclosures made by KSA listed companies. Given this context, the present research will develop an SR measurement index that is derived from global reporting initiative (GRI) and Islamic variables. Some previous studies have adopted a similar approach of employing a combination of GRI and Islamic factors to develop a SR measurement index (Alotaibi &

Hussainey, 2016; Haniffa & Hudaib, 2007; Platonova et al., 2018). These studies have guided the present research in further adapting to reflect the current KSA context and in arriving at an SR measurement index that differs from those of previous studies (Ameer & Othman, 2012; Aribi & Gao, 2011; Platonova et al., 2018). The proposed SR measurement index offers a more comprehensive measurement to reflect all sustainability dimensions for evaluating SR practices.

1.1.1 Sustainability reporting practices

Although KSA firms follow the International Financial Reporting Standards (IFRS), which outline how a set of accounting standards are reported in financial statements, some modifications are allowed. These include 1) adding more disclosure requirements, 2) removing optional treatments and 3) amending the requirements that contradict sharia or local law, while considering the level of technical and professional preparedness in KSA (Almaqtari et al., 2021).

Extending from IFRS, the term 'sustainability practices' refers to the process of managing and harmonising the economic, environmental and social demands of diverse stakeholders through various business practices. Sustainability is founded on three pillars: economic, environmental and social sustainability (Buallay et al., 2020b). The first pillar, economic sustainability, incorporates income or expenditures, taxes, employment and business diversity variables (Slaper & Hall, 2011). This pillar signals a company's financial and economic performance, as well as the optimal management of its diverse stakeholders (Hamad et al., 2020). The second pillar, environmental sustainability, focuses on resource viability and ecological sustainability (Slaper & Hall, 2011). This pillar is a crucial component of sustainability and has received the most attention in terms of climate change and growing energy costs (Shad et al., 2020). Further, business survival has become increasingly contingent on the extent to which organisations integrate environmental sustainability into their strategic planning (Zeng et al., 2018). The third pillar, social sustainability, entails the factors of education, equity, health, wellbeing, quality of life and social capital (Slaper & Hall, 2011). Socially responsible businesses combine their operational activities and improve the quality of life of numerous stakeholders (Friske et al., 2023).

Most corporations worldwide publish their SRs to demonstrate their sustainability activities (Deegan, 2013; Karaman et al., 2018). According to GRI (2019), 90% of the world's 250 largest corporations published SRs in 2017, and 75% reported their sustainability progress according to the GRI sustainability index. Increasing SR rates are prompted by pressure from stakeholder groups to show greater transparency because they want corporations to not only be financially successful but also socially and environmentally responsible (Rahman et al., 2021). Consequently, companies worldwide incentivise businesses to improve their sustainability policies and the reporting of these activities. This increasing trend of the world's 250 largest firms indicates that sustainable practices are becoming obligatory, as is their reporting. Presently, businesses must demonstrate a high level of social responsiveness via proactive SR (Amran et al., 2017). According to Al Hawaj and Buallay (2022) and Amran et al. (2017), numerous industrialised economies pay increased attention to sustainability. However, in developing nations such as KSA, little emphasis has been placed on sustainable practices, and especially on SR (Ebaid, 2023a).

1.1.2 The nexus of sustainability reporting with firm performance

Although previous studies have investigated how SR affects firm performance in developed countries (Buallay, 2019; Buallay et al., 2021), scant studies have focused on this topic in developing countries (Al Hawaj & Buallay, 2022; Dissanayake et al., 2019; Ehsan et al., 2018). According to Galli and Bassanini (2020), SR in developing countries is still limited compared with developed countries because of different market behaviours. Firms in developed countries face increasing pressure because of their resource capacity to support SR (Haidar et al., 2021).

Further, previous studies in this area have derived mixed results, with several researchers identifying a positive relationship between SR and firm performance (Albitar et al., 2020; Ammer et al., 2020; Dewi et al., 2023; Ebaid, 2023a; Ellili & Nobanee, 2022; Uwuigbe & Egbide, 2012), and others demonstrating a negative relationship between SR and firm performance (Duque-Grisales & Aguilera-Caracuel, 2019; Ghardallou, 2022; Landi & Sciarelli, 2019). Moreover, some studies have demonstrated no association (González-Rodríguez et al., 2019; McWilliams & Siegel, 2000; Pajuelo Moreno, 2013). These mixed findings might have been caused by SR differences between countries and potential inconsistencies with SR (Birkey et al., 2016).

1.1.3 Corporate governance as a moderating effect on sustainability reporting and firm performance

Previous studies have used CG as a moderator variable to investigate the relationship between SR and firm performance. Ali et al. (2020) contended that positive relationships are more prevalent compared with results indicating negative coefficient signs. For example, Rossi et al. (2021) demonstrated that board characteristics positively and significantly affected SR practices and firm performance. Similarly, Ammer et al. (2020) discovered that board independent directors (IDs) in KSA significantly and positively moderated the influence of environmental sustainability practices on firm value. This finding suggests that stakeholders associate firms' environmental reporting with an increased number of IDs who provide better accountability for environmental practices. Conversely, some studies have revealed that CG has a negative moderating effect on the relationship between SR and firm performance (Butt et al., 2020), while others have found that audit quality, as a moderating variable, does not affect the relationship between SR disclosure and return on assets (ROA), return on equity (ROE) (Dewi & Monalisa, 2016). However, a review of recent empirical research has indicated mixed results caused by the moderating role of CG mechanisms on the relationship between SR and company performance.

Given the context outlined in this subsection, CG can be used as moderation variable to research the relationship between SR and firm performance (financial and non-financial). Since CG can effectively align the interests of the shareholders and management, its effects on a firm's performance creates value for both the shareholders and managers (Dewi et al., 2023). This balance maximises profit potential by increasing investor confidence in the firm. Further, effective CG policies ensure transparency in disclosure and reporting, and they promote accountability in terms of financial performance (FP) and non-financial performance (NFP; Munir et al., 2019). Therefore, the importance of CG to stakeholders cannot be overlooked. Aligned with earlier research, the present thesis considers CG according to three aspects: board attributes, ownership structure and board committee.

Previous research has focused on the relationship between CG and SR (Bamahros et al., 2022; Chebbi & Ammer, 2022; Dam & Scholtens, 2012), as well as on the relationship between CG and FP and NFP (Adams et al., 2014; Al-Ahdal et al., 2020; García-Meca et

al., 2015). Studies have also focused on how CG affects SR and FP (Albitar et al., 2020; Ammer et al., 2020). However, until the present time, SR and CG have been primarily studied independently in relation to financial and non-financial firm performance. Further, SR in KSA is a relatively new concept; limited studies have examined it in the context of KSA, indicating that the issue is still in its infancy (Al-Hamadeen, 2021; Alsaeed, 2006; Badkook, 2017). This topic must be addressed, given that effective CG mechanisms and SR in a firm can improve firm performance.

Saudi Vision 2030 aims to reduce KSA's reliance on oil, diversify its economy and expand public service areas such as health, education, infrastructure, recreation and tourism. It also aims to achieve financial sustainability with less social and ecological degradation. Consequently, SR is considered an essential part in achieving these goals. A move towards achieving them is evidenced by the Saudi Stock Exchange joining the United Nations (UN) Sustainable Stock Exchange (SSE) initiative in 2018. This initiative directs KSA capital market enterprises to strengthen their incorporation of sustainability practices and achieve social and environmental objectives (e.g., responsible production and consumption, climate-related actions). A KPMG (2020) survey of SR revealed that KSA continues to be a nation with much lower sustainability practice rates than the worldwide average, despite an increase from 2017 to 2020. According to Ebaid (2023b), less than 36% of firms in KSA practice SR. Nevertheless, KSA firms are improving their approaches to increase their engagement with SR.

1.2 Research problem

According to the Global Risks Report (World Economic Forum [WEF], 2019), sustainability-related issues are among the top three global risks. Therefore, to control these risks, the UN launched their Sustainable Development Goals (SDGs) in 2015, which required business firms to adopt SR. KSA's adoption of SR practices among listed firms has been somewhat sporadic (Alotaibi, 2020; Alsaati et al., 2020; Ebaid, 2023b; Yow, 2016); additionally, it has focused on the social aspect more than on having a holistic orientation of SR in KSA (Hill et al., 2015).

KSA listed firms have not performed well in terms of SR compliance and adoption aimed at reducing global sustainability risks (Alotaibi, 2020; Yow, 2016). Habbash (2017) found that SR practices among KSA listed companies was below average, with only 24% of

average disclosures. Previous studies have examined the penetration level of SR in KSA and have revealed that KSA listed firms lag behind in terms of SR compared with other countries (Alotaibi & Hussainey, 2016; Issa, 2017; Yow, 2016). Razak et al. (2019) further argued that the absence of a standardised sustainability measurement index and framework have prompted poor and inconsistent sustainability practices among KSA listed firms, which could deteriorate their FP and NFP. Moreover, the KSA government, in its 2021 national transformation program, aimed to rectify the lack of SR practices in KSA and declared it a major challenge (Bataeineh & Aga, 2022).

Given the pressure to present SRs, a sustainability measurement index that reflects the KSA Islamic context must be developed. Because of KSA's social, economic, religious and political background—which influences the whole society's daily life, commerce, law, economics and politics (Alsaif, 2015; Habbash et al., 2016)—the KSA context for SR is thus distinct from that of other nations. It is also different because a small number of political and commercial families hold and control KSA's listed companies. Therefore, a modified GRI index must be developed to incorporate specific aspects of the KSA context (e.g., religious and cultural considerations) and its local economic systems (e.g., charitable organisations that support initiatives like the memorisation of the Holy Quran). Therefore, the present research developed a sustainability measurement index and examined its effect on the FP and NFP of KSA listed firms.

Saudi Vision 2030 also emphasised CG's role in promoting sustainable business practices and pursuing the national aspiration of the SDGs. According to Gangi et al. (2020), companies with stronger CG mechanisms are inclined to be more involved in SR. This finding supports stakeholder theory, thereby indicating that managers employ effective governance mechanisms alongside SR initiatives to address stakeholder concerns. Many stakeholders—including government bodies, non-government organisations, environmental bodies and political groups—are advocating for green environments, social justice, human rights and equality among others. Therefore, SR compliance has become a critical part of CG. According to stakeholder theory, management should use effective CG practices to prioritise sustainability practices, which will ultimately yield better firm performance (Rodriguez-Fernandez, 2016). Therefore, CG has a moderating role in the relationship between SR and firm performance. This knowledge gap identified

in the existing research has outlined the research problem that the present thesis aims to address:

> To empirically examine how SR affects the FP and NFP of KSA listed firms via the moderating effect of CG.

1.3 Research questions and objectives

To address the research problem listed above, this thesis aimed to investigate SR's influence and how it affects the FP and NFP of KSA listed firms from 2015 to 2020, as moderated by CG mechanisms. Therefore, the present research is guided by the following research questions (RQs):

> RQ1: How does the SR index developed for KSA listed firms differ from the standard GRI index in its ability to capture the contextual factors specific to the listed firms' operations?
>
> RQ2: How does SR affect the FP of KSA listed firms?
>
> RQ3: How does SR affect the NFP of KSA listed firms?
>
> RQ4: Do CG mechanisms moderate the impact of SR and FP in KSA listed firms?
>
> RQ5: Do CG mechanisms moderate the impact of SR and NFP in KSA listed firms?

SR and CG are crucial areas of investigation for Saudi-listed firms due to their potential impact on the overall performance and reputation of organisations. Therefore, this research focuses on SR and CG due to their relevance and benefits for Saudi companies amidst the increasing trend of sustainability issues. The intention to examine SR's impact on financial and non-financial performance is to provide a clearer understanding of how Saudi firms respond to sustainability challenges and enhance competitiveness. Adopting SR allows firms to meet stakeholder demands, enhance reputation, and attract responsible investors, while CG serves as a driving force to ensure SR compliance, set long-term SR strategy and align with evolving sustainability issues. Incorporating CG as a moderator will bestow firms with important insights into how it influences SR's effects on performance and how companies manage sustainability matters in the region.

This research's main objective is to empirically examine the impact of SR on FP and NFP as moderated by the CG mechanisms of KSA listed firms. The specific research objectives that were pursued to address the RQs include the following:

1. To develop a measurement of the SR framework that covers GRI and Islamic items for KSA listed firms.
2. To examine how SR affects FP in KSA listed firms.
3. To investigate how SR affects NFP in KSA listed firms.
4. To investigate the moderating impact of CG mechanisms on SR and FP in KSA listed firms.
5. To investigate the moderating impact of CG mechanisms on SR and NFP in KSA listed firms.

1.4 Definition of key terms

Table 1.1 provides definitions for the key concepts used throughout the present research.

Table 1.1 Definitions of key terms

Concepts	Description
Corporate sustainability	An approach that aims to create long-term stakeholder value through implementing a business strategy that focuses on the ethical, social, environmental, cultural and economic dimensions of business (Ashrafi et al., 2019, p. 386).
Sustainability reporting	A company-prepared report that exposes the economic, environmental and social performance of commercial organisations (GRI, 2013, p. 5).
Corporate governance	A collection of relationships between a company's management, board of directors, shareholders and other stakeholders; this collection further offers a framework through which the company's objectives are defined, as well as the means to achieve those objectives and assess performance (OECD, 2015, p. 9).
Board size	The total number of directors who serve on a company's board, including the CEO and chairman (Shahzad et al., 2023, p. 18).
Independent directors	Individuals who serve on a company's board of directors, but who are not affiliated with the company in any material or financial way that could compromise their independence (Jan et al., 2021, p. 11).
Audit committee size	The number of audit committee members appointed by the major bodies, which can influence the quality of financial reporting and company disclosures, as well as the members' dedication to

	monitoring management and detecting deceptive behaviour (Moses, 2016, p. 63).
Board gender diversity	Either the total number of women serving on a company's board of directors or the ratio of women directors to the total number of directors on the board (Kabir et al., 2023, p. 5).
Government ownership	The proportion of shares held by government institutions in a company (Esa & Ghazali, 2012).
Foreign ownership	The ownership of an asset by a person or entity from outside the nation in which the asset is located (Rashid, 2020, p. 726).
Financial performance	A subset of organisational efficiency that includes operational and financial results (Santos & Brito, 2012, p. 98).
Non-financial performance	A subset of organisational approaches that is used to assess an organisation's operational efficacy and measure a company's performance according to factors such as customer happiness, employee engagement and market share growth (Yüksel & Dağdeviren, 2010, p. 1,270).
International Accounting Standards Board	An international board that produces accounting standards, known as the IFRS; these standards aim to enhance financial statement comparability, minimise agency costs and increase openness worldwide (Mylonas, 2016, p. 19).

1.5 Research methods overview

A quantitative approach was used to empirically examine the present research problem. This research employed fixed effect (FE) panel regression models to examine how SR affected firm performance under the moderating effect of the CG mechanism for KSA listed companies. This research also used t-tests to evaluate the role of IFRS adoption and pre-COVID-19 and COVID-19 effects, as well as to compare GRI and modified GRI in terms of KSA firm performance. The present research incorporated two main sample periods: a pre-COVID-19 period (2015–2019) that comprised 596 firm–year observations from 121 non-financial companies; and a period that included COVID-19 (2015–2020) that comprised 690 firm–year observations from 121 non-financial companies. This study's data were collected from the annual reports of listed companies, the Tadawul website (www.tadawul.com.sa) and other sources, including other documentation and reports from the KSA Ministry of Commerce and Investment.

To avoid endogeneity caused by unobserved heterogeneity, the study's equations were estimated using the FE panel data approach, which was founded on the outcome of a Hausman test outcome (e.g., Brown et al., 2011; Himmelberg et al., 1999). STATA and

SPSS software were used to conduct the analysis. Further, for a robustness check, this study employed a generalised method of moments (GMM) approach to determine whether the results had an endogeneity problem to adjust for any concurrent interdependencies (Dang et al., 2015; Shao, 2019). The present study observed that the FE panel regression model method is the most often used approach in existing SR and CG research (Adnan et al., 2018; Amidjaya & Widagdo, 2020; Li & Qian, 2012; Lin & Zhang, 2009; Zaman et al., 2022). Moreover, GMM is typically employed as a robustness check for data from established and developing countries (Ammer et al., 2020; Pathan, 2009; Shao, 2019; Wellalage et al., 2018). These methods are further discussed and justified in Chapter 4.

1.6 Research contributions

1.6.1 Academic contribution

The present research contributes to the existing body of knowledge in the following ways:

1. The present research developed a modified SR measurement index by including key Islamic indicators for KSA listed firms, in which the proposed index differs from those of previous studies. Unlike prior modifications for Islamic indicators—which did not categorise sustainability items into economic, environmental and social sustainability dimensions—the proposed index in this research incorporates all three dimensions of sustainability (Aribi & Gao, 2011; Haniffa & Hudaib, 2007; Khan et al., 2013; Mallin et al., 2014). Further, previous studies have focused on other countries or specific industries, while this study has designed a SR index that is specific to non-financial KSA firms. The present study is also distinctive because it incorporates Islamic items such as zakat, charity and Qard-e-Hassan into the GRI, which provides a more comprehensive understanding of sustainability practices in the context of KSA culture and religious standards. Therefore, this study's proposed index is unique in its approach, and it can be used as a foundation for measuring the SR of non-financial KSA firms. The Islamic items are critical to Muslim stakeholders, who are strongly concerned about their cultural values and beliefs.
2. To the best of the researcher's knowledge, this study is the first investigation to employ eight variables of CG mechanisms to moderate the GRI–FP relationship

for the KSA context. Implementing a modified GRI that includes Islamic sustainability items, in combination with a comprehensive set of CG mechanisms, is a novel strategy that surpasses the limited previous works in the field, in which either no or only a few CG factors were employed.

3. This study further enriches the literature by comprehensively examining how SR influences the FP and NFP of firms, while simultaneously considering CG as a moderating factor. This comprehensive perspective is supported by a multi-theoretical approach that encompasses stakeholder, legitimacy, agency and institutional theories. To the best of the researcher's knowledge, this study is the first to employ this approach.

1.6.2 Practical contribution

The present study also provides practical contributions, including the following:

1. This research's findings that emerge from the proposed index will help listed KSA firms, regulators, policymakers and management more effectively identify vital SR indicators for firm performance.
2. The research's findings will also provide a SR framework that can provide key insights for practitioners and investors regarding specific SR items that pertain to firm performance. Therefore, these findings can help investors make decisions about their investment in those companies that report those items.
3. The research's findings can outline the value and advantages of investing in SR for KSA enterprises. Moreover, KSA listed firms will obtain insights into the key elements of CG, which can improve the quality of SR and subsequently improve firm performance.
4. The research's findings can produce more meaningful and effective actions to maintain sustainability while also carrying out its legal obligation of SR.
5. The current study is the first to use two datasets (pre and during COVID-19) to examine how SR (which includes Islamic items) affects FP, which consequently offers a critical comparison of how KSA firms performed in both periods. It also investigates how IFRS adoption affects SR and firm performance in the context of KSA through an analysis of the pre and post-IFRS adoption periods.

1.7 Thesis organisation

This thesis is organised into seven chapters (see Figure 1.1). Chapter 1 presents an overview of the topic, provides the background for the research and outlines the RQs that were developed according to the study's problem statement. Chapter 2 explains the theories and empirical literature that underpin SR, FP, NFP and IFRS. This chapter also presents the hypothesis development in relation to how SR affects FP and NFP. Chapter 3 explains the theories and empirical literature that pertain to CG as a moderating factor between SR and firm performance. It also reveals the hypothesis development regarding the moderating effect of CG on SR and firm performance.

Chapter 4 describes the research's conceptual framework, methodology and data by explaining how it collected data and constructed its variables and models. This chapter also outlines the detailed methods that were employed to examine how SR, FP, NFP and CG affect the relationship between SR and firm performance. Chapter 5 presents findings in the form of descriptive statistics to demonstrate generalised findings according to the research sample. The chapter also covers the research's classic assumption test, correlation analyses, model selection and hypothesis testing, as well as its Islamic and GRI index comparison. Chapter 6 discusses the results in reference to the RQs, as well as describes the study's robustness test to demonstrate that the estimated regression coefficients can be reliably interpreted as the effects of the associated factors. Finally, Chapter 7 summarises the studies conducted for this thesis, as well as presents its implications and future research directions.

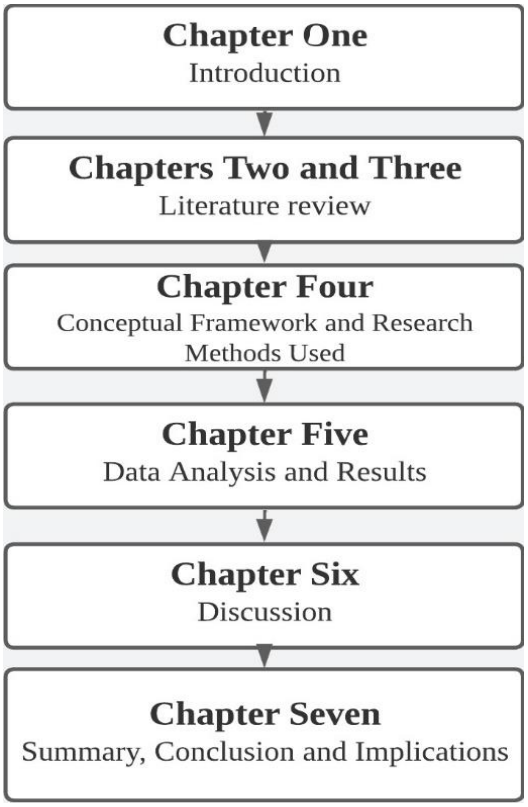

Figure 1.1 Thesis structure

Chapter 2: Sustainability reporting and firm performance

2.1 Introduction

The previous chapter outlined the present thesis's context, research problem, RQs and research objectives. This chapter extensively reviews the literature that focuses on two main constructs of this thesis: SR and firm performance. It begins by reviewing the KSA context in Section 2.2 and then defines corporate sustainability in Section 2.3. Sections 2.4 and 2.5 discuss the historical development of sustainability and SR, while Section 2.6 describes the current landscape of SR. Section 2.7 reviews the theories related to SR, and Section 2.8 discusses the link between SR and IFRS. Section 2.9 describes the formation and development of the SR index, while Sections 2.10–2.13 review the concept of firm FP and NFP, along with associated empirical studies. Finally, Section 2.14 provides a summary of the chapter.

2.2 The context of the Kingdom of Saudi Arabia

This section provides the relevant background of KSA, with a focus on the country's political, legal and economic environment. It then highlights the monitoring and regulating authorities in KSA and their respective duties and responsibilities before overviewing the existing SR and CG practices in KSA at the end of this section.

2.2.1 Background to the Kingdom of Saudi Arabia

KSA is a rapidly developing country in the Middle East that spans 2,250,000 km^2 (MOFA, 2015), with Riyadh as its capital city. Founded in 1932, KSA is the largest state in Western Asia, with a population of approximately 36,263,783 people as of March 8, 2023—15.5 million of whom are non-Saudi nationals (WPR, 2023). The country is distinguished by its two holy Islamic towns, Mecca and Medina, and Arabic is the official language (Aloulou & Alarifi, 2022). KSA is a member of the Arabian Gulf Cooperation Council (GCC), and its currency is Saudi Riyal. The official religion of KSA is Islam, which influences many aspects of life in the nation, including finance, accounting and the stock exchange.

Since KSA was not dominated by colonialism, it freely developed its own economy, language, society and culture (Bowen, 2014). Further, KSA's government is a monarchy

restricted to the Al-Saud family. As Goldthau (2017) highlighted, since there has never been a foreign invasion in KSA, the country's culture, language, society and economy were allowed to grow. Further, KSA has recently implemented significant changes related to its social system, business industry and governmental structure. These amendments were then incorporated into the legislative framework in 2005, resulting in the country's admission into the World Trade Organization. It joined the G20, one of the world's top economies, in 2009.

2.2.2 Economic context of the Kingdom of Saudi Arabia

With approximately 16% of the world's petroleum reserves, KSA's economy is oil based. The petroleum sector accounts for approximately 87% of KSA's budget revenues, 90% of its export earnings and 42% of its GDP (Bradshaw et al., 2019). Before 1937, KSA's economy was founded on agriculture, but the discovery of vast oil reserves transformed its growth trajectory (MEP, 2019). KSA is also a founding member of the Organisation of the Petroleum and Exporting Countries (OPEC), as well as one of the world's leading exporters of oil and petrochemicals (Fattouh, 2021). Through diversification, Saudi Vision 2030 aims to reduce the country's reliance on its oil-based economy and increase its reliance on new resource development. Vision 2030 incorporates gas exploration, power generation, telecommunications and petrochemical manufacturing in its diversification strategy. KSA now has the largest economy in the Middle East (Habtoor et al., 2017; Wilson, 2021). In the global market, its economy accounts for 44% of the total capitalisation of all Arab states, as well as 25% of the GDP of all Arabic countries (Habbash, 2016). KSA is not only a significant OPEC member but also a member of the G20, which is increasingly considered the premier grouping of the world's greatest countries, who work to advance global policy and address the most pressing issues of the contemporary era (Fattouh, 2021). Additionally, KSA joined the World Trade Organization in 2005. Joining these organisations has allowed the country to increase its access to international markets and attract more investors worldwide (MEP, 2019).

Launched in 2016, Saudi Vision 2030 is an ambitious collection of programs that is designed to foster national development in KSA. The plan aims to improve the country's quality of life by enacting change in several areas (e.g., environmental standards, healthcare) and by boosting economic growth (Bataeineh & Aga, 2022). The timetable for implementing these various programs continues to undergo revision, but the main

themes of Saudi Vision 2030 include a vibrant society, a successful and sustainable economy and the determination of nation under transformation.

2.2.3 Corporation and regulations in the Kingdom of Saudi Arabia

Nalband and Al-Amri (2013) stated that the KSA government has several regulatory authorities that develop and ensure compliance with the legal, ethical and social contexts of the country's regulatory legislation.

2.2.3.1 Ministry of Commerce

KSA's Ministry of Commerce is a cabinet-level ministry responsible for investment throughout the country's several business sectors. The Ministry of Commerce was formed in 1954 to regulate and develop the kingdom's external and internal commerce (Khan et al., 2013). The ministry also oversees global commercial efforts to cultivate and establish business relationships with other countries. Further, its primary responsibility in the country is to promote and regulate the corporate sector in accordance with Islamic principles. Ensuring efficient CG in KSA is also a primary mission of the Ministry of Commerce, which involves regulating the corporate sector to foster a transparent institution that benefits society (Ramady, 2021).

2.2.3.2 Saudi Organization of Certified Public Accountants

The Saudi Government issued the *Certified Public Accountant Law (CPAL) 1991* to regulate the auditing and accounting profession in KSA. In September 2005, the Saudi Organization for Certified Public Accountants (SOCPA) issued 14 auditing and 17 accounting principles to maintain standards for auditing and accounting (Mihret et al., 2017). According to Khan et al. (2013), the CAPL statute stipulates that the SOCPA is charged with developing the accounting and auditing professions in KSA. In KSA, SOCPA is tasked with managing and regulating the audit profession and frequently examining the performance of audit firms. Further to SOCPA, KSA companies also adhere to the *Companies Act 1965*, the *Capital Market Law 2004* and the Corporate Governance Code 2006. The *Corporate Governance Act 2006* was modified and amended in 2010, mandating that all newly listed companies closely adhere to the country's norms

and regulations (Mihret et al., 2017). The recent CG codes are enacted in 2022 to ensure that capital markets comply with 12 parts and 98 articles.[1]

2.2.3.3 Kingdom of Saudi Arabia capital market

KSA's capital market is responsible for issuing rules and regulations for the *Capital Market Law 2003*, which was issued by Royal Decree No. M.30 in 2003. Under this statute, the Capital Market Authority (CMA) was granted authority to oversee and regulate the complete disclosure of data and information regarding securities, including to issuers and major stakeholders (Mihret et al., 2017). In KSA, the CMA conducts educational initiatives and financial awareness programs to foster an investment-friendly environment. The CMA also focuses on applying the finest CG strategies and practices by requiring that corporations adopt procedures that establish internal control rules and resolve conflicts of interest (Abdelqader et al., 2022).

2.2.3.4 Kingdom of Saudi Arabia Stock Market (Tadawul)

The Saudi Stock Exchange, also known as Tadawul, was founded in 2007, and it is the sole body in KSA that manages securities exchange (Gouda, 2012). Although Tadawul began with only 14 listed companies, it currently has 203 registered companies listed on the stock exchange. According to estimates for July 2020, the market capitalisation of Tadawul is approximately 2.22 trillion USD, with a volume of 102.8 billion USD (Ramady, 2021). In 2003, the CMA of KSA regulated Tadawul, which became a partially self-regulating body in 2018. Since the advent of CMA, Tadawul has prioritised the development of the stock market by establishing and promoting the Saudi Stock Exchange.

Tadawul comprehends the relevance of governance, social and environmental factors in the challenges of the current global context, such as climate change (Bajaher, 2019). Tadawul is adamant about its role in KSA's long-term development and its achievement of Saudi Vision 2030 goals.

[1] These 2022 CG codes can be found on the following website: https://cma.org.sa/en/RulesRegulations/Regulations/Documents/CorporateGovernanceRegulations.pdf

2.2.3.5 Accounting and auditing standards in the Kingdom of Saudi Arabia

KSA's auditing, accounting and financial standards are specified under the 1965 Company Act No. M/6. According to SOCPA regulation, the KSA's Ministry of Commerce oversees SOCPA as the accounting and auditing standard-setter for all firms that operate in the kingdom (Nalband & Al-Amri, 2013). Insurance companies and banks are recognised as public interest entities in KSA's accounting system, while all other entities are considered non–public interest entities. In addition to SOCPA-added disclosures and regulations, the endorsed standard is the IFRS released by the International Accounting Standards Board (IASB; Khan et al., 2013). Other pronouncements and standards include the technical and standard releases endorsed by SOCPA that cover issues not covered by IFRS, such as zakat and tax obligations (Bajaher, 2019).

For auditing frameworks, the *Companies Act 1965* requires all joint-stock and limited liability corporations, brokerages and corporations to have a yearly audit of their financial statements and reports (Abdelqader et al., 2022). As per the requirements of SOCPA, the International Standards on Auditing should be utilised in the KSA, along with the additional obligations of maintaining audit documentation for a minimum of 10 years and including footnotes in audit reports as of the assessment date. Professional accountants in KSA are governed by SOCPA in compliance with the *Accounting and Auditing Law*, which was enacted in 1992 and is overseen by the Ministry of Commerce (Bajaher, 2019).

2.2.4 Corporate governance in the Kingdom of Saudi Arabia

As a concept, CG is still in its infancy in most KSA firms. Although the CMA established CG frameworks in 2006, most KSA firms have only minimally implemented CG mechanisms (World Bank, 2009). Because KSA and Western corporate sectors are substantially different, it is difficult for KSA to adopt certain regulations derived from the Organisation for Economic Co-operation and Development (OECD; Riyadh Chamber of Commerce and Industry, 2007). Given these differences, adopting international corporate governance frameworks without considering local factors will not work for KSA's CG and SR. KSA's context thus requires a CG structure that promotes sustainability disclosures, reporting and organisational performance.

Before the CMA established the regulatory framework in 2006, CG was overlooked in KSA, just as it was in many other developing nations. However, from 2005, the CMA began examining the performance and sustainability issues that KSA organisations faced (Al-Matari et al., 2012). The Saudi Stock Exchange crash of 2006 also highlighted the need for an effective CG framework, which prompted the CMA to implement one in 2006.

Article 1 of the Corporate Governance Regulations states that CG regulates the management of firms listed by the Saudi Stock Exchange. This regulatory framework ensures that listed firms follow CG rules to protect direct shareholders and stakeholders (CMA, 2006, p. 3). Listed firms were accordingly required to report their compliance with these voluntary regulatory frameworks, as well as justify any non-implementation of regulations. Since 2009, the CMA has required that all firms listed in the Saudi Stock Exchange follow these CG guidelines, although they were initially voluntary.

The CG instituted in KSA was founded on the OECD's principles of CG and the 1992 United Kingdom (UK) Cadbury report (Al-Abbas, 2009; Riyadh Chamber of Commerce and Industry, 2007). In total, 18 articles are stipulated in the CG, and they address different aspects relating to CG. In this regard, the CG did not establish new policies or guidelines that would enable it to work within the Islamic law context of KSA (Al Kahtani, 2013). In the KSA context, factors such as culture, religion and ownership structures have an inalienable influence on how firms operate; therefore, they should have been key considerations when the GC framework was created in KSA (Al-Abbas, 2009; Seidl et al., 2013).

The demand for CG has recently expanded to address scandals and weaknesses in stock markets, financial systems, legislation and regulations. According to Cadbury (1992), CG requires that businesses 'do the right thing' in internal and external processes, as well as reduce agent-principal agency costs (Andreou et al., 2014). Similarly, KSA is currently grappling with what transparent and trustworthy CG, and good disclosure practices, entail to avoid a financial crisis similar to the great recession of 2007–2008 (Maswadi & Amran, 2023). Further, KSA has contextual, regulatory and institutional frameworks that are similar to those of other Arab nations but distinct from those of other oil-based economies (Piesse et al., 2012).

The Saudi CMA was established in 2003 in response to increasing domestic and international pressure, the demand for effective CG for the country's stock market, and the need to protect the rights of stockholders. In KSA, CG practices are founded on Islamic laws that emphasise social cohesion, responsibility, equity and transparency. Choudhury and Alam (2013) further asserted that the Islamic laws that govern CR also prohibit gambling, profiteering and exploitation, which all pose risks to business operations. Additionally, informal rules, social hierarchies and commitment to traditions (e.g., loyalty to one's clan, tribe, social group, town, region) characterise KSA's business culture. Finally, although nepotism can be prevalent, it is generally not considered detrimental to economic activities (Al–Twaijry et al., 2002; Alshehri & Solomon, 2012).

2.2.5 Sustainability reporting framework aspects in the Kingdom of Saudi Arabia

Before the mid-1990s, KSA had no official sustainability regulations. However, this recently changed given the country's growing environmental consciousness. In 2012, the Saudi Government passed nine new environmental laws to promote sustainability. In 2014, a royal decree stipulated that businesses had five years to comply with the most current air, water and noise pollution regulations. Additionally, all projects had to comply with the Saudi International Development Plan and international benchmark requirements. These requirements formed part of the Presidency of Meteorology and Environment's environmental strategy to protect KSA's health and natural resources (Ahmed et al., 2020).

Since its inception, the GRI has become the pre-eminent voluntary SR system worldwide. The updated GRI standards that came into effect on 1 July 2018 include six themes that are divided into two categories: universal standards and subject-specific standards (AlFadhli, 2019). The present research helps determine whether the largest and most lucrative sectors in KSA comply with GRI standards, as outlined in Saudi Vision 2030. The present research can also be used a resource for potential investors who wish to comprehend the state of corporate sustainability in KSA before making any investment decisions.

In KSA, corporate SR as a concept originated from the Islamic concept of sharia, which was founded on the pillar of zakat (SAGIA, 2008; Visser & Tolhurst, 2017). Therefore, the modern concept of SR is still considered from a cultural perspective. A 2006 survey

of the top 100 KSA companies revealed that reporting on corporate sustainability is considered more from a religious and cultural perspective than from a stakeholder perspective (Visser & Tolhurst, 2017). Religion is thus a critical factor for studying SR in a KSA context. In accordance with the larger assessment system of an Islamic society, SR in the Islamic context may relate to a social contract that is founded on religious and moral values more than on one relating to personal ethical convictions (Low et al., 2013). From an Islamic perspective, the notion of benevolence to others strongly helps determine people's responsibility vis-a-vis their society (Duthler & Dhanesh, 2018; Low et al., 2013).

In KSA, minimal regulations and a limited understanding of corporate SR hinder the widespread acceptance and implementation of corporate SR. Because of the limited adoption of corporate SR in the KSA context, sustainability practices in the country would not be implemented. This can be remedied by increasing the number of KSA companies who include corporate SR in their annual reports; this would embed the concept of corporate SR in corporate practices (Ahmed et al., 2020; Ali, 2017).

2.3 Definition of corporate sustainability

As a concept, sustainability is not restricted to a specific corporation, industry or geography, and it has no expiry or termination date (Gray, 2001). Although several scholars have expressed 'sustainability' in various ways (Carter & Rogers, 2008; Farneti & Guthrie, 2009; Moneva et al., 2006), the definition provided by the Brundtland Commission has the highest popularity. Nevertheless, some researchers consider the Brundtland definition too broad, which has prompted attempts for more precise definitions. For example, Pfeffer (2010) defined sustainability as a concerted effort to conserve natural resources and reduce waste in company-wide operations. Goldsmith and Goldsmith (2011) similarly defined sustainability as the implementation of consumption choices that help conserve the environment and limited global resources. White (2013) further described corporate sustainability as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs' (p. 213).

Although the above definitions are strictly associated with environmental concerns, it should be noted that other definitions apply to social concerns. For example, Biart (2002) defined sustainability as an effort to identify societal challenges that might limit strategic,

long-term development. In this sense, most definitions clearly emphasise a single concept. Sustainability should thus be defined from a broader capacity, while also simultaneously eliminating ambiguousness. This necessitated the TBL approach, which includes enterprises balancing economic considerations with environmental and social issues (Elkington, 1998). This approach signifies that enterprises that embrace the concept of corporate sustainability are not just driven by economic rewards and short-term benefits, but that they are also driven by a long-term outlook that creates value in ecological and social terms (Cramer, 2002).

In this context, Eweje and Perry's (2011, p. 125) definition perceives firm sustainability as the attempt to incorporate social, economic and environmental factors in an organisation. In this case, the objective is to incorporate economic dimensions within the environmental and social concepts. The concept of sustainability is thus multidimensional, and it does not only encompass generating financial value but also creating social and environmental value for the organisation's stakeholders. This implies that to achieve sustainability, companies must consider performance in terms of social and economic value, similar to how they consider their FP (Capella, 2002). Ultimately, an organisation's long-term value will depend on the nature of its relationships with different stakeholders (Perrini & Tencati, 2006; Post et al., 2002, pp. 8–9).

The concept of corporate sustainability has expanded further to cover the traditional organisational setting (Pagell & Gobeli, 2009). Although most firms focus more on profitability, other aspects understandably have significant public correlations. Specifically, it is evident that companies should implement measures to maintain their environmental, social and economic status (Elkington, 1997a). Therefore, the concept of corporate sustainability includes meeting present social, environmental and economic needs without compromising the potential of future generations.

Considering this section's review of various definitions, the present research employed the following operation definition: corporate sustainability is an approach that aims to create long-term stakeholder value by implementing a business strategy that focuses on the ethical, social, environmental, cultural and economic dimensions of doing business (Ashrafi et al., 2019, p. 386). Accordingly, this definition includes the notion that companies perform their operations to meet the environmental, social and economic

requirements of future generations without losing the prospect of achieving their goals at the present time.

2.4 Historical development of sustainability

The present concept of sustainability has gradually developed over time (Purvis et al., 2019). The term 'sustainability' was initially used in a broad sense in the 1970s, in which it referred to the notion of maintaining a balance between human activity and the environment (Herzig & Schaltegger, 2006).

'Sustainability' became popularised in the 1990s, and the term was increasingly used in the business and academic worlds (Cerin, 2005; Umwelt et al., 2002). This period saw the emergence of several initiatives that aimed to promote sustainability, such as the UN's Earth Summit in 1992 and the Kyoto Protocol in 1997 (Jordan & Voisey, 1998). In the 2000s, the concept of sustainability was further developed and refined to include a specific focus on integrating economic, social and environmental considerations (Tost et al., 2018). In the 2010s, the concept of sustainability became increasingly mainstream, with many businesses and governments incorporating it into their strategies and policies (Deloitte, 1992). For example, the European Union established the European Commission's SDGs, which aim to promote sustainable development in Europe. Additionally, the 2015 Paris Agreement was established to limit global warming by setting targets to reduce greenhouse gas emissions—and it placed sustainability at the forefront of international policy.

Presently, sustainability is becoming increasingly crucial, with governments, businesses and individuals striving to reduce their environmental influence and promote sustainability (Amankwah-Amoah, 2020). Additionally, the increasing prevalence of climate change and environmental disasters has further highlighted the need for sustainability and the importance of protecting the planet (Jabbour & Renwick, 2020).

Corporate sustainability in KSA is still a developing field. However, KSA's Saudi Vision 2030 and 2020 National Transformation Program have established an agenda for more balanced growth and socio-economic development. Further, the expansive and reliable policy planning and management structure of the 2030 Agenda for Sustainable Development also established a firm basis from which to enact it and achieve

sustainability. This agenda comprises numerous significant transformational and executive projects that establish critical long-term objectives and targets, as well as an extensive network of government agencies that were either newly founded, reorganised or merged together (Vision2030, 2016). Saudi Vision 2030's success depends on the active participation and empowerment of key stakeholders from all levels, as well as the implementation of thorough evaluation tools to track the progress of attaining sustainability (Alshuwaikhat & Mohammed, 2017).

Although corporate sustainability has been variously criticised regarding its demerits in enterprises, businesses are increasingly recognising their role in ensuring social and environmental sustainability (Lozano, 2013). Sisaye (2013) observed that the pursuit of sustainability in businesses has prompted innovations in accounting and reporting systems that have subsequently prompted more social and environmental disclosures to stakeholders. However, despite this progress, businesses still encounter barriers, such as non-standardisation (Sisaye, 2011) and the inability to compare the content of disclosures that different companies and industrial sectors make (Odera et al., 2016).

Further, an organisation's sustainability is intrinsically tied to its ability to meet the needs and interests of its stakeholders. This signifies that companies must increase their engagement with their stakeholders to positively influence their sustainability efforts (IFC, 2007). To do so, organisations should adopt policies that are more open and transparent to various interest groups. Further, by incorporating social and environmental objectives with their financial goals, organisations can meet the core principles of corporate sustainability. To achieve this, firms should provide disclosures and reports that outline their operations in relation to the interests of their various stakeholders (Perrini & Tencati, 2006; Seow et al., 2006).

Organisations must meet the needs and expectations of their stakeholders to maintain strong relationships with them (Bourne, 2005, 2010). According to stakeholder theory, working towards sustainability not only helps solidify the relationship between firms and their stakeholders, but it also furthers the firms' efforts to meet their financial goals (Wilson, 2003). Stakeholder theory essentially posits that a firm's success is intrinsically tied to its successful management of its relationships with stakeholders (Elijido-Ten, 2007). Sustainability would thus be impossible to achieve without successful stakeholder relationships, given that it depends on an organisation's ability to satisfy the interests of

its stakeholders (Strand, 2008). To establish a more inclusive process, firms should engage their stakeholders when they create their corporate sustainability objectives (Schaltegger & Wagner, 2017).

2.5 Historical development of sustainability reporting

Several environmental and social disasters occurred in the 1970s and 1980s—including the Bhopal gas tragedy and the Exxon Valdez oil spill—which directed public attention towards the negative effects that corporate activities can inflict on the environment and society. Some companies began publishing environmental and social responsibility reports in response, although these were not standardised and often lacked credibility (Elkington, 1993).

The growing notion of sustainable development, which became clearer between 1980 and 1988, prompted an increasing need for SR. The reports 'World Conservation Strategy' (1980), 'World Commission on Environment and Development' (1983) and 'Our Common Future' (1987) provided the theoretical foundation for the widespread acceptance of sustainable development as a concept, as well as acceptance of SR (Gokten et al., 2020). Although environmental reporting began gaining popularity in the 1980s, a historic milestone in SR's evolution was the World Conservation Strategy report (Baines, 1983). The idea of sustainable development was referenced for the first time in this report, though in a limited form. Additionally, the report's global influence remained incredibly minimal. The Brundtland Commission then offered an alternative perspective on sustainable development, in which it did not distinguish between the economy and the environment as independent components. The report 'Our Common Future' was published in 1987 and then adopted by the General Assembly Resolution 42/187 as an outcome of its investigations, which were conducted in accordance with the philosophy that the Brundtland Commission espoused (Keeble, 1988). Under the guise of sustainable development, the report's central notion became obvious; sustainable development was defined as 'a development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Perchinunno et al., 2023, p. 1).

The early 1990s witnessed a surge in SR practice, which was possibly sparked by the European Commission's implementation of market mechanisms that aimed to push corporations to address their environmental issues (Larrinaga & Bebbington, 2021). The

goal of the European Union's environmental policy was to encourage businesses to report more about their environmental performance and externalities (Wallace et al., 2020). Beginning in the early 1990s, discussions about various aspects of society—including the business and economic worlds—became increasingly more relevant to environmental issues and calls for sustainability. The focus shifted to creating strong frameworks for sustainability. The inception and development of sustainability and sustainable development were significantly influenced by international summits, such as the 1992 UN Summit on the Environment and Development in Rio de Janeiro (Kelly, 2020). The notion of environmental accounting originated as the first methodological instrument of SR as a concept (Elkington, 1993). After the Exxon Valdez disaster in 1989, environmental reporting—which informs stakeholders about how an enterprise's operations affect the environment—became more crucial, especially for investors.

Early in the 1990s, the topic of SR was discussed in terms of environmental accounting, in which the emphasis of reporting was placed on how corporate operations affected the environment. The TBL method, which was first proposed in 1998, defined corporations as social, economic and environmental entities. In 1998, the GRI steering committee also accentuated the necessity of creating a reporting structure that accounted for economic, environmental and social effects. This signifies that 1998 was the year that environmental accounting transformed into sustainability accounting. Consequently, the development of SR occurred between 1989 and 1998 (Kelly, 2020).

GRI became an autonomous organisation after it released its first GRI guidelines (G1), and it relocated its headquarters to Amsterdam, the Netherlands, in 2002. Under the sponsorship of the United Nations Environment Programme (UNEP), GRI formally unveiled its headquarters and established itself as a group that was devoted to SR (Gokten et al., 2020). The UN then accepted the GRI's guidelines as the standard for SR in 2010. The final product of the framework development process—the fourth GRI guidelines (G4)—was released in 2013. GRI then advanced to the last level of standardisation in 2014 by publishing its content index and establishing the Global Sustainability Standards Board (Kelly, 2022). In 2016, the GRI published its first SR standard set (Larrinaga & Bebbington, 2021).

2.6 Current landscape of sustainability reporting

As discussed in the previous subsections, the practice of reporting about an enterprise's social, environmental and economic performance has recently been conceived as SR (Bebbington, 2014; Hahn & Kühnen, 2013; Lodhia & Hess, 2014; Manetti & Bellucci, 2016). Initially, the disclosure of sustainability reports was voluntary (Milne & Gray, 2013). However, when the challenges associated with sustainability increased, the demand for SR from different stakeholders (e.g., shareholders, regulators, civil society) also increased. Consequently, the 1990s witnessed the evolution of standalone sustainability reports (Kolk, 1999). However, the type and quality of sustainability information and how it was governed and measured were problematic (Hohnen, 2012). Milne and Gray (2007) observed that problems with voluntarily disclosing sustainability reports occur because businesses try to provide a mostly favourable account of their effects on the environment and society. Corporate sustainability reports aim to protect the interests of all stakeholders and demonstrate to them that firms have improved their performance without adversely affecting society or the environment (Myšková & Hájek, 2018).

Casado-Díaz et al. (2014) explored corporate sustainability report activities and established that they positively influence a firm's performance. Corporate sustainability report activities have also been found to improve a firm's relationships with stakeholders, which subsequently prompts higher profits (Preston & O'Bannon, 1997; Waddock & Graves, 1997). Further, Aerts et al. (2008) and Cormier and Magnan (2007) noted certain progressive outcomes when companies engaged in corporate sustainability report actions, which included enhanced shareholder confidence, well-functioning markets and financial stability in economy and finance (Lins et al., 2017). Ultimately, corporate sustainability reports were found to overall improve firm performance (Lee & Chen, 2018).

Critics of sustainability practice have focused on the notion that being preoccupied with corporate sustainability issues can lead to losses in short-term profit and returns for investors (Murray, 2010). Although empirical studies have not yet identified the benefits of enterprises contributing to SR, they have established the causal relationship between what is disclosed and financial results (Aggarwal, 2013; Murray, 2010). Transparency in disclosures, which involves detailing the amount a business spent in its SR contribution,

can facilitate research that focuses on the financial implications of business sustainability practices in terms of gains or losses.

Additionally, the International Federation of Accountants (2006) posited that the accounting profession has a role to play in sustainability accounting and SR. The International Federation of Accountants further indicated that Professional Accountants in Business should influence SR by extending beyond collecting, analysing and reporting data—specifically, they should engage in strategic decision-making that influences SR. Burritt and Schaltegger (2010) argued that accounting for sustainability should necessarily lead to SR, while Zvezdov (2012) also postulated that enhancing SR requires a system within accounting systems of generating, preparing and publishing information.

Given the connection between the performance of sustainability and long-term shareholder value, it can be argued that advancements in SR can help managers understand the expectations of business stakeholders. Reports that include sustainability performance can offer shareholders a more accurate indication of the company's performance. In this sense, the more that shareholders evaluate sustainability practices through the share price of a company, the more that businesses can increase the quality of their SR (Burritt & Schaltegger, 2010).

From the analysis provided in this subsection, SR can be classified as environmental, social and economic disclosure. Therefore, these three SR disclosures are further discussed in the following subsections.

2.6.1 Environmental sustainability reporting

Environmental sustainability reporting (ENV) became a part of SR in the 1980s (Kolk & van Tulder, 2010) because of the increasing environmental changes that companies faced, such as pollution, land degradation and oil spills (Deegan, 2014). As stakeholder awareness of environmental effects increased, more firms found that making environmental disclosures in their reports was necessary. However, voluntary reporting about environmental issues has sometimes prompted companies to only disclose favourable information about their environmental activities and to ignore any unfavourable disclosures that could affect the stakeholders' decisions (Deloitte & van Staden, 2011). In this sense, firms disclosed environmental activities as a tactic to

influence the decisions of their stakeholders (Brown & Deegan, 1998; Deegan & Gordon, 1996).

The environmental indicators that are used address performance in relation to inputs (e.g., material, energy, water) and outputs (e.g., emissions, effluents, waste). Using inputs and outputs generated by companies triggers numerous environmental problems (Caesaria & Basuki, 2017). Therefore, assessing environmental compliance, environmental expenditure and the effects of products and services also form part of environmental SR (GRI, 2013, p. 5). Environmental reporting identifies and discloses environmental-related costs that emerge from the production process (Ayoola, 2017)—and this reporting provides narrative and numerical information that details how companies affect the environment.

2.6.2 Social sustainability reporting

The social dimension of sustainability describes how an organisation affects the social structures in which it operates (GRI, 2013, p. 5). In this sense, social sustainability focuses on people and society as a whole. This aspect of sustainability encompasses issues related to labour rights, charitable initiatives and community development. Socially sustainable organisations thus strive to improve the quality of life of their employees and related community. While internal social disclosure focuses on employee welfare and problems such as diversity, health and safety, social sustainability on an external level focuses on anti-corruption policies, anti-competitive and monopolistic practices that can harm stakeholders, and product labelling for the health and safety of consumers (Caesaria & Basuki, 2017). Social sustainability can be achieved by accounting for the welfare of employees (i.e., clean and safe working conditions, health, fair wages) and others in the surrounding community. Overall, social sustainability encompasses the creation of advantageous and equitable market practices for human resources and the environment (Elkington, 1997a).

2.6.3 Economic sustainability reporting

Economic sustainability concerns how organisations affect local, national and global economic conditions for their stakeholders and economic systems (GRI, 2013, p. 5). Indicators of the flow of capital among various stakeholders and an organisation's primary economic effects on society are demonstrated through economic indicators (GRI,

2013, p. 5). According to Reddy and Thomson (2015), 'Economic sustainability is inextricably linked to both environmental and social sustainability. This is demonstrated by the limits to growth' (p. 8). For economies to be sustained, natural resources must be used within limits. Therefore, disclosing economic sustainability practices can prove a company's contribution to the economic development of local communities (Caesaria & Basuki, 2017).

2.6.4 Triple bottom line

The TBL model was developed in 1994 by Elkington (Wise, 2016), and it has been accepted by scholars and practitioners as a comprehensive perspective of a company's FP and NFP (Garcia et al., 2016). The multidimensional TBL model integrates a company's economic, social and environmental scopes (Garcia et al., 2016) and provides a comprehensive understanding of a company's performance not just in terms of profits but also in terms of the environment and society in which it operates (Mitchell et al., 2015). However, in some cases, it is inevitable that performance in one scope hinders performance in another (Garcia et al., 2016). Although all three dimensions are critical, each focuses on a different aspect of performance. For example, the economic scope focuses on profitability and FP; the social scope focuses on social accountability; and the environmental scope focuses on a company's use of natural resources (Alhaddi, 2015; Chabowski et al., 2011).

2.6.4.1 Economic line

A company's operations either directly or indirectly affect the economy in which it operates. This economic influence is what constitutes the economic dimension of the TBL model (Elkington, 1997b). The economic dimension concerns a firm's ability to create value and remain sustainable enough to conduct its operations in the future and benefit the forthcoming generations (Spangenberg, 2005). Any company's growth is ultimately tied to the economy and to the contribution that the company makes to economic growth. The economic line of the TBL model thus pertains to the value a company creates and its ability to keep creating value in the future.

2.6.4.2 Social line

Organisations operate within societies, and their influence on these societies constitutes the social dimension of the TBL model. This social line focuses on fair business practices and positive effects on society (Elkington, 1997b). Essentially, organisations that strive to add value to society give back to the community and prioritise the social aspect of their sustainability and performance. Fair practices, including fair salaries, corporate social responsibility (CSR) and charitable activities, affect a company's performance. Therefore, the interaction and relationship between society and an organisation, as well as the type of relationship, can be crucial aspects of sustainability and performance. A company's lack of social responsibility can negatively affect its financial success, which incurs economic expenses. The social dimension of the TBL model thus encompasses all concerns that pertain to the connection between an organisation and the society in which it operates (Goel, 2010).

2.6.4.3 Environmental line

The environmental dimension of the TBL theory concerns itself with practices that ensure the efficient use of natural resources, such as practices for reducing pollution, efficiently using energy and recycling (Goel, 2010). Environmental sustainability practices can affect a company's performance. For example, Kearney's (2009) study aimed to establish how environmental policies affected companies' performance in numerous industries; the scholar found that companies that employed sound, sustainability-geared environmental policies and that addressed the wellbeing of their stakeholders performed better financially than companies that did not have such policies. This study was conducted over six months and aimed to establish whether firms that prioritised environmental sustainability performed better in the economic downturn at the time. The study ultimately revealed that reduced operating costs caused by the reduction of wastage and responsible use of resources resulted in a financial advantage for firms that had incorporated sound, sustainability-geared environmental practices. This led to better FP and greater value for stakeholders (Kearney, 2009).

TBL reporting and disclosures can help businesses demonstrate how seriously they consider issues related to environmental, economic and social sustainability (Cho et al., 2015; Hossain et al., 2015). This type of reporting will increase investor confidence and

reassure stakeholders that the company is meeting its multidimensional sustainability obligations. The GRI offers organisations a standardised and efficient method for disclosing their CSR reports (Michelon et al., 2015). Therefore, businesses can use GRI guidelines to strategically disclose their TBL data in an efficient and comparable framework that will subsequently increase investor confidence and address stakeholder interests (Yadava & Sinha, 2016).

2.6.5 Global reporting initiative

As previously discussed, the GRI provides essential guidelines for SR on a global scale, and it tries to empower stakeholders with credible data for decision-making. The GRI was established in 1997 by the Coalition for Environmentally Responsible Economies, the Tellus Institute and the UNEP. It is internationally recognised, provides a standardised framework for SR, and is sponsored by stakeholders from numerous businesses and countries.

The first global framework for SR was provided in 2000: the G1 guidelines. In 2002, GRI became a standalone, non-profit organisation and released its first iteration of the second GRI guidelines (G2). These revised guidelines outlined the fundamental concepts for GRI SR. These GRI guidelines essentially provide organisations a standardised framework for reporting their economic, environmental and social performance—and this type of exhaustive reporting allows stakeholders and investors to make sound decisions.

In 2006, the GRI released its third GRI guidelines (G3) in response to the gradually increasing interest in SR. The GRI has continued to release sector-specific guidelines and reporting structures that target specific industries, such as oil and gas, mining operations and financial services. These industry-specific guidelines, launched in 2008, address the unique issues that each industry faces to achieve CSR.

The fourth GRI guidelines (G4) provide a framework for reporting standard disclosures and an implementation manual that outlines how organisations of various sizes and structures can prepare sustainability reports. The G4 guidelines were launched in 2013 and outline four key phases of determining the relevant data or information for sustainability reports: identification, prioritisation, validation and review. This determination process furthers the multidimensional principles of SR. The G4 guidelines are designed to be flexible, and any organisation can implement them, regardless of size

or industry. Examining the GRI's guidelines—from the G1 guidelines of 1997 to the G4 guidelines of 2013—has clearly revealed the multifaceted nature of sustainability. Further, the concept of sustainability that encompasses social, environmental and economic performance remains the key foundation of the GRI reporting guidelines. The GRI Sustainability Reporting Guidelines (2013, p. 3) stipulate that a sustainability report should convey disclosures related to an organisation's positive and negative effects on the environment, society and economy.

In 2016, GRI transitioned from providing guidelines to establishing the first global standards for SR: the GRI standards. These standards continue to be updated and amended, including the new standards on tax (2019) and waste (2020), a major update to the universal standards (2021) and the continued rollout of sector standards (2021 onwards). Figure 2.1 displays GRI's periodic development.

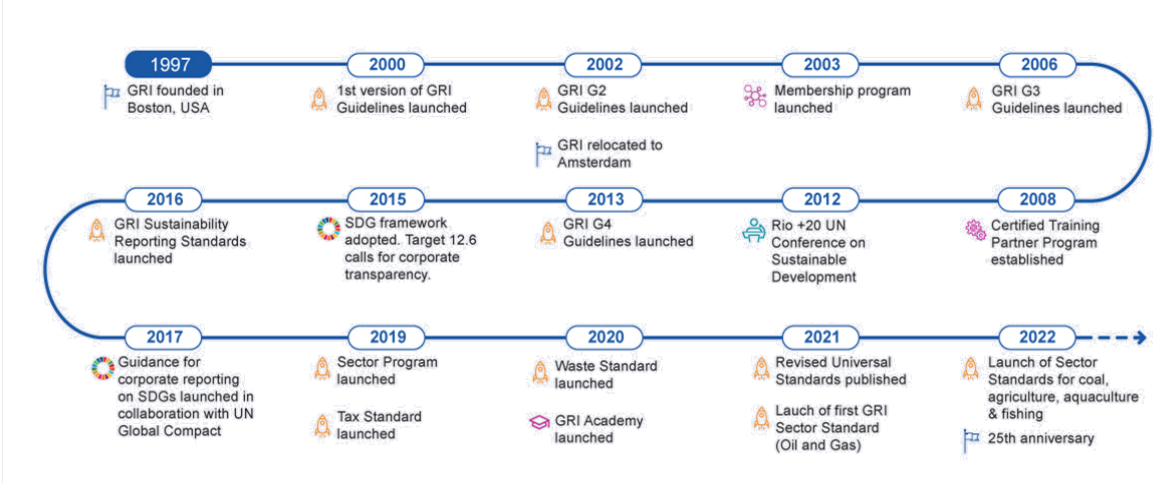

Figure 2.1 The development of the Global Reporting Initiative

Source: GRI (2022) Available at: (https://www.globalreporting.org/search/?query=history+of+GRI)

The GRI standards are presently founded on four key segments: universal, economic, environmental and social standards. Each segment is tabulated in Table 2.1, along with the key elements for each standard.

Table 2.1 The Global Reporting Initiative standards

GRI 100: Universal standards	GRI 400: Social standards
GRI 101 Foundation 2016	GRI 401 Employment
GRI 102 General disclosures 2016	GRI 402 Labour/Management Relations
GRI 103 Management approach 2016	GRI 403 Occupational Health and Safety
GRI 200 Economic	GRI 404 Training and Education
GRI 201 Economic Performance	GRI 405 Diversity and Equal Opportunity
GRI 202 Market Presence	GRI 406 Non-discrimination
GRI 203 Indirect Economic Impacts	GRI 407 Freedom of Association and Collective Bargaining
GRI 204 Procurement Practices	GRI 408 Child Labour
GRI 205 Anti-corruption	GRI 409 Forced or Compulsory Labour
GRI 206 Anti-competitive Behaviour	GRI 410 Security Practices
GRI 207 Tax	GRI 411 Rights of Indigenous Peoples
GRI 300 Environmental	GRI 412 Human Rights Assessment
GRI 301 Materials	GRI 413 Local Communities
GRI 302 Energy	GRI 414 Supplier Social Assessment
GRI 303 Water	GRI 415 Public Policy
GRI 304 Biodiversity	GRI 416 Customer Health Safety
GRI 305 Emissions	GRI 417 Marketing and Labelling
GRI 306 Effluents and Waste	GRI 418 Customer Privacy
GRI 307 Environmental Compliance	GRI 419 Socio-Economic Compliance
GRI 308 Supplier Environmental Assessment	

Source: GRI (2016)

2.6.6 Islamic corporate social responsibility framework

The disclosure of Islamic CSR is founded on the premise that the Western SR framework may not accurately complement Muslim customers who follow shariah law (Baydoun & Willett, 2000). Haniffa (2002) also noted that the Western model might not appropriately portray the operations of Islamic business institutions (IBIs), given that it does not recognise the principle of responsibility to God. In Islam, the most important concept regarding disclosure is accountability (Lewis, 2006). Lewis (2006) further asserted that accountability in Islam is primarily interpreted as being accountable to God, which is achieved by ensuring that information is freely available.

Similar to the Western SR model, CSR disclosure in Islam is used to demonstrate a company's sustainability efforts to stakeholders. Baydoun and Willett (1994) and

Harahap (2003) noted that despite similarities with the Western model, Islamic CSR disclosure should embrace a different set of requirements that are tailored to providing information that outlines IBI compliance with shariah *Islamiyah* (Harahap, 2003; Maali et al., 2006). Islamic CSR disclosure can thus demonstrate IBI accountability to God (Haniffa, 2002).

Given the Islamic Capital Market's swift growth, shariah-approved companies were expected to present a religious dimension to their financial statement disclosures for the benefit of Muslim stakeholders. Haniffa and Hudaib (2001) recommended that Islamic accounting should be founded on the shariah and principles of Islamic accounting. In this regard, Tilt and Rahin (2015, p. 138) stated that:

> To assist in achieving socio-economic justice (al-falah) and recognize the fulfilment of obligations to Allah, society and individuals concerned, by parties involved in the economic activities viz. accountants, auditors, managers, owner, government, etc. as a form of worship.

Organisations should also report about how they fulfil their duties according to the shariah, including zakat to the beneficiaries, *sadaqa* (charities, gifts), wages, initiatives to safeguard the environment and other sustainability projects. This kind of reporting would prompt IBIs to provide more detailed disclosures than standard disclosure reports. Consistent with existing literature, this study also incorporates the theory of Maqasid Al-Shariah to assign sustainability items as Islamic items when they relate to the KSA environment; this study subsequently incorporates the items into the economic, environmental and social sustainability dimensions. Table 2.2 lists the Islamic Standards used in this research.

Table 2.2 Islamic items

Item	Economic		Social
1	Shariah screening during the investment	1	Charitable society for the Holy Quran memorisation
2	Zakat payment	2	Empowerment of women
3	Qardh-e-Hassan/benevolent fund	3	Job nationalisation (Saudisation)
4	Charity (*sadaqa*)	4	Islamic training and education for the staff
5	Disclosure of earnings prohibited by shariah	5	Sponsoring pilgrimage
	Environmental	6	Funding scholarship programs
1	Compliance with Islamic laws for environment	7	Hajj donations
		8	Sponsoring for sporting recreational projects and army
		9	Support for art, culture and health culture
		10	Employment of other special-interest groups (i.e., people with physical disabilities, ex-convicts, former drug addicts)

Source: Author's compilation from previous studies.

2.7 Corporate sustainability reporting theories

2.7.1 Stakeholder theory

Stakeholders play a critical role in promoting sustainability practices and SR. Sustainability reports are provided to stakeholders not only for information purposes but also to demonstrate an organisation's commitment and accountability regarding sustainable business practices. Scholarly studies have tied stakeholder theory to SR in many organisations (Buallay, 2022; van der Laan, 2009).

Stakeholder theory has been used to explain any people and entities that are regarded as stakeholders of firms. Attributed to Freeman (1984), stakeholder theory has argued that an enterprise is not an 'island'; it does not function in isolation, so its operations extend beyond the equity holders to embrace any person or group in society that influences, or is influenced by, the enterprise's activities. This theory asserts that managers must try to

satisfy multiple stakeholders who can directly or indirectly influence the firm's operations (i.e., employees, consumers, suppliers, investors, agencies, governments, regulatory organisations, the public; Bartolacci et al., 2022). Therefore, stakeholder theory suggests that management should urge a firm to operate for all stakeholders, not just investors. Further, many personal values should be incorporated in the firm's strategy to improve stakeholder interactions (e.g., ethical behaviour; Freeman et al., 2004). Consequently, managers must satisfy more than stockholders' needs. Research has indicated that firms have benefited from satisfying or building excellent relationships with stakeholders in their society, which justifies the necessity to publicise their corporate social actions (Shad et al., 2020). According to stakeholder theory, optional disclosures such as SR affect share prices equally for all market participants (Kim et al., 2014).

All organisations have different levels of stakeholders. Primary stakeholders have a direct relationship with the organisation, while secondary stakeholders are affected by the organisation's activities in some way (Deegan, 2009). Mitchell et al. (1997) noted that from a business perspective, primary stakeholders will be more powerful because they directly influence the organisation's resources, so they consequently exert a greater influence on its performance and future. This could prompt organisations to provide more disclosures and SR to primary stakeholders than to secondary stakeholders, who do not directly influence the organisation. This disparity in how different types of stakeholders influence an organisation could explain the SR disparities observed in various companies from various countries.

Stakeholder theory comprises four main premises, as identified by Jones and Wicks (1999). The first premise is that all firms have different relationships with various stakeholders who are affected by the firms' decisions and actions. The second premise is that part of the stakeholder theory depends on the resulting relationships between firms and their stakeholders. The third premise relates to the intrinsic value tied to the stakeholders' interests in the firms, while the fourth premise concerns the decision-making process that results from these relationships.

From an ethical standpoint, stakeholder theory posits that firms must operate with the intention to meet the needs of their stakeholders rather than solely for financial gain (Hasnas, 1998, p. 32). Businesses thus have a responsibility to meet the interests of their stakeholders and demonstrate accountability that accounts for the different needs of

various stakeholders (Buchholz & Rosenthal, 2005). This signifies that SR should address concerns and interests of all levels of stakeholders that may be directly or indirectly affected by an organisation's operations (Snider et al., 2003).

According to King (2002), integrated SR both satisfies the needs of primary stakeholders as well as fosters positive relationships between an organisation and the society in which it operates. This is crucial for any organisation's future because a negative public image ultimately affects its future performance. Bal et al. (2013) noted that stakeholder theory highlights the importance of sound stakeholder relationships in an organisation's performance, and that the health of these relationships should be a key consideration in making decisions. Studies that have investigated stakeholder theory in relation to SR have found that organisations focus on making decisions that satisfy their stakeholders, whether primary or secondary (Benoit-Moreau & Parguel, 2011). In this way, stakeholder theory improves understanding of the factors that drive SR and disclosures (Searcy & Buslovich, 2014)—and it is thus relevant for the present research.

2.7.1.1 Stakeholder theory in the Saudi Arabian corporate environment

As aligned with the Saudi Corporate Governance model, the 2006 Saudi Corporate Governance Code (SCGC) includes guidelines for protecting stakeholders' rights and CSR (Al-Bassam et al., 2018; Alshehri & Solomon, 2012; Seidl et al., 2013). CG guidelines in KSA have evolved recently, with a focus on improving the transparency, accountability and overall performance of companies that operate in the country. These CG regulations were modified in 2007 by the CMA to improve the quality of financial reporting and to strengthen the role of boards of directors in overseeing company operations. In 2016, KSA launched its Saudi Vision 2030 initiative, which includes a series of reforms that aim to diversify the economy and attract more foreign investment. As a part of this initiative, the government has implemented several measures to improve CG, which includes establishing the CG Centre and introducing new regulations to protect minority shareholders. KSA's CG Code was introduced in 2017, and it provides detailed guidelines for managing board structure and composition, disclosure and transparency, risk management, and internal control. The CMA then issued amended CG regulations in 2022, which more strongly focus on social responsibility to meet stakeholder demands. This model emphasises that KSA enterprises must promote the broader community's objectives while simultaneously meeting their stakeholders'

requirements. These principles also cover the interests of secondary stakeholders (e.g., local community, employees, KSA government). In addition to these standards, the zakat (communal charity) principle, which is a fundamental aspect of KSA's society, also supports CSR. However, the adoption of stakeholder theory in KSA is still hindered because SCGC sustainability guidelines are voluntary. This is especially true for KSA listed companies, in which the interests of the largest shareholders take precedence.

The Islamic perspective on CG somewhat resembles the perspective of stakeholder theory, as both assert that meeting the interests of all stakeholders should be prioritised in the interest of fairness (Al-Turki, 2006). That is, from an Islamic perspective, CG should be value based. These two perspectives align with the principle of zakat in Islam, which calls for social responsibility and promotes positive relationships between organisations and the wider community (Nadzri et al., 2012). Articles 84 and 85 of the recent CG guidelines 2022[2] address the need to defend the interests of all stakeholders by requiring that firms engage in CSR activities.

2.7.2 Legitimacy theory

The present research employed legitimacy theory to explain how firms relate to society and recognise it as a major stakeholder. According to legitimacy theory, it is generally assumed or perceived that the actions of any entity are desirable, valid or appropriate when they occur within a social system of rules and values (Ioannou & Serafeim, 2014; Suchman, 1995; Zheng et al., 2015). As aligned with legitimacy theory, businesses assure sustainable growth and market reputation enhancement by demonstrating their CSR. This legitimacy notion often attracts new investors, customers and highly qualified staff to the organisation, which subsequently improves its performance (Herbert & Graham, 2022). This hypothesis links firm success to SR.

Corporate sustainability and the theory of legitimacy both assert that sustainability disclosures are essential for preserving a company's image and its legitimacy (Buallay, 2022; de Villiers & van Staden, 2006). Further, communication with various stakeholders is required to fully realise the value of SR and sustainability disclosure (Dimaggio & Powell, 1983, as cited in Moir, 2001). Since SR is considered a source of information for

[2] These articles can be viewed in the 2022 CG codes: https://cma.org.sa/en/RulesRegulations/Regulations/Documents/CorporateGovernanceRegulations.pdf

stakeholders, it presents a full picture of an organisation's performance and helps it establish its legitimacy in the eyes of stakeholders (Campbell et al., 2003).

According to Zharfpeykan and Askarany (2023), a general method to measure corporate performance and determine firm legitimacy is to consider the concept of profit maximisation (as cited in Ramanathan, 1976). According to Adams and Roberts (1995), organisations require managers to ensure that stakeholders receive adequate information to negate their own personal interests and maintain legitimate relationships. Moreover, managers also require adequate information to avoid the regulatory interventions of public sector authorities in the companies' operations (Gray & Roberts, 1989). Further, Lindblom (1994) and Rizk (2006) posited three approaches that legitimise the decisions of firms. First, stakeholders receive information regarding alterations to the performance of firms; second, changes are made in stakeholders' perceptions instead of their actual behaviour; and third, stakeholders' concerns and interests are directed towards other relevant issues to change their perceptions of what is realistically occurring.

For a company to thrive and ensure its sustainability, its values must correspond with the values of the society in which it operates (Dowling & Pfeffer, 1975; Lindblom, 1994; Magness, 2006; Rizk, 2006; Shehata, 2013). This signifies that firms must maintain high levels of social responsibility to achieve legitimacy and ensure financial gain (Alkayed, 2018; Deegan, 2002; Kuzey & Uyar, 2017; Mathews, 1993; Michelon et al., 2015). Without legitimacy and ethical operations, poor investor and stakeholder relationships are bound to decrease the company's FP and NFP.

Academic literature has commonly used legitimacy theory to explore the connection between FP and sustainability disclosure. Several studies have relied on legitimacy theory to explore the role of corporate SR in enabling companies to acquire and maintain legitimacy. Further, several studies have also established the role of legitimacy as a motivating factor for SR and sustainability disclosure (Ali et al., 2021; Herbert & Graham, 2022). Business leaders have been found to disclose and report more sustainability efforts when society requires them to do so, and their disclosures mostly relate to the firms' social and environmental effects (Deegan, 2002; Deegan & Gordon, 1996; O'Donovan, 2000).

Since the norms and values of KSA and the West are different, when legitimacy theory is used, legitimacy is perceived differently in KSA. Consequently, how sustainability disclosures affect a company's efficacy will greatly depend on the society in which it operates. For example, environmental sustainability disclosures in some countries may have little to no effect on the market value or confidence of investors (Ariani, 2021; Wahyuni, 2020). The present research will thoroughly examine this aspect.

Managers create a contract with stakeholders and society by revealing a firm's information, and they try to legitimise company policies and practices. Since legitimacy theory supports disclosure practices, it can help underpin environmental and social transparency. This notion is validated by several studies that demonstrated the theory's positive effects (Ali et al., 2021; Deegan, 2002; Jan et al., 2021; Mahmood et al., 2019; Wellalage & Kumar, 2021). Social and environmental SR can broadly increase a company's reputation and credibility (Hassan & Marston, 2019), which could eventually prompt increased investor confidence and, consequently, improved business performance.

2.7.2.1 Legitimacy theory in the corporate environment of the Kingdom of Saudi Arabia

KSA companies function in accordance with Islamic norms and values, which entail adherence to Islamic principles that are rooted in the country's traditions. This compliance facilitates the legitimacy of these companies in the KSA context. A critical aspect of gaining legitimacy is promoting social and economic sustainability through zakat or *sadaqah* values. Additionally, globalisation and rising social consciousness have prompted the Saudi Government and public to increasingly pressure businesses to implement social and environmental sustainability practices. In the present research, legitimacy theory, along with stakeholder theory, will be employed as a foundation for evaluating how SR influences the firm performance of KSA listed firms. These theories effectively address the effects of society and shareholder interests, providing valuable insights into the relationship between SR and firm performance.

2.7.3 Signalling theory

Michael Spence presented the signalling theory in 1973 to solve the problem of information asymmetry (Spence, 1973). This theory emphasised the intention of management to share information and receive signals from the market and other relevant

stakeholders. Various conflicts are derived from the information asymmetry between management and stakeholders in the organisational environment, and the signal reduces the gap by sending relevant and high-quality information to different parties (Connelly et al., 2011). Signalling theory comprises four elements: signaller, signals, receiver and feedback aligned with a basic communication channel (Bae et al., 2018). In a business setting, the management (e.g., executives, directors, managers) is the signaller, while the signals comprise the flow of information regarding stock price news, dividends, environmental financing or sustainability management investment. The receivers are outsider stakeholders who are unaware of insider information, and the feedback reflects interactions between signallers and receivers. The signaller and receiver are the key actors in this signalling process, while the signals convey positive or negative information to improve information asymmetry. The organisation's strategic decisions then send signals to the market about commitment and initiatives that affect relationships with other organisations and stakeholders (Ching & Gerab, 2017).

Signalling theory is a well-liked theoretical paradigm for explaining why businesses report their sustainability efforts. According to this theory, SR is a signalling mechanism that enables businesses to inform stakeholders (e.g., investors, consumers, employees, regulators) about their sustainability performance and commitment. Businesses can demonstrate their environmental and social responsibility, managerial excellence and long-term focus by proactively sharing information about their sustainability policies and initiatives. This can subsequently improve their reputation and FP (Friske et al., 2023; López-Santamaría et al., 2021). Additionally, a business's long-term direction and strategic goals can be communicated through SR, which can increase the business's competitiveness and resilience in the face of shifting market conditions and stakeholder expectations (Amaya et al., 2021).

However, the present research did not employ signalling theory for several reasons. First, this theory overlaps with the agency theory (Morris, 1987), in which the agency theory was used to form the moderation of CG. Second, signalling theory assumes that companies perform SR only to promote their favourable traits and attributes, and that they always provide accurate and reliable information. However, in practice, businesses may also participate in 'greenwashing', in which they falsely depict their sustainability performance or commitment through their SR (Uyar et al., 2020). This can cause

information asymmetry and impede the effectiveness of SR as a signalling technique. Third, signalling theory assumes that decision-makers can accurately perceive and apply the data revealed in sustainability reports. However, in relation to sustainability concerns, stakeholders might possess varying tastes, expectations and levels of understanding, which can make assessing and comparing sustainability performance among organisations challenging. Further, stakeholders might not be able to independently confirm the veracity and comprehensiveness of the data presented in sustainability reports. Finally, businesses are rational actors who constantly try to maximise their utility and improve their signalling tactics. However, in practice, businesses can encounter several obstacles (e.g., lack of resources, institutional demands, competing stakeholder demands) that can limit or prevent them from engaging in SR. Table 2.3 summarises the three theories that this research reviewed in relation to SR and firm performance.

Table 2.3 Summary of sustainability reporting theories

SR theory	Assumptions and key tenet	Strength and weakness	Relevance to SR and FP	Relevance to the KSA context
Stakeholder theory	• Organisations must pay closer attention to all relationships if they want to be more effective, especially relationships that influence or are influenced by the organisations' goals. • The primary goal of organisations is to create and maximise the value of their stakeholders.	• The stakeholder theory's basic tenet is that any organisation has diverse ties with numerous stakeholders who are influenced by the organisations' decisions and actions. • Potential stakeholder conflicts of interest are overlooked. Secondary stakeholders, who do not directly influence the organisation, receive less disclosure and SR than primary stakeholders.	• It can be reasonably expected that disclosing SR will benefit stakeholders and directly affect FP and NFP (Aerts et al., 2008).	• As aligned with the Saudi Corporate Governance model, the 2006 SCGC includes guidelines for protecting stakeholders' rights and CSR. • These guidelines cover the interests of secondary stakeholders (e.g., local community, employees, Saudi Government). • Beyond these guidelines, the principle of zakat or benevolence to the community—an integral tenet in KSA society—also promotes CSR.
Legitimacy theory	• Stakeholders assess companies according to their perceptions of the companies' value and organisational values; the organisations' survival will thus be threatened if society realises that they have violated their social contract (Zheng et al., 2015). • Three approaches legitimise the organisations' decisions: 1) stakeholders receive	• The legitimacy theory is inextricably tied to the stakeholder theory, which is specifically beneficial for justifying and assessing the factors underpinning the sustainability of non-financial reporting. • Using the legitimacy theory involves accepting that differences exist between the norms and values in KSA and the West, in which	• The legitimacy theory demonstrates the variables that can be caused by varying levels of scrutiny and social pressure, and it ultimately demonstrates how these affect SR and FP.	• KSA companies operate within Islamic norms and values, which requires that they adhere to the Islamic principles that form the country's traditions. This compliance helps companies achieve legitimacy in the KSA context. • Because of globalisation and increasing social awareness, KSA firms

SR theory	Assumptions and key tenet	Strength and weakness	Relevance to SR and FP	Relevance to the KSA context
	information regarding alterations to firm performance; 2) changes are made in stakeholders' perceptions instead of their behaviour; and 3) stakeholders' concerns and interests are directed towards other relevant issues to change their perceptions about what is happening.	legitimacy is interpreted differently in KSA.		face increasing pressure from society and the government to adopt sustainability practices.
Signalling theory	• Signalling theory is a branch of economics and finance that concerns the transmission of information between parties in a transaction. The theory posits that when one party has more information than the other, the latter party might use signals to convey information about their true quality or intentions. For example, a company might issue a dividend to signal to investors that it is profitable and that it has a strong financial position. This theory mainly focuses on the flow of information to reduce information asymmetry.	• Because SR is voluntary and thus allows the possibility of incorrect information, the correct signals might not be sent to investors. • Signalling theory assumes that companies are truthful in their SR. However, some companies may engage in greenwashing (i.e., falsely depicting sustainability performance or commitment). This theory overcomes information asymmetry, although the same concern is addressed by the agency theory. Therefore, signalling theory overlaps with agency theory.	• Signalling theory suggests that companies use SR to signal their sustainability commitment to stakeholders. This can improve firm performance because stakeholders are more likely to engage with the companies that they believe are sustainable. However, companies should not engage in greenwashing because it can damage their reputation and entail negative consequences.	• Signalling theory has limited relevance to the KSA context, given that only some aspects are relevant. Overall, it is not highly applicable. • Studies that used this theory demonstrated the insignificant role of SR in the KSA context, which further diminishes the relevance of this theory.

2.7.4 Multi-theoretical approach to sustainability reporting and financial performance

The present research adopts the perspectives of the stakeholder and legitimacy theories to support the connection between SR and firm performance. A multi-theoretical approach to understanding SR and firm performance was used to examine the links between SR and firm FP and NFP. This approach recognises that the mechanisms by which SR affects firm performance are complex and multifaceted, and that they may vary depending on several factors (e.g., industry context, firm size, stakeholder pressures). Therefore, a multi-theoretical approach aims to integrate insights from different theoretical perspectives (e.g., legitimacy, stakeholder and signalling theories) to ensure a more comprehensive understanding of the relationship between SR and firm performance.

Previous studies with different contexts have also used multi-theoretical approaches such as the legitimacy, stakeholder and signalling theories. For example, Bashatweh and Jordan (2018) conducted research on Jordanian public firms, while Meutia et al. (2022) incorporated stakeholder and legitimacy theories to investigate SR in Indonesian firms. Similarly, Khan et al. (2023) used stakeholder and legitimacy theories in relation to SR to study listed firms in Pakistan. However, it should be noted that these three theories have not been applied in the specific context of the KSA. One reason why is because the of the country's unique sociocultural, political and economic characteristics, which may require a different theoretical lens to understand the dynamics of SR. Stakeholder theory contends that businesses have a duty to society to balance the needs and goals of all parties involved, while legitimacy theory explains how businesses report their sustainability to preserve their credibility with stakeholders. Both theories favour SR in an organisation. Signalling theory is less emphasised when used with stakeholder and legitimacy perspectives because it focuses on the substantive and long-term alignment between corporate actions and stakeholders' interests instead of mere signals or symbolic gestures.

In light of the above, the rationale for selecting stakeholder theory is grounded in its holistic perspective, emphasis on long-term sustainability, potential for competitive advantage, risk management benefits, and alignment with sustainable development (Korkmaz, 2022). This theory provides a robust framework to guide the research on the effect of SR on firm performance. This is because stakeholder theory encompasses the

broader aspect of stakeholders and the overall business environment, which are both important factors that can affect firm performance in Saudi Arabia (Khan et al., 2023). In addition to stakeholder theory, legitimacy theory also provides a strong rationale for examining the effect of SR on firm performance. It underscores the importance of gaining legitimacy through responsible practices, stakeholder perceptions, external pressures, long-term orientation, and stakeholder engagement (Bartolacci et al., 2022). By using this theory, this study can explore the relationship between SR and firm performance, shedding light on how organisations' SR influence their overall success and reputation in the eyes of stakeholders (L'Abate et al., 2023).

2.8 Sustainability reporting and the International Financial Reporting Standards

The IFRS are international accounting standards that offer companies a guide for compiling financial statements. Their objective is to provide transparency, uniformity and comparability of financial statements worldwide. The IFRS framework presently does not require reporting on social and environmental factors. The IASB considers environmental reporting to be beyond the scope of the IFRS, but International Accounting Standards 16 and 37 offer guidance regarding the recognition and measurement of environmental protection–related assets (Jose, 2017). Directive 2014/95/EU stipulates that large businesses must harmonise their accounting systems by including provisions for non-financial disclosures regarding environmental, anti-corruption, social, employee-related and human rights issues (Amelio, 2016). This component is essential to the IFRS because it requires certain types of businesses to file social balance reports that are pertinent for international comparison.

Company visibility is more prominent because of IFRS adoption, and therefore it is also more exposed to potential expenses like political costs. Disclosing voluntary information is one way to overcome these expenses. Therefore, companies that adopt the IFRS are more likely to continue offering information voluntarily, as well as provide more corporate sustainability disclosures (de la Bruslerie & Gabteni, 2010).

The IFRS accounting rules allow an increased level of comparison to be made between businesses and more openness in financial statements. When implementing IFRS in accounting standards, more environmental data may be required (van der Laan Smith et

al., 2014). Adopting IFRS is also attractive to foreign investors. For example, investors in the UK and United States (US) may seek improved FP as well as exemplary social and environmental performance. Therefore, organisations that aim to attract overseas investors will need to consider regional expansion and merger difficulties, which can result in increased voluntary disclosures of information as required by the IFRS (Li & Yang, 2016). The IASB has stated that a company's adoption of IFRS will yield additional information regarding its non-financial characteristics; however, implementation is voluntary (Elbannan, 2016). Consequently, this study will investigate any differences in KSA's sustainability disclosures before and after implementing the IFRS.

Weerathunga et al. (2020) investigated how IFRS convergence affected the degree of CSR reporting in listed firms' annual reports. In India, it was discovered that firms that implemented IFRS exhibited a higher level of CSR reporting in their annual reports than firms that did not adopt IFRS. Further, Alsulayhim (2020) established that significant improvements were experienced after adopting the IFRS. However, it should be noted that the voluntary disclosure of organisations was minimally affected. This indicates that more work is needed to encourage organisations' voluntary disclosure and reporting.

Because of the significant changes being recently made in KSA sustainability policies, the present research is an important tool for stakeholders. Adopting the IFRS a key change that has strongly affected the reporting paradigm for KSA listed firms. This research thus evaluated how SR affects firm performance before and after IFRS implementation.

2.9 The basis for developing a sustainable reporting index

To perform SR, various international organisations have begun developing SR frameworks (Reverte, 2009). The Global Compact of the UN, Accountability AA1000, the International Integrated Reporting Council and GRI are some of the most globally recognised frameworks. For external reporting about different social and environmental issues, all these frameworks tend to incorporate specific guidelines (Tschopp & Nastanski, 2014). The GRI is the most accepted framework, and it has become the international standard for non-government organisations and businesses (KPMG, 2013; Tschopp & Nastanski, 2014). A KPMG survey on corporate social responsibility disclosure (CSRD) clearly indicated an increasing international trend of reporting

corporate, social and environmental issues. Approximately 78% of reporting organisations asserted their frameworks to be GRI compliant (KPMG 2013). A significant aspect of the GRI framework is that it is a rule-based standard that helps promote uniformity by leaving limited room for deviations. This makes it distinct from the Global Compact of the UN and Accountability AA1000, both of which are founded on other principles and have been criticised for being subject to interpretation (Tschopp & Nastanski, 2014).

Although previous research has considered SR from a GRI perspective (Bouten et al., 2011; Brammer et al., 2006; Holder-Webb et al., 2009; Michelon & Parbonetti, 2012; Reverte, 2009; Sotorrío & Sánchez, 2010), the present research extends further to address the gaps in existing SR frameworks. It does so by determining how the cultural, religious and ownership structures in the KSA context affect firms' SR. This research adopts a multidimensional approach by considering parameters that are critical in an Islamic context, such as shariah compliance, payment of zakat and other cultural biases that may affect the interpretation of the GRI guidelines in the KSA context.

Current sustainability practice initiatives, although meeting the needs of a wider audience, lack the most relevant elements from an Islamic perspective, such as usury, *gharar* and zakat (Aman, 2016; Othman & Thani, 2010). To overcome this limitation, adjustments were made to the SR index so that the index could be implemented for the purpose of this thesis. For example, the current research has added new items to the SR index with GRI so that the index is relevant to Islamic principles such as shariah screening during investment; zakat payment; disclosure of earnings prohibited by shariah; compliance with Islamic laws regarding the environment; and Islamic training and education offered to staff (Amran et al., 2017; Aribi & Gao, 2011; Dusuki & Abdullah, 2007; Haniffa & Hudaib, 2007a; Haniffa et al., 2004; Maali et al., 2006; Platonova et al., 2018). Other items related to KSA culture were also included, such as a charitable society for the Holy Quran memorisation, ongoing charity (WAGFF), Hajj donations and other disclosures related to sharia activities (Alotaibi & Hussainey, 2016; Haji, 2013; Milne & Adler, 1999). According to Islam, individuals should consider three factors when they conduct business: their relationship with Allah (the All-Mighty), their relationship with humans and the conservation of the natural environment for future generations (Marsidi et al., 2017).

The present research's approach is different from those of Aribi and Gao (2011), Ameer and Othman (2012), Haniffa and Hudaib (2007b), Alotaibi and Hussainey (2016) and Platonova et al. (2018), who developed new indexes without categorising sustainability items into economic, environmental and social sustainability dimensions. These studies also provided generic indices that did not include economic, environmental and social sustainability characteristics, which are considered the three most important facets of sustainability. Second, the indexes from these studies were established for the context of other countries. Further, the indices related to the Islamic banking industry. The present research uses a more comprehensive SR measuring index that is founded on GRI and Islamic aspects. This research's integration of Islamic considerations entailed a more thorough comprehension of sustainability practices in KSA. This thesis analysed sustainability not as a generic notion but as a concept founded on the context and culture of KSA enterprises to better understand how religious and cultural standards affect business approaches to sustainability. The developed index will assess the SR practice for non-financial firms.

2.10 Firm financial performance

A firm's FP centres on the economic aspect of an organisation's goals in relation to profit maximisation. An organisation's ability to efficiently use resources and assets to generate profit is the measure used to determine FP (Nnamani et al., 2017). This FP can be categorised in various ways, such as ROA, ROE, return on investment (ROI), economic value added and Tobin's Q (TQ). The financial variables employed in the present research were chosen at the discretion of the researcher. The current research evaluated FP from the perspectives of management, shareholders and company growth, as reflected by ROA, ROE and TQ.

2.10.1 Return on assets

ROA is a critical indicator of FP (Finkelstein & D'Aveni, 1994; Kiel & Nicholson, 2003; Weir & Laing, 2001), and it is used to analyse how efficiently firms use assets (Bonn et al., 2004). This indicator is crucial from the perspective of a company's upper management because it provides information regarding the profits created by the company's overall investment, regardless of debt or equity (Epps & Cereola, 2008). ROA can also be used to gauge the effectiveness of a company's CG structure, and it has been

used to indicate company FP in numerous studies because of its immense significance (Cho et al., 2019; Kyere & Ausloos, 2021). Additionally, studies have examined how SR affects ROA (Asuquo et al., 2018; Johari & Komathy, 2019).

2.10.2 Return on equity

ROE is another critical measure of firm's FP (Baysinger & Butler, 1985; Dehaene et al., 2001; Zabri et al., 2016). This metric depicts the percentage of profit that a firm has generated on shareholders' equity or investment into the firm (Epps & Cereola, 2008). It is determined by dividing a company's net profit by its equity. Given its importance, ROE has also been used in several studies to measure the financial health of companies, and it has been a key indicator in studies that focus on CG and reports of environmental and social effects.

2.10.3 Tobin's Q

TQ has become an increasingly well-known indicator of a company's standing in the market. It denotes the ratio of an asset's market value to its book value (Bhagat & Jefferis, 2005), which consequently demonstrates how highly the market values the firm's assets. Therefore, it represents the value that shareholders place on a company's assets. In addition to its use as a market-based measure of firm performance, TQ has also been strongly used in CG and SR literature (Agrawal & Knoeber, 1996; Gompers et al., 2003; Hermalin & Weisbach, 1991). A greater TQ value may indicate efficient CG mechanisms, sustainability policies and, consequently, greater investor confidence in the firm. Moreover, organisations that possess a high TQ could indicate that shareholder interests and management have been aligned to maximise shareholder value (Weir et al., 2002).

2.11 Firm non-financial performance

Non-financial measures of firm performance relate to indicators such as creating customer value, market share (MS) and investor confidence (Zehir et al., 2016). Various techniques are used to determine an organisation's operational efficacy (Yüksel & Dağdeviren, 2010, p. 1,270)—such as a balanced scorecard (BSC) approach, which focuses on an organisation's ability to create value for its customers. From the present research's perspective, firm NFP variables represent two BSC perspectives: the customer perspective and internal business perspective (IBP).

2.11.1 Market share

According to Kaplan and Norton (1992), the leading perspective in the BSC approach is the customer perspective. In this perspective, firms create value in numerous ways, including through their product or service attributes, customer relationship management, image and ability to build loyalty (Chavan, 2009). Kaplan and Norton (1996) further noted that by creating customer value, organisations can acquire new markets and retain their customers. The rate at which an organisation can acquire new customers is linked to new sales and comprises the acquisition of new clients and markets. Further, customer retention focuses on building loyalty and ensuring continued sales and sustainability for the organisation.

The result of customer acquisition and retention is a larger MS for the firm, which helps boost its firm performance in terms of profitability (Kaplan & Norton, 1996). MS reflects an organisation's competitiveness and ability to penetrate the market. Therefore, the customer perspective is a significant indicator of current and future firm performance. If an organisation performs poorly from a customer perspective, then its future prospect might include a decline in performance. Managers can use the customer perspective to assess their performance in the market and strategise accordingly to ensure that they deliver customer value, secure a share of the market and remain competitive (Irala, 2007).

2.11.2 Internal business perspective

The internal business perspective (IBP) covers the interests of both internal and external stakeholders, and it enables firm managers to identify strategies, policies and frameworks that meet the interests of firm shareholders and customers (Kaplan & Norton, 2001). Managers can use this perspective to devise value chains that start from research and development and extend to after-sales services. According to Kaplan (2009), some measures that can be used in IBP include manufacturing time, order entry time and product defects. Additionally, SR can link the IBP to sustainability performance by providing information about the environmental and social effects of the firm's operations and processes, as well as by identifying opportunities for improvement. For example, a company's energy and water use, waste production, greenhouse gas emissions and other environmental effects can all be disclosed through SR. Firms can then analyse these data to find opportunities to minimise resource use and emissions while simultaneously

improving their environmental performance. This can yield financial savings, increased operational effectiveness, improved competitiveness and a smaller environmental influence for the company. Farooq and Hussain (2011) argued that the IBP should primarily focus on improving processes relating to manufacturing, products, order processing and delivery, which requires firm managers to assess their internal processes continuously and invest in innovation. Firms that embrace the IBP can also include SR practices in their internal processes, which ensures that firm stakeholder interests are aligned with the firms' long-term development goals.

2.12 Empirical studies focusing on sustainability reporting and financial performance

This subsection provides a literature review that focuses on the relationship between SR and firm FP. Bragdon and Marlin (1972) and Moskowitz (1972) conducted the first two studies that explored this relationship. Since then, the field has observed numerous empirical investigations that have produced mixed results, which are further reviewed in the following subsections.

2.12.1 The positive relationship between sustainability and financial performance

Numerous studies focusing on both developed and developing countries have evidenced how SR favourably affects the FP of firms. For example, Khunkaew et al. (2023) investigated how SR affected firm performance as measured by TQ and ROA in the ASEAN region. Data from listed companies in Thailand, Malaysia, Indonesia and the Philippines between 2010 and 2019 were analysed. The study found that SR positively affected corporate performance but negatively affected firm value. Grewal et al. (2021) examined the association between SR provided by firms in their sustainability reports and stock price informativeness. They found that the provided sustainability information was associated with greater stock price informativeness, which implies that market stock information can improve investors' assessment of firms' future performance, as well as reduce information asymmetry. Oncioiu et al. (2020) used a sample of Romanian companies to investigate the relationship between corporate SR and FP, in which they collected data from 320 managers through a questionnaire that was founded on GRI indicators. Their findings indicated that SR significantly and positively affects FP.

Jørgensen et al. (2022) examined the perspectives of financial market professionals who were undertaking an Executive Masters of Business Administration in sustainable financial analytics in Norway. The professionals had extensive experience in various financial roles, and their beliefs regarding material sustainability issues and their effects on FP were assessed using a survey and semi-structured interviews. According to the study's results, the respondents believed that considering dynamic materiality in reporting was critical, and that SR should encompass more than just financial material sustainability issues. Additionally, they believed that properly addressing material sustainability issues was crucial for companies' FP. Buallay and Al Marri (2022) presented global evidence by examining the association between SR levels and the operational, financial and market performance of the telecommunication and information technology sectors. Their research employed data from 4,458 observations in 60 countries over a decade (2008–2017), in which the independent variable was founded on SR scores and dependent performance indicators (i.e., ROA, ROE, TQ). The partial least square structural equation modelling revealed that the link between environment, social and governance (ESG) and ROA was stronger in emerging economies than in developed ones.

In a related study, Ismail et al. (2022) explored the relationship between SR and firm performance in emerging markets. The sample comprised 24,029 firm–year observations from 14 emerging markets that spanned from 2011 to 2018. Data were collected from various sources, including Thomson Reuters Fundamentals, World Economic Forum reports and the World Bank database. This study's results indicated a positive association between SR and ROA. Thompson et al. (2022) further investigated the link between SR and FP (in terms of TQ) in South Africa. This study focused on firms that used the GRI G4 standards to report sustainability activities, and it employed the FE panel data analysis method to estimate the coefficients of the variables. The study's sample comprised 460 reports from 92 unique firms from 2015 to 2019. The findings indicated a positive correlation between sustainability disclosures and TQ, which implies that firms with better FP tend to disclose more sustainability-related information.

Emeka-Nwokeji and Osisioma (2019) explored how SR and the three ESG pillars affected firm market value in Nigeria. This study examined 93 non-financial firms listed on the Nigerian Stock Exchange from 2006 to 2015 and used TQ to proxy firm market value. Data were analysed using pooled ordinary least squares regression, in which the results

suggested that SR positively affects firm value overall. Additionally, ENV and CG reporting positively affected market value. In a related study, Buallay (2019b) examined the relationship between SR and European bank performance indicators in terms of ROA, ROE and TQ. Using a sample of 235 banks over a 10-year period (2007–2016), the study found that SR significantly and positively affected bank performance. Specifically, environmental disclosures positively affected ROA and TQ. This study ultimately recommended that banks should focus on their disclosure strategies to enhance their value.

Aziz and Haron's (2021) empirical study investigated the relationship between corporate SR and FP (i.e., ROA and TQ) among shariah-compliant public limited companies (PLCs) in Malaysia from 2007 to 2017. The sample comprised 175 shariah-compliant PLCs listed on Bursa Malaysia's Main Market. The results revealed a low level of CSRD among shariah PLCs in Malaysia, but a positive correlation between SR and ROA and TQ. Wardhani (2019) investigated whether SR affects the FP of non-financial public companies that were listed on the Indonesia Stock Exchange. The study used panel data from 2,985 observations over eight years and employed ordinary least square regression with robust standard errors. The results indicated that SR positively and significantly affected both FP indicators (i.e., ROA and TQ). Fitriana and Wardhani (2020) investigated how SR affected firm performance and highlighted the criticality of managing external risks for businesses. The analysis included 734 observations from 324 non-financial listed enterprises in five countries (Indonesia, Singapore, Malaysia, Thailand, the Philippines) spanning a six-year period. The results revealed that SR positively affected the ROA of enterprises, which highlights the importance of ensuring external risk management to enhance performance.

In a related study, Xi et al. (2022) examined how environmental information disclosure affected the FP of 30 Chinese listed banks between 2009 and 2019, in which the scholars used manually collected data. The study found that enhancing the quality of environmental information disclosure improved the FP of the banks. Additionally, Goel and Misra (2017) analysed the SR practices of 120 companies listed on the Bombay Stock Exchange across eight industries. The study implemented self-constructed SR and examined it using FP indicators on a company-wise basis, with the results revealing a positive relationship between SR and profitability. Further, Brown et al. (2009)

investigated the association between SR and corporate reputation by analysing data from a sample of US firms from 2001 to 2007. The findings indicated that companies that engaged in higher levels of SR generally exhibited a stronger reputation, and that improving a company's ROA can enhance its SR. Overall, the authors asserted that SR can serve as a valuable instrument for bolstering corporate reputation, especially for companies that operate in environmentally sensitive sectors. Guidry and Patten (2010) explored whether a corporation's decision to publish standalone SR is perceived as valuable by market participants, and whether differences in market reactions are related to the quality of the reporting. This study used standard market model techniques to identify unexpected changes in market returns from 2001 to 2008, in the period when a US-based publicly traded corporation announced the publication of its first sustainability report. The study's findings indicate that companies with high-quality sustainability reports have significantly more positive market reactions than companies with lower-quality reports.

Reddy and Gordon's (2010) empirical study aimed to investigate how SR affected FP, and it identified the gaps, overlaps, limitations and flaws in current SR constructs. A sample of 68 listed companies—including 17 in the New Zealand Stock Exchange and 51 in the Australian Stock Exchange—was analysed using the event study method to estimate abnormal returns over a 31-day event window. The study discovered that SR significantly influenced the explanation of abnormal returns for Australian companies.

The study conducted on Islamic banks operating in Pakistan from 2012 to 2017 revealed a positive link between an SR index and its FP (Mallin et al., 2014). Additionally, Rehman et al. (2020) discovered that the environmental and economic dimensions of SR positively influenced firm performance. Similarly, Jan et al. (2019) found that in terms of ROA and shareholder confidence, a positive link existed between SR and firm performance. Finally, Bashir et al. (2020) analysed the link between SR and FP in Nigerian Banks, which revealed a positive and significant relationship between SR and FP.

The relationship between CSR and FP has also been studied in the context of KSA. Alotaibi and Hussainey (2016) used financial indicators such as ROA, TQ and market capitalisation to examine the relationship between firm CSR and firm performance. This study found that CSRD practices positively affected market capitalisation, and that firms that engaged more in CSRD activities benefited more in terms of MS compared to firms

that did not engage frequently in CSRD. However, neither ROA nor TQ were significantly affected by CSRD practices in the KSA context. Similarly, Al-Malkawi and Javaid (2018) studied the influence of CSR on corporate FP, in which zakat was used as the measure for CSR in the study's analysis. This study analysed a sample of 107 non-financial firms listed on the KSA stock market over a 10-year period (2004–2013), the results of which indicated that the zakat CSR measure significantly influenced firm performance and market value. This indicates that CSR can contribute positively to a firm's profitability, and that it is a tool that can be used concurrently to deliver enhanced value to shareholders and serve society.

Habbash (2017) investigated the relationship between CSRD level and FP and firm value in KSA. A sample of 267 annual reports from KSA listed firms from 2007 to 2011 was analysed using manual content analysis and regression analysis. The study implemented ROA as an accounting-based proxy and TQ as a market-based proxy for FP and firm value, respectively. The findings indicated that a higher level of social disclosure can enhance both FP and firm value. Alhazmi (2017) conducted a study to investigate how SR affected the market value of firms (measured by TQ) in KSA. SR was measured using a content analysis method that was founded on word count. Econometrics regression models were used to analyse the data collected from an unbalanced panel of 545 annual reports over a five-year period, with the results revealing a significant positive relationship between SR practices and TQ.

Buallay (2022a) used a sample of 67 companies listed on the Saudi Stock Exchange to investigate how SR influences the FP of firms in the food industry. The scholar collected SR data from the annual reports of food firms from the 2014–2018 period. Buallay also collected financial data from the firms' annual reports and financial statements, including ROA, ROE and TQ. They found that SR significantly influences ROE but not ROA and TQ. In another study focusing on KSA, Ammer et al. (2020) found that reported environmental sustainability practices strongly and positively affected firm value, indicating that stakeholders associated businesses' environmental reporting with increased accountability for environmental practices because of IDs.

Given the varied studies discussed in this subsection, it can be summarised that several empirical studies have sought to examine the relationship between SR and FP (Jayachandran et al., 2013; Nishitani & Kokubu, 2012). Several of these studies reported

a positive connection between SR and FP (Fatemi et al., 2015; Malik et al., 2015), while some studies identified a negative correlation (Lyon et al., 2013). Additionally, other studies have concluded that no significant correlation existed between SR and FP (Renneboog et al., 2008).

2.12.2 The negative relationship between sustainability reporting and financial performance

Academic literature has also documented an unfavourable relationship regarding how SR influences FP. Several studies have suggested that SR has prompted poor FP. However, firms may engage in greater disclosures to avoid reputational costs (Stocken, 2000). Skinner (1997) posited that companies engage in SR because of shareholder litigation. Given that SR may incur negative repercussions on a firm's profitability, it is essential to carefully consider the potential impacts before implementing such measures (Leuz, 1999). Additionally, Cho et al. (2012) supported the argument that SR impedes a firm's FP.

For example, Buallay and Al Marri (2022) examined the association between SR and the operational, financial and market performance of the telecommunication and information technology sectors. The research employed data from 4,458 observations in 60 countries from 2008 to 2017, with an independent variable founded on SR scores and dependent performance indicators (ROA, ROE, TQ). The results indicated that SR significantly and negatively affected the TQ performance indicator. Friske et al. (2023) further explored the link between SR and firm value, as measured by TQ. Using a panel of reporting and non-reporting organisations over the 2011–2020 period, the scholars tested three hypotheses that were derived from signalling theory and the SR literature. The findings from an FE panel model indicated that SR has an overall negative association with TQ.

Buallay et al. (2023) aimed to investigate whether a connection existed between the extent of SR and the performance of banks and financial services throughout seven different regions worldwide, including Asia, Europe, MENA, Africa, the US and South America. To achieve this goal, the scholars collected data from 60 countries from the 2008–2017 period, which included 4,458 observations. Specifically, they examined how ESG scores and the three pillars of SR related to ROA, ROE and TQ, with the findings indicating a

negative correlation between ESG and the operational, financial and market performance of banks and financial services.

In a related study, Dinçer and Altınay (2020) examined how SR influenced the FP of the Turkish banking sector by analysing a sample of seven banks that were included in the Borsa Istanbul Sustainability Index between 2010 and 2017. The findings suggested that SR negatively influences ROA. Garg (2015) examined how SR affected the FP of Indian companies. Annual reports from selected companies and the Prowess Database were used to collect data, which were then analysed using SPSS 16.0. Although the results demonstrated that SR practices improved over time, they also revealed that SR negatively affected TQ and ROA in the short term. Buallay et al. (2020) examined the relationship between SR (proxied with ESG scores) and the operational, financial and market performance (proxied with ROA, ROE and TQ) of 59 banks that were listed on the stock exchanges of MENA countries over the 2008–2017 period. The results revealed that SR negatively influenced ROA, ROE and TQ. Further, Baboukardos and Rimmel (2016) investigated how SR influenced the value relevance of summary accounting information (i.e., book value of equity and earnings) for firms listed on the Johannesburg Stock Exchange in Africa. The study used a sample of 954 firm–year observations and a linear price-level model to analyse the relationship between a firm's market value of equity and its book value of equity and earnings. The findings indicated a decrease in the value relevance of net assets, which was potentially caused by the disclosure of previously unknown risks or unrecorded liabilities.

Buallay (2022b) investigated the influence of SR levels on FP throughout seven sectors in the MENA region. The study measured SR using ESG scores and data from 316 observations from 11 countries within the 2008–2017 period, with the control variables of banks and macro-economics. The empirical results suggested that SR influenced ROA, ROE and TQ throughout the seven sectors in various ways, in which most sectors involved SR negatively influencing ROA, ROE and TQ. Given these findings, managers in these sectors were advised to concentrate on their disclosure strategies, and it was recommended that they reveal more non-financial information to improve firm value (e.g., ESG). Buallay (2019b) examined the relationship between SR and FP indicators in terms of ROA, ROE and TQ using a sample of 235 European banks over the 2007–2016 period. When SR was measured individually, the effects of different SR pillars on

performance varied. Social responsibility disclosures negatively influenced all three indicators, while governance disclosures negatively affected ROA and ROE but positively affected TQ.

Scholarly literature has emphasised the connection between a firm's SR and its respective industry (Alrazi et al., 2016; Brammer & Pavelin, 2006; Clarkson et al., 2011; Kuzey & Uyar, 2017). Industries with greater environmental and social effects are more likely to prioritise SR and disclosures. This includes businesses who directly communicate with their customers, such as those in the manufacturing and retail sectors. Because of increased public pressure and scrutiny, businesses in these sectors are increasingly engaging in social and environmental sustainability initiatives. Industries with low environmental and social effects have been observed to engage in fewer social and environmental sustainability activities, as well as to report less frequently on these matters. Given the present research's goal of addressing concerns related to SR and FP, it selected a representative sample of all non-financial companies that were listed on the Saudi Stock Exchange between 2015 and 2020. This research aimed to develop SR indexes using GRI and existing literature, as well as to use relevant accounting and market-based measures to analyse how SR affects FP in KSA.

2.12.3 No relationship between sustainability reporting and financial performance

Several studies have demonstrated that SR insignificantly affects FP. For example, Ebaid (2023a) investigated the SR and FP of companies listed on the Saudi Stock Exchange. A sample of 67 companies listed on the stock exchange from 2016 to 2019 was analysed using ROA and ROE as a proxy for FP, while SR was evaluated using a sustainability index. The findings revealed that KSA companies exhibited a generally low level of SR, and that a positive relationship existed between FP and SR, though it was not statistically significant. Alhawaj et al. (2022) examined the link between SR and FP in developed and emerging economies using data from 50 countries over the 2008–2017 period. In this study, SR was an independent variable and the performance indicators of operational ratio, ROE and TQ were the dependent variables. Notably, the results suggested no significant association between SR and ROE and TQ. Arthini and Mimba (2016) also explored how SR affects companies' FP. This study employed secondary data in the form of financial data gathered from the financial statements of firms listed on the Indonesian Stock Exchange, while SR data were sourced from the National Centre for Sustainability

Reporting. The findings indicated that SR positively influenced FP, which was measured using various indicators (e.g., ROA, ROE, net profit margin). However, this influence was not statistically significant. Silva (2019) also aimed to examine whether a statistically significant difference could be found in the influence of reporting on institutional performance. This study employed a disclosure index from the GRI guidelines that comprised 119 parameters to evaluate the content of reports submitted by listed banks and financial sector companies in Sri Lanka. The study's results suggest that the levels of SR do not significantly influence financial measures such as ROA and ROE, with corresponding p-values of 0.741 and 0.454, respectively. Further, Buallay and Al Marri (2022) examined the association between SR levels and operational, financial and market performance within the context of the telecommunication and information technology sectors. This study employed data from 4,458 observations in 60 countries over the 2008–2017 period, with an independent variable founded on SR scores and dependent performance indicators (ROA, ROE, TQ). The results indicated that SR did not significantly affect operational performance (measured by ROA) and FP (measured as ROE).

Nwaigwe et al. (2022) investigated how the degree and quality of sustainability disclosure affected the market value of firms. To achieve this objective, the study analysed 31 relevant sustainability performance indicators from 39 companies throughout nine sectors in the 2010–2019 period. A total of 390 firm–year observations and 12,090 data points were collected and used to calculate unweighted indices for sustainability degrees and quality. The results of the regression analysis revealed a positive yet statistically insignificant relationship between the degree of sustainability disclosure and firm market value. Dissanayake et al. (2016) investigated how SR was used in Sri Lankan PLCs, with a focus on key performance indicators. Content analysis was performed for the annual reports, separate sustainability reports and websites of 60 top PLCs in Sri Lanka for the 2011–2012 financial reporting period. This study found that neither total revenue nor ROE was associated with the SR use for these companies. Johari and Komathy (2019) examined the association between SR and FP using a sample of 100 firms with good disclosure in 2016, in which FP was measured using ROA, ROE, earnings per share and dividend per share. The study revealed that SR did not significantly affect ROE and dividend per share. Murray et al. (2018) further investigated the link between social and environmental disclosure with financial market performance in the UK's largest

companies. This study used the Centre for Social and Environmental Accounting Research database for disclosure and The Times 1,000 for stock returns. Statistical tests were conducted for a period of 10 years, which revealed no direct relationship between share returns and disclosure.

Despite the many studies discussed in this section, the current body of research that focuses on determining how SR affects FP during times of crisis presents conflicting findings. Hwang et al. (2021) conducted a study to investigate how a firm's ESG initiatives affected their FP during the COVID-19 pandemic. Because of unforeseen obstacles that emerged in early 2020, many Korean firms experienced considerable FP deterioration. Hwang et al.'s study revealed that the more successful a firm's ESG activities were, the less decline they experienced in their earnings. Additionally, a study conducted by Yi et al. (2022) used a sample of 3,016 Chinese listed companies to analyse how SR influenced stock returns during the COVID-19 crisis. This study found that companies with greater pre-crisis SR involvement experienced fewer stock returns during the crisis period.

2.12.4 Sustainability reporting and financial performance hypothesis

The findings from the studies discussed in the previous subsection suggest that the relationship between SR and FP is complex and contingent on various contextual factors. Although some studies found a positive association between SR and FP, others documented a negative relationship or no relationship. Therefore, the underlying mechanisms and contextual factors that can influence the relationship between SR and FP must be examined when investigating this relationship.

This thesis's literature review revealed mixed results regarding the relationship between SR and FP (see Table 2.4). Most studies examined how SR affects the FP of firms that are stationed in developed countries or in countries where the reporting standards and regulations are followed to a higher level (Berthelot et al., 2012; Lo & Sheu, 2007). However, some studies also explored this relationship in the context of developing countries—though these are limited, especially in the context of a Middle Eastern country such as KSA. However, the findings from most of these studies were inconclusive; further, different results were obtained regarding the nature of the relationship between

SR and FP (Almaqtari et al., 2021; Alsulayhim, 2020; Badkook, 2017; Buallay & Al Marri, 2022; Chebbi & Ammer, 2022; Ebaid, 2023a).

The present research intended to investigate and expand existing literature focusing on the connection between SR and FP. With a basis in GRI and other research, this research examined SR indices in the context of KSA and then assessed how SR affected the FP of KSA listed companies. As aligned with existing literature and the theoretical underpinnings of the stakeholder and legitimacy theories, the present research generated four hypotheses:

H_{2a}: Environmental SR will significantly and positively affect the FP of KSA listed firms.

H_{2b}: Social SR will significantly and positively affect the FP of KSA listed firms.

H_{2c}: Economic SR will significantly and positively affect the FP of KSA listed firms.

H_{2d}: Total SR will significantly and positively affect the FP of KSA listed firms.

Table 2.4 Summary of recent and critical studies focusing on sustainability reporting and financial performance effects

No.	Author/year	Country/group	Dependent variable	Methodology	Result
1	Soytas et al. (2019)	US	ROA	First-stage estimation	Positive effect
2	Buallay (2019b)	European banks	ROA, ROE, TQ		Mixed effect
2	Platonova et al. (2018)	GCC	Return on average assets, return on average equity	FE regression	Positive effect
3	Nobanee and Ellili (2016)	United Arab Emirates	Growth in interest income	GMM	Negative effect
4	Eccles et al. (2014)	US	ROA, ROE	Four-factor model	Mixed effect
5	Mallin et al. (2014)	13 countries	ROA, ROE	OLS, 2SLS, 3SLS	Positive effect
6	Arsad et al. (2014)	Shariah-compliant companies in Malaysia	Earnings per share	Structural equation modelling	Positive effect
7	Emeka-Nwokeji and Osisioma (2019)	Nigeria	TQ	Pooled ordinary least squares	Positive effect
8	Carp et al. (2019)	Romania	Price-to-book ratio, sales growth, cost of capital	Quantile regression	Negative effect

9	Johari (2019)	Malaysia	ROA, ROE, earnings per share, and dividend per share	Multiple Regression	Mixed effect
10	Laskar (2018)	Japan, South Korea, Indonesia, India	Market-to-book ratio	Structural equation modelling	Positive effect
11	Duque-Grisales and Aguilera-Caracuel (2019)	Brazil, Chile, Colombia, Mexico, Peru	ROA	Linear regressions with a data panel	Negative effect
12	Deng and Cheng (2019)	China	Operational ROA	FE model, difference-in-differences test, GMM	Positive effect
13	Aouadi and Marsat (2018)	Worldwide	Operational ROA		Positive effect
14	Garcia et al. (2019)	Brazil, Russia, India, China, South Africa	Market TQ	OLS, random effects, FE	Positive effect
15	Nekhili et al. (2019)	France	Market TQ	System GMM	Positive effect
16	Landi and Sciarelli (2019)	Italy	Market TQ	Panel data through an FE model	Negative effect
17	Miralles-Quirós et al. (2019)	31 countries	Market TQ	Panel data	Mixed effect
18	Zhao et al. (2018)	China	Financial ROE	FE, random effect, mixed regression model	Positive effect
19	Rehman et al. (2020)	Pakistan	ROA, ROE	OLS, Panel corrected standard errors, GLS	Mixed effect
20	Jan et al. (2019)	Islamic countries	Return on average assets, return on average earnings, TQ	GMM statistical	Mixed effect
21	Alhawaj et al. (2022)	50 countries	ROE, TQ		Statistically insignificant
22	Wasara and Ganda (2019)	South Africa	ROI	A multi-regression analysis	Mixed effect
23	Javeed and Lefen (2019)	Pakistan	ROA, ROE	GMM	Positive effect
24	Hongming et al. (2020)	Pakistan	ROA	OLS, FE effect, random effect model	Positive effect
25	Girón et al. (2020)	366 large Asian and African companies	TQ, profit margins, ROA, ROE	Two logit models, one regression model	Mixed
26	Aifuwa (2020)	Developing countries	ROA, ROE, earnings per share	GMM	Mixed effect, mostly positive
27	Ghardallou and Alessa (2022)	GCC	ROA, ROE, TQ	Panel smooth transition regression model	Negative effect

28	Al-Malkawi and Javaid (2018)	KSA	ROE, price-to-book ratio	GMM, OLS, FE, random effect model	Positive effect
29	Habbash (2017)	KSA	ROA, TQ	Panel data	Positive effect
30	Alhazmi (2017)	KSA	TQ		Positive effect
31	Ebaid (2023a)	KSA	Return on capital employed and Earnings per share	OLS, FE, random effect	Statistically insignificant

2.13 Empirical studies focusing on sustainability reporting and non-financial performance

This subsection examines research focusing on the link between SR and NFP—specifically, research that has examined how SR affects NFP.

2.13.1 The positive relationship between sustainability reporting and non-financial performance

Zimon et al. (2022) evaluated how SR influenced the corporate reputation of companies listed on the Tehran Stock Exchange. The study examined 178 firms from 2013 to 2020 and analysed SR in four dimensions: environmental, social, governance and ethical SR. The study's findings indicate that SR and its dimensions positively influence corporate reputation. Michelon (2011) employed legitimacy theory to argue that a company's reputation influences sustainability disclosure. This study explored reputation from the three perspectives of FP, commitment to stakeholders, and media exposure. Michelon proposed that companies with strong FP, a proactive approach to stakeholder engagement, and a high level of public visibility were more likely to use sustainability disclosure to communicate their legitimacy to stakeholders. These findings suggest that both commitment to stakeholders and media exposure positively correlate with sustainability disclosure. Further, Gunawan et al. (2022) evaluated the level of SR in Indonesian companies before and after the Financial Service Authorities implemented mandatory regulations in 2017. The study also aimed to analyse the differences in SR practices between companies that are and are not environmentally sensitive. The researchers collected data from standalone sustainability reports that the selected companies published from 2006 to 2019, resulting in 887 sustainability reports. The study's findings indicated that SR is associated with community engagement, new employees and employee turnover.

Loh and Tan (2020) examined the relationship between SR and brand value in Singapore's top 100 brands. Sustainability information was collected and scored using the GRI framework, and regression analysis was performed to compare sustainability performance and brand rankings by brand finance. The study's results demonstrates that although most of the top 100 brands engaged in SR, one-fifth did not. Additionally, although greater disclosure led to a higher level of brand value, social and environmental indicators were undermanaged. Further, Shanti and Joshi's (2022) research evaluated how environmental sustainability practices influenced the brand equity of hotels in India. The study employed a survey methodology with a structured questionnaire that was distributed to 400 customers, as well as a partial least squares structural equation model (PLS-SEM) to build the green branding constructs. The findings revealed that green brand image, green brand awareness, and green perceived value favourably affected the green brand equity construct. In a related study, Petrescu et al. (2020) investigated the actual benefits of SR for large companies in Romania, and how SR helps develop a sustainable economy. The research involved a quantitative marketing analysis that was performed on a randomly selected sample of the largest 5,750 companies in 35 counties that were active in strategic priority areas of Romania. The results revealed that SR can help build trust in a company's reputation, enhance customer loyalty and create, improve and repair a brand's image. The findings also suggested that implementing reputation management systems is crucial, especially in the online environment.

Alam and Islam (2021) explored the relationship between different dimensions of environmental SR, green corporate image and green competitive advantage in firms. The study conducted a survey on apparel factories in Bangladesh in July 2019, as well as employed random sampling from a list of 53 apparel firms listed on the Dhaka Stock Exchange. A total of 340 questionnaires were distributed, of which 302 were returned, with 268 being used in the analysis. The results indicated that ENV dimensions positively affected the firm's green corporate influence and reputation. Nyarku and Ayekple (2019) further investigated how the level of customers' awareness of sustainability practices affected the NFP of Nestlé Ghana Limited, a multinational corporation operating in Ghana. The study implemented a quantitative approach, in which 300 customers were surveyed through questionnaires and a simple random sampling method. The PLS-SEM method was employed to analyse the data, with the findings revealing that awareness of sustainability practices positively affected Nestlé Ghana Limited's image and reputation.

Farooq and Salam (2020) tested a proposed multiple mediator conceptual model to investigate the relationship between CSR and employees' desire to have significant effect through their work in the airline industry. PLS-SEM was used to analyse the data collected from 640 employees of a well-established airline in Malaysia, with the results indicating that sustainability practices in the form of CSR significantly and positively affected employees in the airline industry. Gazzola et al.'s (2021) study investigated the increasing trend of SR practices in non-governmental organisations. The study examined the top 100 most funded non-governmental organisations that received the 'five per thousand' donation to determine if and how they achieved their SR practices. In their investigation, the scholars analysed public data from official government records published by the Italian Revenue Agency. The results indicated that SR provides various financial and social benefits, such as by increasing social influence and building trust in civil society and its donors.

Corporate sustainability activities and disclosure are beneficial for firms because they prompt increased investor confidence, customer loyalty and competitive advantage (Farooq & Salam, 2020; Nyuur et al., 2019; Perez et al., 2018). Research has also demonstrated that firms build better relationships with their stakeholders on various levels when they commit to integrating social, environmental and economic considerations in their operations (Perez et al., 2018). The stakeholder theory further suggests that firms should consider the interests of all stakeholders that are affected by their operations (Clarkson, 1995; Pérez & del Bosque, 2016). Further, research has demonstrated that socially responsible firms attract customers who are aware of the need for environmental and social responsibility, which elevates customer loyalty (Fatma & Rahman, 2016; Moisescu, 2017; Moisescu et al., 2020; Pérez & del Bosque, 2017; Tuan et al., 2019).

In their 2020 study, Iglesias et al. investigated the relationship between CSR and customer loyalty in the context of health insurance firms in Spain, in which the study aimed to examine how CSR influenced customer loyalty through measures such as brand trust. A sample of 1,100 customers participated in the survey, which was conducted using structured questionnaires. The findings revealed that CSR activities positively influenced customer loyalty because they directly and indirectly enhanced brand trust. This implies that when customers perceive a company as being socially responsible, they are more likely to develop trust in the brand, which ultimately leads to customer loyalty.

Omran et al. (2019) studied a sample of 156 Australian firms to explore the relationship between operational performance and the effectiveness of management quality practices as perceived by external stakeholders. The study focused on firms that link executive compensation to NFP measures. According to the results, no significant direct link was observed between the extent of disclosure in the financial statements and the NFP measures for firms in which executive compensation was linked to NFP measures. However, the study also found that a firm's NFP measures significantly influence its FP through the implementation of a quality-based strategy. Moreover, the study also revealed that manufacturing firms that prioritise a quality strategy are more likely to disclose more NFP information in their annual reports, which positively affects their FP.

Prieto et al. (2020) investigated the relationship between CSR initiatives and firm performance in the Ecuadorian banking sector. The study employed two models to measure performance: FP, which was measured using ROA and ROE; and NFP, which was assessed through a customer survey. The study's results indicated that CSR practices positively influenced both the FP and NFP of a firm—specifically, that ethical practices, philanthropic initiatives and economic and legal accountability positively affected firm performance. The study also revealed that CSR initiatives contributed to customer retention by increasing brand loyalty and perceived value, which subsequently positively affected firm performance. These findings suggest that CSR practices play a crucial role in enhancing the overall performance of firms in the Ecuadorian banking sector. Bello et al. (2020) studied four Nigerian telecommunications companies to analyse how SR practices affected customer value, brand trust and loyalty. The study found that SR positively affected customer satisfaction, repurchase intention and brand trust.

Al-Mamary et al. (2020) investigated the relationship between entrepreneurial orientation and the FP and NFP of small-to-medium sized enterprises (SMEs) in KSA. The study found that CSR is positively linked to customer satisfaction and loyalty, which subsequently elevated brand loyalty and attracted more customers. Additionally, Pérez and del Bosque (2015) discovered that CSR initiatives positively affect brand trust and customer loyalty, which contributes to the long-term success of a firm. Further, Mani et al. (2020) focused on the relationship between social sustainability practices and customer performance in manufacturing SMEs in an Asian country, with the research method involving semi-structured interviews with supply chain managers and practitioners to

identify social sustainability dimensions. A survey was then conducted using a structured questionnaire, and the collected data were analysed using covariance-based structural equation modelling with 327 samples from SMEs. Mani et al. ultimately found a positive correlation between social sustainability practices and customer performance.

2.13.2 The negative relationship or absence of relationship between sustainability reporting and non-financial performance

The studies discussed in the previous subsections generally indicated a positive link between SR and NFP, both directly and indirectly. However, limited studies have found this relationship to be insignificant or negative. For example, González-Rodríguez et al. (2019) examined how sustainability practices influenced the corporate reputation of hotels. The study targeted 668 hotels in the three, four and five-star categories registered with the Andalusian Hotel Association in Spain. According to the research findings, hotel managers believed that sustainability practice initiatives related to the local community and environment did not significantly affect a hotel's reputation. Additionally, Raza et al. (2020) explored the relationship between CSR and customer behaviour in a developing country, with their study comprising a sample of 280 banking customers in Pakistan. The results indicated that CSR practices are not directly associated with customer loyalty. These findings differ from those of studies focusing on developed countries, which demonstrated a positive relationship between CSR initiatives and customer loyalty. Further, Luo and Bhattacharya (2006) examined the relationship between SR practices and firm market value by testing a conceptual framework that predicts customer satisfaction as a partial mediator. The study analysed data for publicly traded Fortune 500 companies from multiple sources and found support for the framework. However, it was notably found that sustainability practices can decrease customer satisfaction levels, which subsequently negatively influences market value. Despite the evidence cited in this subsection, it should be noted that scant research has focused on how SR affects NFP in the context of developing countries like KSA.

2.13.3 Sustainability reporting and non-financial performance hypothesis

The findings of previous studies have highlighted that the link between SR and NFP has an intricate and multifaceted nature that is influenced by various contextual factors (see Table 2.5). According to this research's literature review, some studies found a positive

correlation between SR and NFP, while others identified negative or inconclusive relationships. Consequently, the underlying mechanisms and contextual factors that may shape the link between SR and NFP must be considered.

Therefore, this study aimed to explore the relationship between SR and NFP in KSA. Given the empirical studies cited in the previous subsections and the theoretical underpinnings of stakeholder and legitimacy theories, the current research posited the following hypotheses:

H_{3a}: Environmental SR will significantly and positively affect the NFP of KSA listed firms.

H_{3b}: Social SR will significantly and positively affect the NFP of KSA listed firms.

H_{3c}: Economic SR will significantly and positively affect the NFP of KSA listed firms.

H_{3d}: Total SR will significantly and positively affect the NFP of KSA listed firms.

Table 2.5 Recent and critical studies focusing on the effects of sustainability reporting and non-financial performance

No.	Author/year	Country	Dependent variable	Methodology	Results
1	Luo and Bhattacharya (2006)	US	Innovativeness capability, customer satisfaction	Large-scale secondary dataset	Low and weak relationship
2	McDonald and Rundle-Thiele (2008)	Australia	Customer satisfaction	Best-worst method	Significant effect
3	Luo and Bhattacharya (2006)	Spain	Customer satisfaction	Unbalanced panel	Negative effect
4	Galbreath and Shum (2012)	Australia	Reputation, customer satisfaction	SEM using AMOS, with the maximum likelihood estimation method	Indirect effect
5	Khan et al. (2013)	Pakistan	Corporate reputation	Surveys	Strong relationship
6	Martínez and del Bosque (2013)	Spain	Roles of trust, customer identification and satisfaction	Surveys	Positive effect
7	González-Rodríguez et al. (2019)	Spain	Employees, customers, local community, reputation	Questionnaire	Insignificant

8	Hassan and Nareeman (2013)	Malaysia	Customer satisfaction and retention	Regression and correlation analysis using SPSS	Positive effect
9	Al-Hosaini and Sofian (2015)	Yemen	Customer loyalty, government support, reputation	Surveys using Smart PLS 3.0 software	Positive effect
10	Kang et al. (2015)	Taiwan	Customer, internal business, learning and growth and non-market perspectives	PLS regression	Significant
11	Isnalita and Narsa (2017)	Indonesia	Customer loyalty (MS)	Scores of weighting item categories	Positive effect
12	Nyarku and Ayekple (2019)	Ghana	Image, reputation	Questionnaires, simple random sampling method	Positive effect
13	Vu et al. (2020)	Vietnam	Customer loyalty, government support, business reputation	Surveys using Smart PLS 3.0 software	Positive effect
14	Prieto et al. (2020)	Ecuador	Customer brand trust, brand loyalty, perception of quality, satisfaction	Self-designed online questionnaire	Positive effect
15	Raza et al. (2020)	Pakistan	Customer loyalty	PLS-SEM	No direct relationship
16	Iglesias et al. (2020)	Spain	Customer trust, customer loyalty		Indirect effect
17	Bello et al. (2020)	Nigeria	Service quality, satisfaction, repurchase intention	Least squares structural equation	Positive effect
18	Loh and Tan (2020)	Singapore	Brand value	Regression analysis	Positive effect
19	Zimon et al. (2022)	Iran	Corporate reputation	FE method	Positive effect
20	Al-Mamary et al. (2020)	KSA	Customer satisfaction and loyalty	Hierarchical linear regression	Positive effect

2.14 Chapter summary

This chapter overviewed the legal, political and economic context of KSA. This chapter also conducted a thorough literature review that encompassed SR and established a theoretical framework that is founded on the stakeholder and legitimacy theories to examine how SR affected FP and NFP. It further analysed existing empirical studies to explore how SR influenced firm performance. According to the insights derived, hypotheses were formulated to investigate how SR influences FP and NFP. The next chapter reviews how the main theories related to CG mechanisms are applied to the relationship between SR and FP and the findings of previous studies to build hypotheses.

Chapter 3: The moderating role of corporate governance on sustainability reporting and firm performance

3.1 Introduction

The previous chapter examined empirical studies focusing on SR and firm performance, as well as reviewed key SR theories to help develop SR-related hypotheses. This chapter reviews CG definitions and associated theories, as well as examines related empirical studies that focus on the context of emerging and developed markets. This examination will form the basis for developing this research's CG-related hypothesis. Section 3.2 discusses CG definitions, Section 3.3 reviews the main CG theories related to SR and FP and Section 3.4 identifies and addresses CG characteristics pertaining to KSA. Section 3.5 reviews the main empirical studies that focus on the relationship between CG and SR and FP, while Section 3.6 summarises the gaps in knowledge. Finally, Section 3.7 provides a summary of the chapter.

3.2 Definition of corporate governance

CG can be considered a collection of mechanisms, processes, rules and regulations that determine how a firm operates (Abu-Tapanjeh, 2009; Khan, 2011). CG establishes how power is distributed among different participants in a company (e.g., among the board of directors, management, shareholders, other stakeholders), and it distinguishes the decision-making rules and procedures regarding corporate affairs (Abu-Tapanjeh, 2009; Cadbury & Cadbury, 2002). Therefore, CG also protects stakeholders and helps companies achieve their goals.

CG has been explained in different ways, depending on how its organisations use or view it. For example, CG denotes the process of establishing internal and external structures to guide and control a company (Lin, 2011). Further, CG can be considered an attempt to implement control, direction and evaluation of a firm from an external perspective (Brown et al., 2011). It should also be noted that some firms regard CG as a mechanism for mitigating risks and checking the excess and misuse of power.

Although a firm's primary objective is to make a profit, it is understandable that the principles of CG state otherwise. Specifically, firms are responsible for serving the

interests of external stakeholders, including the immediate community. Firms must demonstrate corporate responsibility, such as through the creation of environmental awareness programs. The concept of corporate responsibility can be better understood by considering Cadbury's assertion that CG requires maintaining an effective balance between the economic objectives of firms and responsibilities towards the interests of stakeholders (Cadbury & Cadbury, 2002).

According to the OECD (2015, p. 36), CG concerns how stakeholders are treated. Therefore, CG relates more to how the board of management in firms manage to establish an effective balance between the interests of the firm owners and stakeholders. Essentially, the best CG principle is to ensure that employees receive adequate care, with the aim of ensuring that the firm's interests are also considered.

Specifically, adopting the OECD's principles related to CG helps countries and organisations attain the necessary level of direction and control (OECD, 2015, p. 1). The OECD-based principals have greatly highlighted the roles of the board of management, shareholders and concerned stakeholders in maintaining the long-term success and sustainability of organisations. It should also be noted that the OECD definition of corporate responsibility is founded on the various conceptual theories that subsequently formed the discussion context of the previous chapter.

Additionally, the OECD principle addresses the concepts of transparency, disclosure, use of controls and ownership structure. In KSA, CG involves an external system that aims to regulate and supervise economic organisations (Shehata, 2013). Consequently, KSA emphasises regulatory bodies, including the CMA, the Ministry of Commerce and Industry, and the Saudi Stock Exchange. It should be equally noted that the World Bank's definition of CG is more focused on direction and control (World Bank, 2016).

The KSA has adopted the OECD's definition of CG, in which the OECD guidelines for CG provide further guidance for how KSA should govern corporations (Hamid, 2022). These guidelines offer directions for establishing an effective board of directors and for understanding the need for clear and transparent decision-making processes, the need for effective risk management and internal control systems, and the need for embedding CG into corporate culture (Bamahros et al., 2022). This definition is considered a foundation for developing CG best practices in KSA.

3.3 Corporate governance theories

3.3.1 Agency theory

An agency relationship forms when a principal employs another party through a contract to act on their behalf (Jensen & Meckling, 1976). This makes the relationship between shareholders and business leaders or managers an agency relationship, in which the managers act on behalf of the shareholders (Cerbioni & Parbonetti, 2007; Lim et al., 2007; von Alberti-Alhtaybat et al., 2012). The agency theory posits that the principals or owners of an organisation authorise the agents (recognised as managers) in how a firm's operations are managed. However, the different perceptions of shareholders and management creates a conflict of interest between agents and principals. It may prompt agency problems, when managerial staff primarily consider their own interests rather than those of the principals. Such issues emerge when managers have access to more information, about which stockholders may not be aware (Jensen & Meckling, 1979). However, agency problems can be alleviated by proper contractual agreements that enable shareholders to maximise their awareness of the firm's decision-making processes and managers' actions (Healy & Palepu, 2001).

These conflicts concern the core variable known as information asymmetry. In this case, governance is required to maintain and provide rights to the shareholders while also ensuring that any agency conflict between managers and shareholders is solved properly. Moreover, the influence of shareholders' interests on management must also be controlled (la Porta et al., 2002). Managers sometimes manipulate and hide pertinent information regarding their firms, and inefficient managerial practices and opportunistic activities cause selective information disclosure issues. The information asymmetry issue worsens when managers hide the expropriation of wealth or the firm's inefficient performance from shareholders (Prommin et al., 2014). A strong governance system can thus reduce information asymmetry issues and improve transparency (Leuz, 2003; Hannoon et al., 2021). The agency theory further posits that shareholders with more information are expected to have faith in their investment, which produces confidence about the firms in which they have interests. This situation consequently results in increased SR—and thereby greater firm performance (da Silva et al., 2014).

Agency theory pertains to the challenges that emerge from knowledge asymmetries in markets and the resulting agency costs (Morris, 1987), which include costs associated with structuring, enforcing and monitoring contracts (Fama & Jensen, 1983). By using CG models, businesses can efficiently reduce agency costs while simultaneously boosting voluntary reporting and FP (Fama & Jensen, 1983; Haniffa & Hudaib, 2006; Jallow et al., 2012; Jensen & Meckling, 1976; Khan et al., 2013; Leftwich et al., 1981; Solomon, 2020).

The agency hypothesis has been moved to the forefront of literature by corporate crises that have exposed the conflict of interest existing between firm managers and their shareholders. Investors are exposed to greater risks in the absence of accurate information because of information asymmetry and the failure of management to provide adequate disclosures to stakeholders (de Klerk & de Villiers, 2012). Investor confidence and stock prices consequently decline, which then prompts a decline in corporate performance. These scenarios demonstrate the importance of sustainability disclosures for maintaining market performance and lowering the capital expenses of enterprises (Dhaliwal et al., 2011; Warren & Thomsen, 2012).

Effective communication is established between firm management and shareholders through voluntary disclosures, which thereby minimises information asymmetry and reduces agency costs (Barako et al., 2006; Edelen et al., 2012). Agency theory also highlights the costs caused by differences in the decisions made between the principal and agent (known as residual costs; Schroeder et al., 2019). An agency releasing information that potentially benefits a competing firm constitutes a residual cost, and it is an example of differences that can ultimately cost the principal. To reduce such costs, firms should ensure accurate reporting and disclosures that do not negatively affect FP and NFP (Schulze et al., 2001). These factors relate to the present research regarding the need to assess how sustainability disclosure affects a firm's performance.

Agency theory explores various aspects of CG, which has allowed it to be extensively used in CG and voluntary disclosure literature (Allegrini & Greco, 2013; Barako et al., 2006; Donnelly & Mulcahy, 2008; Eng & Mak, 2003; Muttakin et al., 2015; Idan et al., 2021). The present research employed agency theory to examine how CG and voluntary reporting can be used to reduce agency costs and improve FP.

In brief, the conflicting interests of both managers and shareholders are the primary cause of the agency problem. Shareholders pressure managers to make choices and conduct activities that benefit shareholders. However, they do not have access to actual knowledge about the behaviour or actions of agents (i.e., managerial executives). Managers tend to be primarily concerned with their own interests, even if this produces conflicts with shareholders. Encouraging managers to engage in voluntary information disclosure is an appropriate solution to this problem.

3.3.1.1 Agency theory in the Kingdom of Saudi Arabia's corporate environment

The Saudi Government intends to improve CG by making different reforms, the adoption of which was sparked by regulations such as the 2006 KSA CG Code (Al-Nodel & Hussainey, 2010; Omar et al., 2018; Robertson et al., 2013). This code was created to mitigate the potential agency cost–increasing conflicts of interest that emerge between managers and stockholders. The KSA CG Code reduces conflict between the principal or shareholders and the agency or managers by encouraging greater openness and accountability (Alshehri & Solomon, 2012). This kind of framework is crucial in KSA listed companies, in which most of the ownership is concentrated in affluent families (Al-Nodel & Hussainey, 2010; Omar et al., 2018). The KSA CG Code assures that the requirements of even the smallest stakeholders are acknowledged and met, and that they are not overwhelmed by the requirements of the largest shareholders (Baydoun et al., 2013). Because the needs of larger and smaller shareholders do not always match, an effective CG structure helps reduce conflict and promotes openness and accountability. This safeguards against behaviours that could ultimately affect the organisation's overall performance (e.g., biased appointments; Boytsun et al., 2011; Haniffa & Hudaib, 2007b).

Over 75% of KSA listed companies rely on financing from Islamic banks in KSA (Al-Ajmi et al., 2009), which consequently allows the Islamic financing system to significantly influence the capital structure of KSA listed firms (Iqbal et al., 2014). Equity-based facilities such as Musharaka[3] (partnership) and Mudaraba[4] (finance by way of trust) are some of the financing options offered by Islamic banks. These equity-based

[3] A Musharaka contract is an agreement in which partners contribute capital to projects, profits are shared between partners on a pre-agreed ratio, and losses are shared in the exact proportion to the capital that each party invests (Mirakhor & Zaidi, 2007).
[4] Mudaraba is a partnership agreement in which one partner finances the project and the other manages it. Profits are distributed according to a predetermined ratio (Mirakhor & Zaidi, 2007).

solutions comprise the main principle and concept of profit sharing or loss sharing. This concept helps ensure that interests between shareholders and business managers are aligned, which consequently reduces conflict and agency costs (Mirakhor & Zaidi, 2007).

The SCGC is one step that the KSA has implemented to initiate CG reforms (Al-Abbas, 2009; Al-Nodel & Hussainey, 2010; Robertson et al., 2013). The SCGC operates within the same framework as other CG codes that aim to minimise agency conflicts through enhanced transparency and increased accountability (Alshehri & Solomon, 2012). Because of the ownership structure of KSA listed firms, in which the ownership is mostly controlled by affluent families, the SCGC plays a critical role in the KSA context (Al-Abbas, 2009; Al-Nodel & Hussainey, 2010). The SCGC can be used as a framework to help safeguard the interests of small shareholders and mitigate conflicts of interest (Baydoun et al., 2013). The absence of SCGC might result in unpleasant practices such as nepotism in board appointments, which could adversely affect an organisation's performance (Boytsun et al., 2011; Haniffa & Hudaib, 2007b). The SCGC is dedicated to minimising the negative effects that agency conflicts cause for business performance by promoting openness and accountability in SR and sustainability disclosure. Therefore, the SCGC plays a significant role in KSA.

3.3.2 Institutional theory

According to institutional theory, institutions impose social pressures, constraints and boundaries to determine what is and is not acceptable (Braun, 2016). Businesses need the local community's support to succeed, so it is imperative that they follow the rules and regulations established by the community. Social behaviour in an organisation is governed by institutionalised structures such as schemes, rules, conventions and routines. Rather than being mandated by outside parties, these policies and procedures are typically adopted by businesses on their own accord (Shad et al., 2020). Further, institutional pressure to meet industry standards has prompted increased SR use as a business strategy among many companies (Jan et al., 2021). Failure to follow accepted practices can even threaten an organisation's credibility and existence. Organisations are social units that function within a specific industry, so they often conform to the standard practices and beliefs of that industry. Therefore, the institutional theory analyses how outside forces affect organisations and how this pressure shapes their internal procedures (Mahmood et

al., 2019). Further, the dominant organisation in an industry will generally heavily influence the operations of other companies in that industry.

In general, institutional theory explains why corporate organisations adopt a specific structure or practice. An organisation's network or activities should comply with the external expectations of what arrangements or procedures are appropriate in its institutional settings (Sharkness, 2014). Companies operate in alignment with accepted standards and beliefs about what is exemplary or unacceptable economic behaviour from an institutional perspective. Additionally, neoclassical models emphasise restrictions for technology, information and income, but financial decisions are also bound by socially constructed and human limits such as conventions, habits and customs (Liyanage & Netswera, 2022). The institutional approach posits that human motivation extends beyond growth and productivity to social legitimacy and social obligation (Gupta & Gupta, 2020).

The institutional theory also argues that organisations must adhere to the rules and standards that their institutional environments establish to gain legitimacy and support (Jan et al., 2021). It is no coincidence that institutions in similar countries have adopted similar corporate sustainability practices because of external pressures such as coercion, mimetic imitation and normative insistence (Bhuiyan et al., 2023). The present research employed the institutional theory to identify the corporate structures, rules, norms and routines that affect SR and firm performance. These structures include CG characteristics such as board size (BS), board independence, audit committee size (ACS), government ownership and foreign ownership.

3.3.2.1 Institutional theory in the Kingdom of Saudi Arabia's corporate environment

According to Alwakid et al. (2020), Islamic teachings and local tribal traditions heavily influence business practices in KSA. A large part of KSA culture is founded on Islamic teachings that encourage people to help and care for each other, as well as build strong social relationships. Their conduct aligns with Islamic ethical and value principles such as fairness and transparency. These Islamic principles hold managers, majority shareholders and corporations accountable to society (Osman et al., 2015). Consequently, the acts of company management are considered aligned with the interests of the company's shareholders.

Because of certain elements of KSA culture such as favouritism and tribalism, family and personal relationships ultimately influence the selection of IDs in KSA companies, who are appointed regardless of their talents, expertise and experience (Sidani & Thornberry, 2013). These IDs may consequently lack the required qualifications, which is detrimental to the company's performance. Alarif (2020) stated that even though many KSA listed companies were originally family businesses that later became joint-stock companies, inside directors are more aware of and better understand the nature of their companies, which ultimately enhances the company's performance. In situations that do not involve conflicts of interest, combining the positions of chairman and CEO could be advantageous. In this context, Singh and Alshammari (2020) asserted that personal connections play an important role in contract negotiations in KSA. Therefore, institutional theory convinces the family entrepreneurs that using favouritism in their business harms its competitive performance. This theory also highlights that nepotism contradicts the teachings of Islam, which is expected to be a compelling argument, especially for people who perceive Islam as a basis for the universal principles of justice and equity (Sidani & Thornberry, 2013). In brief, the institutional theory is crucial in the context of KSA because it promotes business compliance with institutional rules and regulations for the purpose of improving the business's corporate image and performance. By adhering to CG regulations, companies can enhance their reputation and ultimately benefit from a positive public perception.

3.3.3 Stewardship theory

Supported by organisational psychology and sociology schools of thought, stewardship theory argues that managers act as dutiful stewards who are highly motivated to act in the best interests of their principals (Donaldson & Davis, 1991). Unlike agency theory, the stewardship theory opposes the opportunism and individualism of managers, as well as prioritises the interests of principals (Davis et al., 1997). Sama et al. (2022) suggested that a more enhanced FP for firms enhances the reputation of managers and helps them develop their careers, which motivates them to commit to improving the firm's FP. Consequently, stewardship theory posits that managers align their goals with those of their firms and shareholders, and that they are content when their firms successfully maximise their shareholders' wealth (Kyere & Ausloos, 2021).

Stewardship theory opposes the notion of having separate leadership structures, an independent board chair and a majority of IDs on the board (Donaldson & Davis, 1991). Instead, the theory proposes that a majority of insider directors on the board (i.e., executive directors) enhances FP and shareholder return (Gay, 2002). This theory assumes that executive directors possess more effective knowledge of and experience with the firm, industry and market, which enhances decision-making quality and subsequently improves FP (Donaldson & Davis, 1994). Therefore, the stewardship theory supports the notion of increasing the managerial powers of executive directors, given that they act as stewards of the firms to maximise shareholder wealth (Sama et al., 2022). Stewardship theory also supports having a duality of the CEO and a higher proportion of executive directors on the board (Syriopoulos & Tsatsaronis, 2012).

According to stewardship theory, granting managers a certain degree of autonomy can motivate them to perform more effectively. Scholars who support this theory believe that financial incentives are not the only motivators for managers, and that discretion is necessary for them to maximise shareholder value. This theory also emphasises that managers' concern for their reputation and career advancement compels them to act in the interest of shareholders, which prompts reduced agency costs (Kyere & Ausloos, 2021). From a psychological perspective, allowing managers to make decisions independently, without being hindered by bureaucratic processes, can increase job satisfaction and contribute to the company's overall FP (Clarke, 2004). However, because stewardship theory emphasises the alignment of interests between managers and shareholders, it may be limited when applied to KSA non-financial firms. KSA's business landscape is characterised by family-owned businesses and concentrated ownership structures, which introduces complexities that may not align with the underlying assumptions of stewardship theory. In isolation, stewardship theory may consequently not fully capture the unique governance dynamics that exist in KSA firms; this subsequently limits its suitability for examining the relationship between SR, firm performance and CG in the context of the present research.

3.3.4 Resource dependency theory

Resource dependency theory extends beyond the monitoring and counselling roles of the board as suggested by agency and stewardship theories; it further proposes that the board's function is also to connect firms with external resources. According to resource

dependency theory, firms need resources from the external environment to succeed and survive, including information, skills, managers, employees, labour, customers and suppliers (Ntim, 2015). Resource dependency theorists suggest that the board can help firms obtain these resources from the external environment (Rasli et al., 2020). According to this theory, IDs on a firm's board are more effective than executive directors at connecting the firm to critical external resources because they can provide more effective networks, contacts and connections to help the firm acquire strategic resources and information (Pahlevan Sharif & Kyid Yeoh, 2014). The theory also suggests that IDs can more successfully assist the firm in various areas, such as in exploring new markets, acquiring loans, managing local pressures, addressing environmental issues, formulating strategies and increasing shareholders confidence (Panicker & Upadhyayula, 2021).

Resource dependency theory proposes that boards play a crucial role in connecting firms with external resources—and boardroom diversity is essential for this purpose. By maintaining a diverse board, firms can access a greater range of expertise, contacts and customer bases from various regions and market segments (Arnegger et al., 2014). According to this theory, boards that reflect broader society can more effectively navigate the uncertainties of the external environment. Empirical studies have also found a positive correlation between the independence, diversity and size of boards and the FP of firms, which supports existing claims about the theory, such as those by Rasli et al. (2020), Panicker and Upadhyayula (2021) and Arnegger et al. (2014). Although resource dependency theory is often employed to analyse an organisation's dependence on external resources, it has limited applicability in the KSA context. This is primarily because of the unique characteristics of the KSA business environment regarding its distinctive resource landscape. Additionally, cultural and institutional norms specific to KSA could significantly influence resource dynamics within organisations, which limits the usefulness of resource dependency theory.

3.3.5 Multi-theoretical approach to corporate governance's effect on sustainability reporting and firm performance

Using multiple theories in research is crucial because it promotes a comprehensive understanding of the phenomenon under investigation. In the current research, multiple theories are used to focuses on the moderating role of CG on SR and firm performance. The agency and institutional theories are critical for understanding the moderating effect

of CG mechanisms on the relationship between SR and firm performance. Agency theory highlights the importance of aligning the interests of managers and shareholders, as well as the role of CG mechanisms (e.g., board independence, ownership structure) in mitigating agency problems. This theory helps explain how CG mechanisms can strengthen the relationship between SR and firm performance by ensuring that managers are held accountable for their actions. Conversely, institutional theory emphasises the importance of conforming to societal norms and expectations. This theory helps explain how CG mechanisms can influence the adoption and implementation of SR practices, as well as how the mechanisms can signal to stakeholders how firms are committed to sustainability (Christopher, 2010). In combining these two theories, the present research provided insights regarding the moderating effect of CG on the relationship between SR and firm performance.

Although the resource dependency and stewardship theories have been commonly used in research to explain CG roles, the current research did not consider them for two reasons. First, resource dependency theory was not suitable because it focuses on how firms acquire resources from external sources, without evaluating how this affects firm performance. Additionally, this theory assumes that firms are passive recipients of resources; however, SR involves firms proactively engaging stakeholders, which does not align with the theory's assumptions (Gray et al., 1995). Second, stewardship theory was not directly relevant to the research because it assumes that managers act in the best interests of shareholders, which potentially overlooks the trade-offs between short-term FP and long-term sustainability objectives in SR (Idowu et al., 2013). Further, stewardship theory does not account for how external stakeholders shape managerial behaviour, which is a central concern of SR (Donaldson & Davis, 1991). Therefore, the current research focused on the agency and institutional theories, which support understanding how CG mechanisms moderate the relationship between SR and firm performance.

Table 3.1 Summary of corporate governance theories

CG theory	Assumption and key tenet	Strength and weakness	Relevance to CG, SR and FP	Relevance to the KSA context
Agency theory	• Proper contractual agreements can alleviate agency problems, which enables shareholders to maximise their awareness of firms' decision-making processes and managers' actions. • Effective communication is established between firms through sustainability disclosures, which involves managers and their shareholders eliminating the problem of information asymmetry and effectively reducing agency costs.	• Governance is required to maintain and provide shareholders' rights while simultaneously ensuring that any agency conflict between managers and shareholders is solved properly. • Managers mainly focus on their own interests, even if this causes conflict with shareholders.	• Agency costs can be reduced through effective CG frameworks, which consequently ensures more effective performance in terms of stock return for shareholders.	• The SCGC operates within the same framework as other CG codes that seek to minimise agency conflict through enhanced transparency and increased accountability. • The SCGC plays a critical role in the KSA context because of the ownership structure of KSA listed firms, in which the majority ownership is condensed within affluent families. • The SCGC is a framework that can be used to help safeguard the interests of small shareholders and mitigate conflicts of interest.
Institutional theory	• The institutional theory argues that organisations must adhere to the rules and standards established by their institutional environment to gain legitimacy and support. • Institutional isomorphism is a concept in institutional theory that describes three ways to force institutions to adapt (i.e., coercive, mimetic, and normative methods).	• In the context of an organisation, coercive mechanisms can refer to pressures from within or outside the organisation (e.g., external stakeholders on whom the organisation relies, social norms from society).	• Notably, institutions in similar countries have adopted similar CSR practices because of external pressure (e.g., coercion, mimetic imitation, normative insistence).	• KSA culture and the ownership structure of KSA companies reflect the stewardship theory's assumptions regarding the most effective board structure for improving business performance. Because of various components of KSA culture (e.g., favouritism, tribalism), appointing IDs in KSA companies is ultimately influenced by family and personal relationships, regardless of the directors' talents, expertise or experience.
Stewardship theory	• Stewardship theory suggests that when managers perceive themselves as stewards, they are more likely to prioritise and implement sustainable	• Stewardship theory highlights the positive motivations and behaviours of managers, the fostering of a long-term orientation and the promotion of	• Effective CG practices can foster responsible and long-term thinking among managers, which promotes more accurate and	• The relevance of stewardship theory to the KSA context is limited, in which only some aspects are relevant. • Previous studies using this theory demonstrated the insignificant role of SR

CG theory	Assumption and key tenet	Strength and weakness	Relevance to CG, SR and FP	Relevance to the KSA context
	practices that consider long-term environmental, social and economic implications. • By embracing sustainability practices, managers demonstrate their commitment to acting in the best interests of the organisation and its stakeholders, which ensures the organisation's longevity and positive societal influence.	collective decision-making, which can enhance organisational performance and accountability. • Stewardship theory might oversimplify the complex dynamics of organisational behaviour and overlook the potential conflicts of interest between managers and shareholders. It also assumes intrinsic motivation without adequately considering external incentives or constraints.	comprehensive SR. This can positively affect firm performance by enhancing reputation, attracting investors and mitigating risks.	in the KSA context, which further diminishes this theory's relevance.
Resource dependency theory	• Resource dependency theory highlights the importance of understanding the external resource environment and the strategies that organisations employ to minimise their dependence on external entities. • It provides insights regarding how organisations manage resource scarcity and uncertainty to maintain their viability and competitive advantage.	• Resource dependency theory offers valuable insights regarding how organisations manage external resource dependencies, adapt to uncertainty and establish strategic alliances, which enhances their ability to secure resources and maintain stability. • This theory might overlook the internal dynamics of organisations and the role of internal resources and capabilities in managing dependencies. It can also underestimate the potential for organisations to influence and shape their resource environment through proactive actions.	• Effective CG practices such as diverse boards and transparent reporting mechanisms can reduce an organisation's dependence on external resources and enhance its ability to implement sustainable practices. This subsequently improves firm performance.	• The relevance of resource dependency theory to the KSA context is limited, in which only some aspects are relevant. • Previous studies using this theory demonstrated the insignificant role of SR in the KSA context, which further diminishes the relevance of this theory.

3.4 Corporate governance mechanisms

The relevance of CG mechanisms in the relationship between SR and firm performance has grown, with research focusing on how a higher level of disclosure can be achieved by building more effective CG systems (Albitar et al., 2020; Gul & Leung, 2004). CG in KSA has aims to safeguard the interests of shareholders and other stakeholders. Further, the boards of KSA companies are tasked with several responsibilities, including setting internal control regulations, defining the company's primary goals and developing policies to govern the company's relationship with its stakeholders (SCGC, 2022). The present research will review the key CG mechanisms in KSA that affect the CG strategies implemented by KSA businesses.

3.4.1 Board size

BS is a critical indicator for the effectiveness of a company's governance and oversight (Bhuyan, 2018; Giannarakis, 2014; Lee & Chen, 2011). According to agency theory, the varying sizes of corporate boards can contribute to the differences observed in accountability, transparency and reporting between companies (Alhazmi, 2017; Fama & Jensen, 1983). The board members can effectively address the issues of both company management and owners, which helps minimise the agency fees that may emerge because of the disputes between the firm's management and owners (Ntim & Soobaroyen, 2013a; Rao et al., 2012). The board also plays a crucial role in decision-making—such as in decisions pertaining to disclosure and reporting policies, which complement the role of monitoring (Alotaibi, 2014; Boshnak, 2020; Xie et al., 2003). Because the board represents the company's shareholders, it is argued that they may be inclined to safeguard the interests of the shareholders (Healy & Palepu, 2001; McWilliams et al., 2006). Additionally, boards with large numbers may experience coordination and communication issues that can subsequently affect decision-making and, by extension, the company's performance (Guest, 2009; Lane et al., 2006).

3.4.2 Independent directors

Agency theory also posits that IDs play a critical role in preventing managerial opportunism (Allegrini & Greco, 2013; Fama & Jensen, 1983; Jensen & Meckling, 1976). This allows IDs to be better equipped in safeguarding shareholder interests while

simultaneously minimising agency costs (Chalevas, 2011; Lipton & Lorsch, 1992). Consequently, both CG policies and most academic studies focus on the role of IDs (Chen, 2011; Collin et al., 2017; Johanson & Østergren, 2010). Because of these directors' independence, it is argued that they can oversee managers and support the board and other committees more effectively with their experience and knowledge (Clarke, 1998; Solomon, 2020; Haniffa & Cooke, 2002). However, it is also argued that a disproportionately high number of IDs on a board could result in the micromanagement of managers, which could subsequently hinder the performance of managers (Bozec, 2005).

3.4.3 Audit committee: Size, independence and quality

The oversight function of audit committees is consistent with agency theory, which posits that functions such as auditing, compensation, nomination and execution should be separated for efficient oversight (Roche, 2005). For cases involving poor oversight, it is difficult to take corrective action in areas in which the board has failed. This type of poor CG can undermine investor confidence and harm shareholder interests. In contrast, CG structures with named committees that perform oversight functions inspire greater confidence in investors and protect shareholders' interests (Davis, 2002; Heenetigala, 2011). Consequently, to fulfil regulatory requirements and improve performance, named committees are increasingly becoming a norm in CG structures.

Audit committees are charged with overseeing financial reports in terms of verifying their accuracy and integrity (El-Masry & Abdelsalam, 2008; Fama & Jensen, 1983). To be effective in this monitoring role, the audit committee must be structured in a way that allows it to function with professionalism, independence and integrity (Khalid, 2020). According to the *Saudi Corporate Governance Act 2006*, the audit committee should comprise at least three non-executive directors and at least one accounting specialist. In addition to the audit committee's composition, the committee should meet regularly to monitor financial reporting and continually improve reporting mechanisms (Habbash, 2016; Soliman & Ragab, 2014).

3.4.4 Gender diversity

Gender diversity is a strongly debated factor in the context of promoting board diversity (Rao et al., 2012). Many studies have found that a diverse board of directors improves SR

(Barako & Brown, 2008; Rao et al., 2012). Many factors contribute to this, including the boardroom environment, quality of decisions made and the board's increasing independence (Kiliç et al., 2015). According to Carter et al. (2003), board diversity will increase as the board becomes more independent because both male and female directors are included, as well as directors of various ethnicities and cultural backgrounds. A diverse board is more transparent than a homogeneous board, and a high representation of female directors strengthens the board's independence. Further, board independence influences issues such as accountability, which prompts a higher level of corporate disclosure (Rao et al., 2012).

Further, because men and women have different working styles and perspectives, appointing more women to firm boards introduces a diversity of opinions during board deliberations (Barako & Brown, 2008; Huse & Solberg, 2006). According to Torchia et al. (2011), having women on boards increases the likelihood of making better decisions because more alternatives and approaches are considered. Huse and Solberg (2006) further indicated that female board members are more diligent and wiser than male directors, and Adams and Ferreira (2009) discovered that women directors improve board effectiveness. Therefore, the presence of women directors improves decision-making processes, which subsequently raises a firm's SR level. In 2017, the CMA issued the CG regulations, which require that all listed companies comply with rules and principles related to board composition and diversity (SCGC, 2022). However, the KSA 2017 code does not address the gender issue by prescribing a specific percentage or quota for women in terms of board or senior management positions (Chebbi & Ammer, 2022).

3.4.5 Government ownership

Government ownership denotes when the government acquires a stake in a private firm. If the government acquires a large enough share of a private company, that company will be categorised as a government-linked firm (Eng & Mak, 2003; Esa & Ghazali, 2012). In relation to the agency theory, government ownership may pose a conflict of interest because the government is by nature socially driven, while private firms operate in the interests of profits and commercial success (Eng & Mak, 2003; Jensen & Meckling, 1976). However, firms with government ownership potentially benefit under the government's control and its influence on policies and regulations (Ntim & Soobaroyen, 2013a; Parmar et al., 2010; Pfeffer & Salancik, 2003). Firms with government ownership

also potentially benefit from government funding and other financial resources that are available to the government but not to private companies (Eng & Mak, 2003; Jiang & Habib, 2009). Further, disclosure and reporting may be more forthcoming in cases involving government ownership because the government can use its power to oversee firm performance and access information (Alhazmi, 2017; Esa & Ghazali, 2012; Ghazali & Weetman, 2006; Rao et al., 2012). The CMA of KSA has issued the CG regulation for listed companies, which includes provisions for companies that are under government ownership (Qasem et al., 2022). The government ownership in listed companies will mandate the practicing of SR under the monitoring of IDs and specific board committees.

3.4.6 Foreign ownership

In some firms, foreign investors may own some of the company's shares. This kind of foreign investment in companies plays a significant role in developing countries, where financial backing from foreign investment could significantly improve the company's performance. A sound reputation is necessary to attract this kind of foreign investment, which can enhance effective CG practices (Alsulayhim, 2020; Bhuyan, 2018). As Western countries generally require more transparency and disclosure in reporting, foreign ownership can promote more efficient disclosure and reporting practices (Boshnak, 2020). However, companies with foreign ownership may face information asymmetry because of issues such as language barriers (Haniffa & Cooke, 2002). Foreign ownership plays a crucial role in promoting more effective CG practices in developing countries, where such practices are poorly implemented (El-Diftar, 2016). In KSA, the regulations for foreign ownership aim to ensure that foreign investors adhere to the policies and CG standards as local investors, and that they contribute to the development of KSA's economy. In this regard, foreign investors emphasise SR because its pivotal role in firm performance (Correa et al., 2020; Mahjoub, 2023).

3.4.7 Corporate governance as a moderating effect

An effective CG framework enhances accountability and transparency while simultaneously maintaining the crucial balance of directing firm performance to meet shareholders' interests and the greater interests of various stakeholders (Haque et al., 2008). Further, information asymmetry may emerge in situations in which the separation between shareholders and company management creates agency conflict. However, this

can be avoided if a proper CG structure is established (Buertey et al., 2020; Choi et al., 2013). Essentially, the CG mechanism can align the management's interests with the interests of the board and shareholders (Al-Janadi et al., 2013; Arcay & Vázquez, 2005; Buertey et al., 2020; Fama, 1980; Jensen & Meckling, 1976; Li, 2014; Madawaki & Amran, 2013). Effective CG thus involves establishing the optimal combination of board size, independent directors, foreign or government ownership and stakeholder interests—in which CG is a moderating factor for all parties involved.

Because CG can effectively match shareholders' interests with the interests of management, its effect on company performance creates value for both shareholders and managers. This equilibrium increases profit potential by boosting investor confidence in the company. Effective CG policies ensure disclosure and reporting openness, as well as encourage FP and NFP accountability (Munir et al., 2019). The current research thus hypothesised that effective CG norms and mechanisms can strengthen the link between SR and firm performance, and it aimed to determine the moderating effect of CG on the connection between SR and FP and NFP. This thesis's findings will enhance the subject of CG and thereby enhance corporate reporting and transparency.

CG is the system by which companies are controlled and directed. It encompasses the relationships between the board of directors, management, shareholders, and other stakeholders (Shahzad et al., 2023). While CG is essential for ensuring that companies are managed in the best interests of all stakeholders, SR is the process of disclosing information about a company's environmental, social, and economic performance (Ebaid, 2023). Such information is used by investors, customers, employees, and other stakeholders to make informed decisions about the company. There is a growing body of research that has resulted in mixed findings regarding the relationship between SR and firm performance (Al-Shaer & Hussainey, 2022). Owing to these mixed results, the present research assumes that this may be due to the absence of the moderating effect of CG (Nuskiya et al., 2021). This research chose to focus on the moderating effect of CG since it is an important factor that can influence the relationship between SR and firm performance. Good CG can help to ensure that SR is accurate and transparent. It can also help to ensure that SR is used to improve the company's sustainability performance (Shah et al., 2021). SR is something that is of high relevance to shareholders and stakeholders. Therefore, the role of CG is to ensure the interest of the principal and overcome the

opportunistic behaviour of agents. In this way, CG as a moderating variable can help firms allocate their resources more efficiently and optimise their sustainability efforts to achieve better overall outcomes (Jan et al., 2021).

Consequently, the present research employs CG as a moderator to assist in understanding the relationship between SR and firm performance. This will have implications for managers, investors, and other stakeholders. For managers, the findings can assist with the design and implementation of sustainability reporting initiatives that are more likely to be effective. Moreover, the findings will also help investors assess the sustainability performance of companies and make informed investment decisions. Finally, other stakeholders can use this finding to hold companies accountable for their sustainability performance through SR.

3.5 Empirical studies focusing on the effects of corporate governance on sustainability reporting and firm performance

Despite SR's favourable effects on firms' stakeholders and, consequently, their performance, ineffective CG practices can negate this. Firm performance, CSR and CG are interlinked, and it is this link that legitimises firms for stakeholders and greater society (Schrempf-Stirling et al., 2016). Various studies have established that the positive firm performance caused by SR implementation often depends on the GC structures that are established via the firms' CG mechanisms (Erin et al., 2021; Jan et al., 2021; Ong & Djajadikerta, 2020). These mechanisms and their potential moderating effects are reviewed in the following subsections.

3.5.1 The moderating effect of board size

BS refers to the overall number of board directors, and it is considered a crucial element of governance (Bhuyan, 2018; Giannarakis, 2014; Lee & Chen, 2011). Strategic decision-making, policy formulation and access to resources are key areas in which boards of directors can provide support to firm managers (Hillman & Dalziel, 2003).

This thesis's review of the empirical literature pertaining to BS revealed mixed results regarding the moderating influence of BS on the connection between SR and firm performance. Rossi et al. (2021) investigated the moderating role of board characteristics in the relationship between CSR practices and firm performance. They conducted linear

regressions with panel data that were sourced from the Thomson Reuters ASSET4 database, in which they focused on 225 listed companies in European countries during the 2015–2019 period. This study's findings indicated that BS had a partial moderating effect on the relationship between CSR practices and FP (i.e., ROA, ROE, TQ). Hou (2019) used social responsibility as an indicator to examine the relationship between CSR and the corporate FP of firms in Taiwan. In this study, the board ownership of firms, when it served as a moderating effect, demonstrated that CSR significantly and positively influences the FP of businesses. Further, Kabir and Thai (2017) found that firm performance is positively associated with CSR, and that CG magnifies the positive association between firm performance and CSR. BS was a CG component that exhibited a positive moderating effect. Additionally, Albitar et al. (2020) examined the moderating role of CG on the connection between ESG disclosure and TQ. Linear regression models using ordinary least squares and FE effects were employed for the FTSE 350 companies over the 2009–2018 period. This study's findings revealed that BS plays a crucial role in moderating and influencing the association between ESG performance and TQ.

Pekovic and Vogt (2021) examined the relationship between CSR and FP (measured by TQ) and analysed the moderating effect of BS. This study was conducted over an 11-year period, with a sample size of 17,500 observations from over 50 countries in the US, Europe and Northeast Asia. The results demonstrated that a larger BS and increased gender diversity positively moderated the relationship between CSR and FP. Additionally, Elbannan and Elbannan (2014) investigated the relationship between CG and FP and NFP in Egypt, in which NFP was measured using customer-related performance, internal business processes and learning and growth. Using OLS regression analysis, Elbannan and Elbannan investigated the relationship and found that BS significantly influenced customer-related performance and employee productivity. Some studies have also identified the negative role of BS in SR. For example, Githaiga and Kosgei (2023) studied how board characteristics affected SR in East African listed firms, in which the study examined a sample of 79 listed firms from East African securities exchanges using data from 2011 to 2020. The results indicated that BS significantly and negatively affected SR. Moreover, the agency and institutional theories advocate that a board with more directors can more effectively serve this purpose by improving the monitoring process and promoting increased FP and NFP. A larger number of directors allows greater discussion and negotiation. This results in fewer significant differences in

decision-making processes and reduced FP variability, which subsequently elevates overall firm performance. Therefore, according to this thesis's empirical investigation of previous studies and the theoretical underpinnings of the agency and institutional theories, the current research posited the following hypotheses:

H4a: BS positively moderates the effect of SR on the FP of KSA listed firms.

H5a: BS positively moderates the effect of SR on the NFP of KSA listed firms.

3.5.2 The moderating effect of independent directors

According to previous research, companies with a higher number of IDs increase corporate transparency and promote SR by incentivising management to exhibit greater compliance with relevant legislation and greater alignment with the opinions of external stakeholders (Jizi et al., 2014; McWilliams et al., 2006; Tibiletti et al., 2021). Deegan (2002) noted that IDs maintain a balance of various shareholder interests and management interests. Consequently, IDs are more likely to encourage social responsibility as a means of safeguarding the interests of stakeholders (Alharbi, 2021).

Rossi et al. (2021) investigated the moderating role of board independence in the connection between CSR practices and firm performance. The findings demonstrated that board independence positively moderates the relationship between these two factors in European ESG firms. Rostami et al. (2016) examined how CG moderated the effect of SR on FP in Turkey, in which one significant finding was the moderating effect of board independence on the relationship between SR and firm performance. Huang's (2010) Taiwan study also confirmed that effective CG practices—as indicated by the presence of IDs, foreign shareholders and domestic institutional shareholders—positively affect both CSR and the FP of firms.

Al-Gamrh et al.'s (2020) study centred in the United Arab Emirates (UAE) indicated that board independence weakens the negative relationship between social performance and firm performance. Further, Alipour et al.'s (2019) study of Iranian companies sought to determine the moderating role of CG structures in the relationship between environment disclosure quality and firm performance. This study's findings revealed that board independence had a significant moderating effect on the relationship between environment disclosure quality and firm performance. Moreover, Ntim and Soobaroyen

(2013b) noted that IDs promote engagement in CSR and boost firm performance by improving managerial practices through monitoring. Agency theory advocates that IDs are more likely to act in the interests of shareholders, as well as effectively monitor the management of the company, which can prompt more effective FP. Similarly, institutional theory suggests that firms may adopt SR practices to conform to institutional pressures and stakeholder expectations. IDs can act as external monitors and ensure that SR represents a genuine commitment to responsible business practices—which can elevate NFP, such as by improving reputation and stakeholder relationships. Aligned with the premises of the agency and institutional theories, this study predicted that IDs had a moderating effect on the relationship between SR and firm FP and NFP. Therefore, the following hypotheses were formulated:

H4b. IDs positively moderate SR's effect on the FP of KSA listed firms.

H5b. IDs positively moderate SR's effect on the NFP of KSA listed firms.

3.5.3 The moderating role of audit committee size

Audit committees play a crucial role in monitoring the quality of controls that are implemented in an organisation (Saha et al., 2018). Audit committees are thus involved in informing decisions, enhancing information quality and reducing costs (Arcay & Vázquez, 2005; Fama, 1980). In KSA, the CG code specifies in Section 14 that firms should have audit committees that comprise three members, in which one should be an accounting or finance specialist. Various studies have linked the quality of CSRD with effective audit committees. For example, Soliman and Ragab (2014) suggested that an effective audit committee that meets frequently will improve the quality of financial reporting. Xie et al. (2003) and Soliman and Ragab (2014) also noted that if experts are appointed on the audit committee, then the quality of reporting improves significantly and potentially improves SR. Madawaki and Amran (2013) found that audit committees can safeguard against the manipulation of financial reporting and thereby deliver higher-quality and more genuine reports. Agency theory suggests that a larger audit committee may improve monitoring and control over a firm's activities, which improves FP and NFP. Institutional theory suggests that a larger audit committee can signal a firm's commitment to social and environmental issues, which can subsequently enhance reputation and stakeholder trust and ultimately improve NFP. The present research relied

on previous research and the theoretical foundations of the agency and institutional theories to propose the following hypotheses:

H4c: ACS positively moderates SR's effect on the FP of KSA listed firms.

H5c: ACS positively moderates SR's effect on the NFP of KSA listed firms.

3.5.4 The moderating role of independent audit committee members

Studies have emphasised the importance of IDs in overseeing top management, including the role of audit committees in enhancing the internal control procedures of corporations. IDs are considered effective at monitoring and reducing agency costs, and a higher number of IDs on the audit committee is associated with reduced information asymmetry (Buallay & Al-Ajmi, 2019; Detthamrong et al., 2017; Bazhair, 2022; Musallam, 2020).

Al-Ahdal et al. (2020) sought to determine how CG influenced the FP of firms listed in India and the GCC. According to the findings, board accountability and audit committee independence insignificantly affected firm performance (measured by ROE and TQ). Moreover, Alshorman and Lok (2022) examined how audit committee financial expertise and independence affected the performance of KSA banks. The study also assessed the moderating effect of environmental disclosure on the association between audit committee characteristics and bank performance. The results suggested that audit committee independence and the financial knowledge of audit committees positively affected bank performance in KSA.

Hamidah and Arisukma (2020) investigated an audit committee's moderating influence on strong CG mechanisms and sustainability disclosure in Indonesia. The findings indicated that the audit committee strengthened the moderating effect of the relationship between BS, CEO duality and the level of sustainability disclosure, while simultaneously weakening the moderating effect of the relationship between board independence and level of sustainability disclosure. Moreover, Al-Matari et al. (2012) investigated the relationship between internal CG mechanisms related to the board of directors, audit committee characteristics and the performance of 135 KSA companies in 2010. These scholars demonstrated that ACS significantly correlates to firm performance, while audit committee independence and audit committee meetings were not significantly related to firm performance. Given the theoretical foundation of the agency and institutional

theories, as well as the empirical evidence cited in this subsection, the following hypotheses were formed for the present research:

H4d: Independent audit committee members positively moderate SR's effect on the FP of KSA listed firms.

H5d: Independent audit committee members positively moderate SR's effect on the NFP of KSA listed firms.

3.5.5 The moderating role of audit committee quality

Empirical research has linked audit committee quality (ACQ) and SR with firm performance. Studies indicate that companies that are audited by the 'Big 4' audit firms exhibit a higher level of CSR performance and transparency, given that these firms invest more resources in human capital and technology and enhance the reliability of information, including CSR information (Agyei-Mensah, 2018b; Francis, 2011; Timbate & Park, 2018). Additionally, Dakhli (2021) revealed that companies in France that were audited by the Big 4 auditors experienced a more significant improvement in CSR's effect on firm performance. However, Dewi and Monalisa's (2016) study focusing on Indonesia found no moderating effect of audit quality on the relationship between CSRD and FP indicators. Although all samples in the studies released their SR, the extent and quality of information provided varied considerably.

Recent research suggests that Big 4 auditor clients exhibit superior FP (Afza & Nazir, 2014; Miladi & Chouaibi, 2021; Phan et al., 2020). According to this research, many stakeholders feel that businesses that are audited by the Big 4 firms are free of substantial misstatement, which stimulates and boosts their confidence in investing more money in such firms. According to Ching et al. (2015), Big 4 audit firms improve how Malaysian listed firms perform financially. These scholars suggest that because large-scale audit firms are consistently regarded as having greater audit quality, which can boost investor trust, high audit quality can thus help improve corporate FP. In this regard, Bouaziz and Triki (2012) investigated a sample of 26 Tunisian companies listed on the Tunis Stock Exchange to determine the link between auditor size and FP. The findings demonstrated that auditor size significantly influenced business FP in terms of ROA and ROE. More recently, Ado et al. (2020) reported a favourable correlation between Big 4 auditor selections and firm FP (measured using ROA), which suggests that persuading Big 4

auditors to contravene the established rules of auditing practices is practically challenging because they have a reputation to uphold.

Institutional theory posits that firms are influenced by social norms and values, and that a high-quality audit committee can help ensure that companies adhere to these norms and values in their SR initiatives. Agency theory suggests that a high-quality audit committee can help mitigate agency problems by providing more effective oversight and accountability in the decision-making of management regarding SR. Therefore, building from existing research and theory, the present research proposed these hypotheses:

H4e: ACQ positively moderates SR's effect on the FP of KSA listed firms.

H5e: ACQ positively moderates SR's effect on the NFP of KSA listed firms.

3.5.6 The moderating role of board gender diversity

Previous research has indicated that board gender diversity improves SR and SR disclosure. For example, Gulzar et al. (2019) investigated how board gender diversity and foreign institutional investors affected the level of CSR engagement of non-financial Chinese firms listed on the Shanghai and Shenzhen Stock Exchanges between 2008 and 2015. This study used data from the China Stock Market and Accounting Research database, with the results indicating that a higher number of female board directors was associated with a stronger level of CSR engagement. Further, Orazalin (2019) analysed CSR reporting practices in the banking industry of Kazakhstan and examined how board characteristics affected CSRD in this emerging economy. The study gathered CSRD data from the annual reports of all commercial banks listed in the Kazakhstan Stock Exchange for the 2010–2016 period, in which the findings revealed that board gender diversity positively affected CSR reporting. However, this study also found no significant relationship between BS or board independence and the extent of CSRD. Chebbi and Ammer (2022) used a sample of KSA listed companies from the 2015–2021 period to investigate how board composition (size, independence, gender diversity) related to ESG disclosure, while accounting for CG reforms. Although the results indicated that board gender diversity positively correlated with ESG disclosure, the association was not significant. Conversely, Saidu et al. (2020) examined how board diversity affected the extent of SR in industrial goods companies listed on the Nigerian Stock Exchange between 2014 and 2018. The findings were obtained through panel least squares

regression, and they demonstrated that diversity in the boardroom significantly and negatively affected the extent of SR.

According to agency theory, gender diversity in the boardroom enhances accountability and transparency, which subsequently increases FP and NFP through effective monitoring and decision-making. Further, institutional theory suggests that companies with gender-diverse boards are more likely to comply with social norms and values, which includes adopting socially responsible practices; this consequently prompts improved FP and NFP. Therefore, given the previous literature and theoretical underpinnings discussed in this subsection, the present research proposed the following hypotheses:

H4f: Gender diversity positively moderates SR's effect on the FP of KSA listed firms.

H5f. Gender diversity positively moderates SR's effect on the NFP of KSA listed firms.

3.5.7 The moderating effect of government ownership

Empirical research has assessed how government ownership affects SR and firm performance. For example, Akrout and Othman (2016) assessed a sample of 347 annual reports and determined that government ownership positively affected the practice of environmental SR in MENA developing markets. In China, Xu and Zeng (2016) discovered a positive relationship between state ownership and CSR in all financial statements that were accessible in the 2006–2010 period. Ahmed and Hadi (2017) also identified a positive association between government ownership and firm performance in the MENA region in 2014. However, Kim and Jo (2022) discovered a negative relationship between government ownership and social and environmental practices when they investigated 512 firm–year observations from 2007 to 2015. Huafang and Jianguo (2007) discovered no relationship between government ownership and disclosure in China, while Tran et al. (2014) studied panel data of Vietnamese companies from 2004 to 2012 and revealed that government ownership negatively influenced company profitability and labour productivity. However, Fuadah et al. (2022) discovered that government ownership did not affect SR for a sample of 140 listed and unlisted companies in Indonesia from 2006 to 2010. Finally, Wu et al. (2022) examined the effect of ownership structure in moderating the relationship between ESG performance and firm

value, with the results revealing that the moderating influence of ownership structure was insignificant.

In the KSA context, comprehending the effects of government ownership is crucial because the government owns a substantial portion of a company's shares. In KSA, the government maintains substantial shares in several enterprises, in which it represents an average of 42% of the overall market value of KSA's stock market (Albassam, 2014). Additionally, it is essential to comprehend how government ownership functions in enhancing SR practices and, consequently, business performance. Institutional theory suggests that government ownership can signal the importance of social and environmental issues, which encourages more proactive SR engagement and more effective alignment with societal expectations. Subsequently, this can positively affect firm FP and NFP. Therefore, it can be argued that government ownership positively moderates SR's effect on FP and NFP. Given this argument, the following hypotheses were developed for the present research:

H4g: Government ownership positively moderates SR's effect on the FP of KSA listed firms.

H5g: Government ownership positively moderates SR's effect on the NFP of KSA listed firms.

3.5.8 The moderating effect of foreign ownership

Various empirical studies have established a positive relationship between foreign ownership and CSR, including Buallay et al. (2017), Khan et al. (2013) and Oh et al. (2011). Foreign investment's positive effect on firm performance has also been noted in various studies, such as in Chen and Liao (2011) and Douma et al. (2006). According to Boachie (2021) foreign ownership significantly moderates the relationship between CG and firm performance. Hoang et al. (2019) found that a moderate foreign ownership significantly and positively influenced the relationship between corporate social disclosure and profitability quality in Vietnam. Further, Amidjaya and Widagdo (2020) empirically determined how ownership structure influenced SR in Indonesian listed banks. The study used balanced panel data that comprised 155 observations from 2012 to 2016, and it employed panel data regression for analysis. The findings suggested that foreign ownership strongly and positively affected SR, which subsequently indicates that

banks with more influential foreign investors tend to produce more effective sustainability reports. Similarly, Khan (2010) investigated the sustainability practices of commercial banks listed in Bangladesh, in which they evaluated how CG mechanisms influenced such disclosures. Content analysis was used to analyse the banks' SR practices during the 2007–2008 period, with the findings indicating that foreign ownership significantly affects SR. In contrast, Hasan et al. (2022) used a logistic regression model to examine the factors that influenced corporate SR decisions. Data from 138 firms listed on the Pakistan Stock Exchange for the 2009–2018 period were analysed, with the results demonstrating that foreign ownership negatively affected SR decisions. However, the institutional theory asserts that institutional ownership prompts organisations towards social norms. Therefore, the theory encourages SR through foreign ownership, which can entail more effective business practices, and it highlights critical business concerns that the corporation should address (e.g., sustainability issues). Given this subsection's discussion and cited empirical findings backed by the agency and institutional theories, the following hypotheses were proposed for the present research:

H4h: Foreign ownership positively moderates SR's effect on the FP of KSA listed firms.

H5h: Foreign ownership positively moderates SR's effect on the NFP of KSA listed firms.

The present research's hypotheses are founded on the empirical evidence of previous studies, as presented in Table 3.2. Most CG literature has emphasised CG's positive effect on SR and firm performance overall, including both financial and non-financial aspects. Specifically, effective CG practices can help develop more transparent and comprehensive sustainability reports, which can subsequently enhance a company's reputation, attract socially responsible investors and foster greater stakeholder engagement. Moreover, strong CG structures have been associated with improved FP because they can enhance accountability, reduce risk and facilitate strategic decision-making. Therefore, organisations must prioritise CG as a key driver of sustainability and business success.

Table 3.2 Recent corporate governance, sustainability reporting and firm performance literature

No.	Author	Country/group	Independent variable	Dependent variable	Methodology	Relationship
1	Jizi et al. (2014)	US	CG	CSR	A sample of large US commercial banks for the 2009–2011 period.	Positive effect
2	Barros et al. (2013)	France	CG practice	Voluntary disclosure	A panel of 206 non-financial French listed firms during the 2006–2009 period.	Mixed effect
3	Ong and Djajadikerta (2020)	Australia	CG	SR	A sample of large resource firms listed on the Australian Securities Exchange using content analysis method.	Positive effect
4	Majeed et al. (2015)	Pakistan	CG elements	CSRD	Multiple regression techniques.	Mixed effect
5	Kabir and Thai (2017)	Vietnam	CSR	FP	Ordinary least squares, FE, the two-stage least squares model.	Positive effect
6	Purbawangsa et al. (2019)	Indonesia, China, India	CSRD	Corporate value	PLS-SEM method with PLS.	No significant effect
7	Akben-Selcuk (2019)	Turkey	CSR	Firm FP	Instrumental variable approach.	Negative effect
8	Mahrani and Soewarno (2018)	Indonesia	FP, good CG, CSR	FP	Secondary data from 102 companies listed, using PLS, Warp PLS 5.0 software.	Positive effect
9	Pham and Tran (2020)	31 countries	CSRD	Firm performance	A dataset of 3,588 firm–year observations from 833 Fortune World Most Admired firms in 31 countries.	Positive effect
10	Alipour et al. (2019)	Iran	Environmental disclosure quality	Firm performance	Original survey data from 720 firm–year observations.	Positive effect
11	Pekovic and Vogt (2021)		CSR	Firm FP	A model tested on a sample of 17,500 observations over an 11-year period.	Mixed effect

12	Manzoor et al. (2019)	Pakistan	Board characteristics, ownership structure, CSRD	Firm performance	Panel data regression analysis (fixed or random).	Negative effect
13	Jan et al. (2019)	Islamic banks	Sustainable business practices	Firm FP	Weighted content method, GMM statistical test.	Positive and significant effect
14	Javeed and Lefen (2019)	Pakistan	CSR	Firm performance	FE model, GMM.	Positive effect
15	Arayssi et al. (2016)		ESG disclosure	Firm performance	Panel data using a regression model.	Positive effect
16	Ali et al. (2020)	China	CG, CSR as a moderator	Firm FP	Panel regression to examine a sample of 3,400 Shanghai Stock Exchange listed firms.	Positive effect
17	Al-Beshtawi et al. (2014)	Islamic banks in Jordan	CG	FP, NFP	Questionnaire, Likert scale, SPSS, T-test, Pearson coefficient.	Positive effect
18	Paniagua et al. (2018)		CG, ownership structure	FP	Complementary linear and non-linear multiple regression analysis.	Weak relationship
19	Adedejif et al. (2019)	Nigeria	CG practices	NFP	Cross-sectional survey method, cluster and stratified probability proportionate sampling method, with data collected using a structured questionnaire.	Positive effect
20	Soliman et al. (2013)	Egypt	Ownership structure	CSR	A sample of 42 more active Egyptian firms firm the 2007–2009 period.	Mixed effect
21	Fallatah and Dickins (2012)	KSA	CG characteristics	Firm performance and value	Panel data.	Mixed effect
22	Buallay et al. (2017)	KSA	CG	Firm performance	Pooled data collected from the Saudi Stock Exchange.	Mixed effect
23	Alsahafi (2017)	KSA	CG	Firm performance	T-tests and regression analysis.	Mixed effect

3.6 Summary of the knowledge gap

The literature review presented in Chapters 2 and 3 identified certain knowledge gaps. Specifically, Sections 2.12 and 2.13 comprehensively reviewed SR and firm performance literature and consequently discovered several knowledge gaps. Additionally, Section 3.5 reviewed CG as moderating factor between SR and firm performance and identified other knowledge gaps in the existing studies. These gaps are summarised below.

3.6.1 Gaps in existing studies

This research aimed to fill the literature gap by investigating how SR affects the FP and NFP of KSA listed companies. An extensive literature review found that current research on this topic is limited, and that it lacks an SR framework in the context of KSA that incorporates Islamic sustainability items. Moreover, the present research was motivated by the limited research that examined the role of numerous CG mechanisms as moderating effects between the SR and FP and NFP of non-financial KSA listed firms. The review of existing literature indicated several gaps in the field, including the following:

1. Although previous studies have used several SR frameworks, these frameworks lack Islamic items in the context of non-financial KSA firms.
2. A comprehensive model that investigates SR's effect on firm FP and NFP in KSA is lacking.
3. Scarce empirical evidence exists regarding how SR affects the FP and NFP of KSA listed firms, which is attributed to inconsistent outcomes observed in the existing literature.
4. Previous research has primarily ignored CG as a moderating variable in the relationship between SR and firm performance. Studies have explored how individual CG affects SR or firm performance, but they have neglected understanding the moderating effects of CG on both SR and firm performance.

3.6.2 Rationale for the present research

Given the context of Section 3.6.1, and the aim of addressing the identified literature gap, the present research undertook the following actions:

1. This research developed a modified GRI framework that includes Islamic sustainability items in addition to conventional SR items. This will allow a more comprehensive understanding of the sustainability practices of KSA listed firms, and it will enhance stakeholder engagement in the region.
2. This research empirically tested the relationship between the SR and FP and NFP of KSA listed firms, which was accomplished using a sample of KSA listed firms and statistical methods (e.g., regression analysis).
3. This research provided a basis for policy recommendations in KSA firms, as well as contributions for developing relevant policies for the KSA context. Moreover, the research's results will benefit the shareholders of sampled firms because they provide insights regarding the effectiveness of the SR practices and the potential benefits of integrating sustainable practices in their firms' operations.
4. This research addressed the literature gap by examining the moderating effect of multiple CG attributes on the relationship between SR and firm performance in the context of KSA listed firms. Specifically, it investigated the role of several CG mechanisms in moderating the relationship between SR and firm performance, including BS, IDs, ACS, ACQ, audit committee independence, gender diversity, government ownership and foreign ownership.
5. This research extended the existing body of knowledge by integrating the stakeholder, legitimacy, agency and institutional theories to support the research's overall framework.

3.7 Chapter summary

This chapter thoroughly reviewed the exiting literature pertaining to the moderating construct of CG, and it used the agency and institutional theories to provide the theoretical foundation for the CG moderator. It also reviewed the main CG mechanisms observed in empirical studies that discussed the moderating influence of CG on the effect of SR on firm performance. On this basis, the present research developed hypotheses related to the CG moderators. This chapter concluded by summarising the knowledge gaps that were identified from existing studies. The following chapter comprehensively overviews the conceptual framework, research methods and measurements that were employed in the present research.

Chapter 4: Conceptual framework and research methods

4.1 Introduction

This chapter develops a model to efficiently answer the present research's RQs. To accomplish this, the chapter first presents the conceptual framework that underpins this thesis's overview of the RQs and hypotheses. Section 4.3 summarises the research hypotheses, while Section 4.4 presents this research's proposed sustainability measurement index. Section 4.5 details the transformation of Islamic items into the proposed measure, Section 4.6 validates the index and Sections 4.7 and 4.8 review the measurement methods for firm performance and CG mechanisms, respectively. Section 4.9 details the control variables, while Section 4.10 reviews the research methods that were used in previous research, which informed this research's selection of an appropriate research method. Finally, Section 4.11 outlines the data collection procedure and sources, Section 4.12 presents the research's regression models and Section 4.13 summarises the chapter.

4.2 Conceptual framework

Informed by the literature review in Chapters 2 and 3, this research developed a conceptual framework to address the RQs and develop hypotheses that assesses the relationships between SR and firm performance (FP, NFP) and the function of CG in moderating SR's influence on firm performance in KSA listed firms. The framework was constructed by integrating a multi-theoretical approach that incorporated aspects of the stakeholder, legitimacy, agency and institutional theories—and it is considered the foundation for this research (see Figure 4.1).

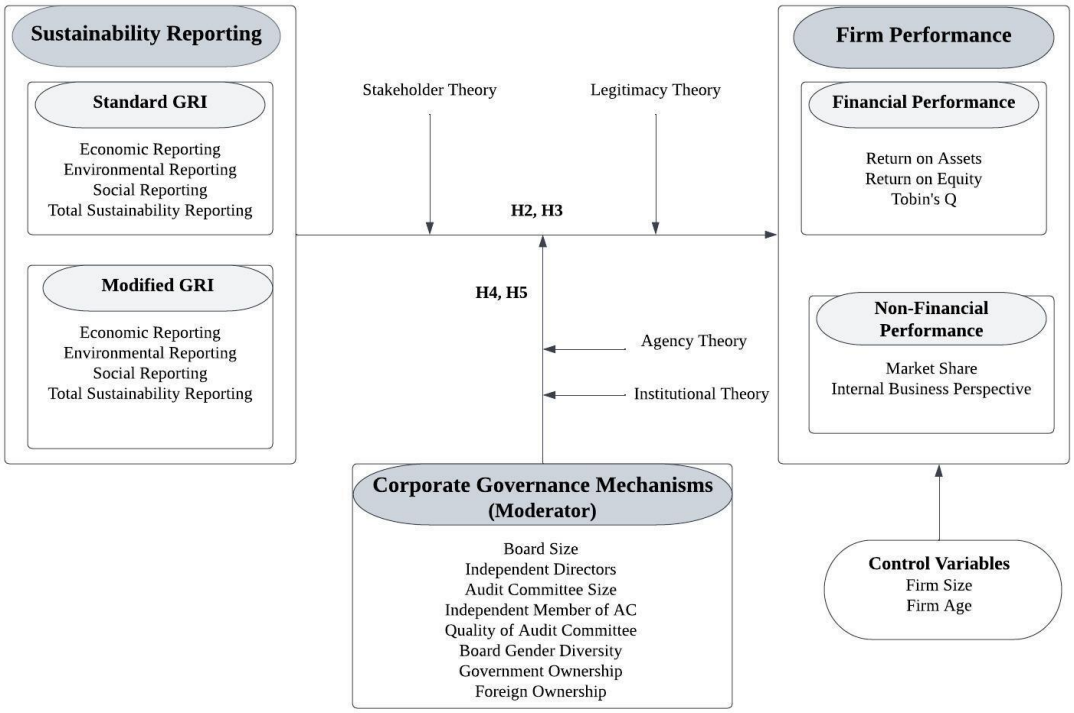

Figure 4.1 Conceptual framework of the present research

As illustrated by Figure 4.1, the proposed framework comprised three main constructs: SR, firm performance and CG. The level of SR was measured using four independent measures of sustainability, which included economic SR (ECO), ENV, social SR (SOC) and total SR (TSR). This research has calculated sustainability scores by adding the scores of each variable. These metrics were derived from the GRI and relevant literature (Alotaibi & Hussainey, 2016; Amran et al., 2017; Haniffa & Hudaib, 2007; Platonova et al., 2018). Further, the modified GRI was used to measure these sustainability scores. The independent variables in this model included four variables (TSR, ECO, ENV, SOC), which have also been used in previous studies (see Albitar et al., 2020; Hongming et al., 2020). FP was measured using ROA, ROE and TQ, while NFP was measured using MS and IBP. The CG mechanisms were assessed using the following variables: BS, IDs, ACS, audit committee independence, ACQ, board gender diversity and ownership structure (government and foreign). This research's control variables included firm size and firm age. Sections 4.9–4.11 provide detailed justifications for the variables that were employed in the research.

4.3 Summary of the research questions and hypotheses

Given this research's framework and objectives, five RQs were developed, as well as the respective research hypotheses. These RQs and hypotheses are outlined in the paragraphs and tables below.

RQ1: How does the SR index developed for KSA listed firms differ from the standard GRI index in its ability to capture the contextual factors that are specific to the firm's operations?

H1: The SR index developed for KSA listed firms is different to the standard GRI index.

RQ2: How does SR affect the FP of KSA listed firms?

Table 4.1 Hypotheses and theoretical basis for the effect of SR and FP

	Independent variables	Dependent variables	Predicted sign	Theoretical basis
H_{2A}	ENV	ROA, ROE, TQ	Positive	Stakeholder and legitimacy theories
H_{2B}	SOC	ROA, ROE, TQ	Positive	
H_{2C}	ECO	ROA, ROE, TQ	Positive	
H_{2D}	TSR	ROA, ROE, TQ	Positive	

Note: ROA = return on assets, ROE = return on equity, TQ = Tobin's Q, ENV = environmental sustainability reporting, SOC = social sustainability reporting, ECO = economic sustainability reporting TSR = total sustainability reporting.

RQ3: How does SR affect the NFP of KSA listed firms?

Table 4.2 Hypotheses and theoretical basis for the effect of SR and NFP

	Independent variables	Dependent variables	Predicted sign	Theoretical basis
H_{3A}	ENV	MS, IBP	Positive	Stakeholder and legitimacy theories
H_{3B}	SOC	MS, IBP	Positive	
H_{3C}	ECO	MS, IBP	Positive	
H_{3D}	TSR	MS, IBP	Positive	

Note: MS = market share, IBP = internal business perspective, ENV = environmental sustainability reporting, SOC = social sustainability reporting, ECO = economic sustainability reporting TSR = total sustainability reporting.

RQ4: Do CG mechanisms moderate the impact of SR and FP in KSA listed firms?

Table 4.3 Hypotheses and theoretical basis for CG moderating effect on SR and FP

Moderating effect		Independent variable	Dependent variables	Predicted sign	Theoretical basis
H_{4A}	Board size	TSR	ROA, ROE, TQ	Positive	Agency and institutional theories
H_{4B}	Independent directors	TSR	ROA, ROE, TQ	Positive	
H_{4C}	Audit committee size	TSR	ROA, ROE, TQ	Positive	
H_{4D}	Independent member of audit committee	TSR	ROA, ROE, TQ	Positive	
H_{4E}	Audit committee quality	TSR	ROA, ROE, TQ	Positive	
H_{4F}	Board gender diversity	TSR	ROA, ROE, TQ	Positive	
H_{4G}	Government ownership	TSR	ROA, ROE, TQ	Positive	
H_{4H}	Foreign ownership	TSR	ROA, ROE, TQ	Positive	

Note: TSR = total sustainability reporting, ROA = return on assets, ROE = return on equity, TQ = Tobin's Q.

RQ5: Do CG mechanisms moderate the impact of SR and NFP among KSA listed firms?

Table 4.4 Hypotheses and theoretical basis for CG moderating effect on SR and NFP

Moderating effect		Independent variable	Dependent variables	Predicted sign	Theoretical basis
H_{5A}	Board size	TSR	MS, IBP	Positive	Agency and institutional theories
H_{5B}	Independent directors	TSR	MS, IBP	Positive	
H_{5C}	Audit committee size	TSR	MS, IBP	Positive	
H_{5D}	Independent member of audit committee	TSR	MS, IBP	Positive	
H_{5E}	Audit committee quality	TSR	MS, IBP	Positive	
H_{5F}	Board gender diversity	TSR	MS, IBP	Positive	
H_{5G}	Government ownership	TSR	MS, IBP	Positive	
H_{5H}	Foreign ownership	TSR	MS, IBP	Positive	

Note: TSR = total sustainability reporting, MS = market share, IBP = internal business perspective.

4.4 The sustainability measurement index

4.4.1 The Global Reporting Initiative

The GRI was formed in 1997 by a US-based non-profit organisation called Ceres, with the support of the UNEP. GRI is an international and independent standards organisation that helps multinational organisations, public agencies, SMEs, non-government organisations, industry groups, governments and other organisations understand and communicate their effects on different economic, environmental and social sustainability issues (Brown et al., 2009). Thousands of organisations worldwide follow the GRI framework to report their firms' sustainability. Although GRI is an independent organisation, it remains a collaborating centre of the UNEP (Levy & Brown, 2011). Moreover, it also cooperates with the OECD, UN Global Compact and International Organisation for Standardisation (ISO). The UN Global Compact aims to encourage businesses worldwide to adopt sustainable social and environmentally responsible policies, as well as to report how these policies are implemented. Therefore, the GRI framework's main purpose is to promote SR worldwide (Sisaye, 2012).

This research adapted the GRI index to include Islamic elements in the economic, environmental and social sustainability dimensions that comprise the relevant GRI index. The GRI index was selected because of its immense popularity and unique categorisation of sustainability issues within the three dimensions. The following subsection details the GRI index's variable composition.

4.4.2 Variable Composition of the GRI index

As mentioned, the GRI comprises three independent variables that are used in this research: economic, environmental and social sustainability. Collectively, these variables form a total sustainability score. Each variable is explained in the subsections below.

4.4.2.1 Economic sustainability

The economic dimension of sustainable development concerns how organisations affect their stakeholders' economic conditions and economic structures at the local, regional and international levels (GRI, 2016). Nine items are used to measure this dimension (see Table 4.8). The present research used an unweighted content analysis approach to

calculate economic sustainability disclosures, with the help of the dummy codes 0–1, in which 0 is used for no reporting and 1 is used if the firm reported economic sustainability. This method has been used in previous studies, such as in Amidjaya and Widagdo (2020), Hamad et al. (2022), Khan et al. (2023), Landrum and Ohsowski (2018) and Zahid et al. (2020). A higher score represents an effective economic sustainability disclosure, while a lower score indicates the opposite. The formula for measuring economic sustainability was expressed as:

$$\text{Economic Sustainability (ECO} - \text{SUS)} = \frac{\text{Summation of performed disclosures per section}}{\text{Total disclosures per section}}$$

4.4.2.2 Environmental sustainability

The sustainability environmental dimension focuses on how companies affect living and non-living natural environments, including land, air, water and ecosystems (GRI, 2016). This dimension is measured using 12 items (see Table 4.8). This research used an unweighted content analysis approach to calculate environmental sustainability disclosures, with the help of the dummy codes 0–1, in which 0 was used for no reporting and 1 was used if the firm reported environmental sustainability. This approach has also been used in previous studies, such as in Shad et al. (2020). The annual reports of firms were used for data collection in this research with the help of the following formula:

$$\text{Environmental Sustainability (ENV} - \text{SUS)} = \frac{\text{Summation of performed disclosures per section}}{\text{Total disclosures per section}}$$

4.4.2.3 Social sustainability

The social dimension of sustainability concerns how organisations affect the social structures in which they operate (GRI, 2016). This dimension is measured using 42 items (see Table 4.8). This research used an unweighted content analysis approach to calculate social sustainability disclosures, with the help of dummy codes 0–1, in which 0 was used for no reporting and 1 was used if the firm reported social sustainability. Similar techniques to this were implemented in other studies, such as in Rahman et al. (2021) and Zahid et al. (2020). This research collected data from the annual reports of the subjected firms with the help of the following formula:

$$\text{Social Sustainability (SOC} - \text{SUS)} = \frac{\text{Summation of performed disclosures per section}}{\text{Total disclosures per section}}$$

4.4.2.4 Total sustainability score: Formative variable

The total sustainability score is a formative variable that can be computed by adding the scores of all three sustainability dimensions. The mean values of the above independent variables were added to form one sustainability score, and the variable of total sustainability was used for empirical testing. Amran et al. (2017) used the formula $\sum = \frac{dj}{N}$, in which *dj* denotes the numbers of disclosures, while *N* signifies the maximum number of disclosures a firm could have made. Consistent with previous studies, the present research formed the variable of total sustainability as expressed below:

$$\text{Total Sustainability} = \text{ECO-SUS} + \text{ENV-SUS} + \text{SOC-SUS}$$

4.5 Transforming the standard GRI into the modified GRI index

The index used to measure sustainability practices for KSA listed firms is limited to standard GRI, which does not include Islamic indicators. Empirical research has demonstrated that most studies have implemented the standard GRI index to examine the SR of KSA firms (Almaqtari et al., 2021; Bamahros et al., 2022; Ebaid, 2023a; Hashed & Almaqtari, 2021). However, given the potential shortcomings of this measure when applied in the KSA context, the present research modified the standard GRI index to include Islamic items in the three dimensions (economic, environmental and social sustainability). The GRI index was chosen because of its widespread use and distinctiveness in terms of classifying sustainability-related issues according to the three dimensions.

Although previous research has used the GRI index to evaluate KSA sustainability practices (Ebaid, 2023a), this index cannot fully assess sustainable standards from an Islamic perspective because Islamic beliefs are not the foundation of the current GRI index (Amran et al., 2017; Othman et al., 2009). Consequently, a more suitable approach would be to measure the sustainability practices of KSA firms by modifying the GRI index to align with shariah rules.

The first phase of this modification process involved reviewing previous GRI indices that were modified to reflect an Islamic perspective and then shortlisting the most suitable ones for the present research (see Table 4.8). These indices provided a foundation from which to make this research's necessary improvements to the GRI index. The indices

were chosen according to their popularity in the literature, as measured according to higher journal rankings and the number of citations they received in other studies (see Table 4.7). The previous indices that used Islamic sustainability practices are shown in Table 4.5 below.

Table 4.5 Literature using Islamic sustainability items

No.	Author and year	Sustainability item
1	Platonova et al. (2018)	(1) Zakat, charity and benevolent funds
2	Amran et al. (2017)	(1) Governance (shariah-compliant) zakat, calculated according to shariah; (2) shariah screening during the investment; (3) allocation of profit according to shariah principles; (4) community development and social goals (Qard-e-Hassan, *sadaqah* charity); (5) employment (shariah training and awareness).
3	Aribi and Arun (2015)	(1) Shariah compliance; (2) zakat; (3) Qard-e-Hassan.
4	Mallin et al. (2014)	(1) Shariah compliance; (2) zakat; (3) charity and donation; (4) Qard-e-Hassan; (5) debtor; (6) environment.
5	Farook et al. (2011)	(1) Zakat, charity and benevolent funds; (2) shariah supervisory board; (3) charity and zakat; (4) shariah supervisory board report; (7) Islamic values.
6	Hassan and Harahap (2010)	(1) Shariah-compliant CG (shariah supervisory board).
7	Rahman et al. (2010)	(1) Unlawful (haram) transactions; (2) zakat obligation; (3) Qard-e-Hassan fund; (4) shariah supervisory council.
8	Haniffa and Hudaib (2007)	(1) Zakat, charity and benevolent loans; (2) shariah supervisory board
9	Maali et al. (2006)	(1) Sharia opinion (unlawful, or haram, transaction); (2) Qardh-e-Hassan; (3) zakat for banks not required to pay it; (4) zakat for banks required to pay it; (5) charitable and social activities.
10	Dusuki (2005)	(1) Zakat and *sadaqah*; (2) fostering Islamic values among customers; (3) fostering Islamic values among staff; (4) granting interest-free loans (Qard-e-Hasan).

The process used to group these previously established indices into more general themes is displayed in Table 4.6. In the subjected themes, 0 denotes the lack of an item and 1 denotes its existence.

Table 4.6 Segregating process for existing indices using frequency distribution

Broader themes from sustainability indexes		Platonova et al. (2018)	Amran et al. (2017)	Aribi and Arun (2015)	Mallin et al. (2014)	Ezat et al. (2020)	Mahjoub (2019)	Rehman et al. (2020)	Hassan and Harahap (2010)	Othman and Thani (2010)	Jan et al. (2019)	Alotaibi and Hussainey (2016)	Badkook (2017)	Frequency distribution	%
1. Economic	1. Economic 2. Economic performance 3. Market presence 4. Economic 5. Economic performance	1	1	0	0	0	0	1	0	1	1	0	1	6	50
2. Environmental	1. Environment 2. Environmental policy 3. Environment 4. Company policy regarding the environment 5. Environmental policy statement 6. Environment 7. Environment 8. Conservation of environment 9. Environmental sustainability indicators 10. Environmental policy statement 11. Environmental disclosure	0	1	1	1	1	1	1	1	1	1	1	1	11	91
3. Labour practices and decent work	1. Employment 2. Commitment towards employees 3. Employee 4. Employee	1	1	1	1	1	1	1	1	1	1	1	1	12	100

Broader themes from sustainability indexes		Platonova et al. (2018)	Amran et al. (2017)	Aribi and Arun (2015)	Mallin et al. (2014)	Ezat et al. (2020)	Mahjoub (2019)	Rehman et al. (2020)	Hassan and Harahap (2010)	Othman and Thani (2010)	Jan et al. (2019)	Alotaibi and Hussainey (2016)	Badkook (2017)	Frequency distribution	%
	5. Employee 6. Employee theme 7. Employee 8. Employee 9A. Worker health and safety 9B. Worker education and training 9C. Fair treatment of workers and applicants 9D. Fostering Islamic values among staff 10. Commitment towards employees														
4. Human rights	1. Investment activities (general) 2. Human rights 3. Human rights 4. Non-discriminatory policies regarding sex, age and ethnicity 5. Childcare 6. Investment 7. Human rights 8. Equal opportunities	1	0	0	0	1	1	1	0	1	1	1	1	8	66
5. Society	1. Commitment to community 2. Community development and social goals 3. Community 4. Society theme 5. Community	1	1	0	1	1	1	1	0	1	1	1	0	9	75

Broader themes from sustainability indexes		Platonova et al. (2018)	Amran et al. (2017)	Aribi and Arun (2015)	Mallin et al. (2014)	Ezat et al. (2020)	Mahjoub (2019)	Rehman et al. (2020)	Hassan and Harahap (2010)	Othman and Thani (2010)	Jan et al. (2019)	Alotaibi and Hussainey (2016)	Badkook (2017)	Frequency distribution	%
	6. Other aspects of community involvement 7A. Financing companies not violating human rights 7B. Financing SMEs providing affordable service to deprived areas 7C. Supporting charities and community projects 7D. Solving social problems 8. Community involvement 9. Commitment towards society														
6. Product responsibility	1. Product and services quality 2. Developing and innovating new products 3. Definition or glossary for a new product 4. Health and safety 5. Consumer health and safety 6. Community investment 7. Product safety	0	0	0	0	1	1	1	0	1	1	1	1	7	58
7. Mission and vision	1. Mission and vision statement 2. Strategy (corporate vision)	1	1	0	1	0	1	0	0	0	1	0	0	5	42

Broader themes from sustainability indexes		Platonova et al. (2018)	Amran et al. (2017)	Aribi and Arun (2015)	Mallin et al. (2014)	Ezat et al. (2020)	Mahjoub (2019)	Rehman et al. (2020)	Hassan and Harahap (2010)	Othman and Thani (2010)	Jan et al. (2019)	Alotaibi and Hussainey (2016)	Badkook (2017)	Frequency distribution	%
	3. Vision and mission statement 4. Vision and mission statement														
8. Customer and clients	1. Ethical behaviour, stakeholder engagement, customer relationships 2. Listening to public views and concerns, fostering Islamic values among customers 3.Customer 4. Late repayments and insolvent clients	0	0	0		1		0	1	1	0	0	1	4	33
9. Debtors	1. Commitment towards debtors 2. Debtors 3. Debtors 4. Commitment towards debtors	1	0	1	1	0	1	0	0	0	1	0	0	5	42
10. Other	1. Finance and investment theme 2. Contribution	0	0	0		0			0	1	0	0	0	1	8

The accompanying Table 4.7 outlines the precise procedure that was used to categorise the selected sustainability measurement indices into more comprehensive themes. This research found that the leading indices that were previously employed to gauge the sustainability of Islamic corporate operations were mostly exploited in 10 greater aspects.

Using frequency distribution, this research narrowed its selection to topics involving a frequency of at least 50. The research selected the top six topics out of 10 during the selection procedure. Because the remaining four themes (serial numbers 7, 8, 9 and 10 in Table 4.6) had frequencies below 50 and were not industry specific (i.e., from an Islamic perspective), they were not chosen. Items for the four themes (i.e., universal themes) were already included in the GRI index. Table 4.7 outlines details about the themes that made the shortlist for this research (serial numbers 1, 2, 3, 4, 5 and 6) that used Islamic values or wording for the sustainability item that was reported.

Table 4.7 Shortlisted Islamic sustainability indicators for firms in the Kingdom of Saudi Arabia

Broader themes	Platonova et al. (2018)	Amran et al. (2017)	Aribi and Arun (2015)	Mallin et al. (2014)	Ezat et al. (2020)	Mahjoub (2019)	Rehman et al. (2020)	Hassan and Harahap (2010)	Othman et al. (2009)	Jan et al. (2019)	Alotaibi and Hussainey (2016)	Thani et al. (2016)	Shortlisted sustainability indicators
1. Economic	Investment activities (general); zakat, charity (*sadaqah*), Qard-e-Hassan; no involvement in non-permissible activities.	Zakat calculated according to shariah; and shariah screening during investment; nature of unlawful transactions; certifying distribution of profits/losses that comply to shariah; Qard-e-Hassan and *sadaqah.*	Shariah compliance; zakat, charity and donation; Qard e-Hasan.	Zakat; Quad-e-Hassan supporting charities and community projects	Charity and donation; other disclosure related to shariah activities.	Zakat; charity; donations; other disclosure related to Shariah activities.	Qard-e-Hassan and *sadaqah* paid; whether the transactions are free of riba, zakat; no investment in non-permissible products or services.	*Sadaqah*/*Waqaf*/ Qard-e-Hassan; zakat; details of investment activities; attestation from the SSB that activities have been properly computed and that the sources and uses of the funds are legitimate.	Zakat and riba activities; Qard-e-Hassan and *sadaqah*/donation; conferences on Islamic economics.	Zakat payment; Qard-e-Hassan; charity (*sadaqah*); shariah screening during the investment; Disclosure of earnings prohibited by shariah.	Charity and donation; WAGFF; community investment; establishing non-profit projects.	Zakat and charity (Qard-e-Hassan) and Waqf; no involvement in non-permissible activities; commitment to engage only in permissible investment activities.	Shariah screening during the investment (6 indexes); zakat payment (10 indexes); Qard-e-Hassan (9 indexes); charity/*sadaqah*/ Waqaf (8 indexes); disclosure of earnings prohibited by shariah (6 indexes).
2. Environmental	0	Quantity of donations in environmental awareness.	Compliance with shariah in all products and services for the environment.	Amount and nature of any donations or activities undertaken to protect the environment.	Other disclosures related to shariah activities.	Sponsoring environmental activities.	0	Enhancement and promotion of energy-saving projects; whether Islamic firms have financed any projects that may prompt environmental destruction.	Shariah compliance status for the environment.	Compliance with Islamic laws for the environment.	Other disclosures related to shariah activities.	0	Compliance with Islamic laws for the environment (5 indexes).

3. Labour practices and decent work	Training in shariah awarenes s.	Training in shariah awareness.	Policy regarding education and training in relation to the Islamic financial institution .	Shariah education for the employee.	Other disclosure related to shariah activities.	Other disclosure related to shariah activities.	Training in shariah awareness .	Sponsoring of Islamic educational and social events.	Training in shariah awareness.	Islamic training and education for the staff	Other disclosure related to sharia activities.	Training in shariah awarenes s.	Islamic training and education for the staff (9 indexes).
4. Human rights	0	0	0	Other social activities.	Other disclosure related to sharia activities.	Other disclosure related to shariah activities.	0	1A: religious freedom to Muslims to pray. 1B: a proper place of worship for employees.	Muslim employees are allowed to perform their obligatory prayers during specific times, as well as fast during Ramadhan on their working day; proper place of worship for employees.	0	Other disclosure related to sharia activities.	Muslim employee s are allowed to perform their obligator y prayers during specific times on their working days; as well as fast during Ramadha n; a proper place and appropria te time for ‘solat’ for Muslim employee s.	Muslim employees are allowed to perform their obligatory prayers during specific times, as well as fast during Ramadan on their working days (3 indexes); proper place of worship for the employees (3 indexes)

5. Society	Conferences on Islamic economics and other educational areas.	0	Charity and donations.	Other social activities.	Other disclosure related to shariah activities.	Funding scholarship programs.	Job opportunities for special persons; funding other organisations for social activities	Scholarships; sponsoring Islamic educational and social events, as well as training and development opportunities; provision of special training related to shariah aspects.	Conferences on Islamic economics; sponsoring of public health and recreational project, as well as sports and cultural events	Scholarships	Funding for scholarship programs.	Conferences on Islamic economics; sponsoring for Islamic events.	Funding scholarship programs (6 indexes); employment of other special-interest groups (i.e., persons with disabilities, ex-convicts, former drug addicts; 3 indexes).
6. Product responsibility	0	Basis of shariah concept on new products	Compliance with shariah in all products and services; Hajj; source of Zakat.	Other social activities.	Charitable society for the Holy Quran memorisation; Ongoing charity (WAGF); Hajj donation.	For Quran and ongoing charity (WAGFF); Hajj.	Donations for education; Waqff	Supporting employees to fulfil their shariah obligation, such as Hajj (pilgrimage to Makkah).	*Halal status of the product;* Waqff; Sponsoring public health and recreational projects, sports and cultural events	Pilgrimage; products and services; labelling (approved by the Shariah Committee)	Charitable society for the Holy Quran memorisation; Hajj donation; ongoing charity (WAGFF).	Sponsoring for Hajj/umrah; bonus for hari raya; breaking fasting during Ramadhan.	Sponsoring pilgrimages (6 indexes); charitable society for the Holy Quran memorisation (4 indexes); ongoing charity (WAGFF; 5 indexes); Hajj donations (7 indexes).

Table 4.7 outlines the process this research used to choose Islamic indicators from the six shortlisted themes. The table only displays sustainability-related items from the chosen overarching themes that adhered to Islamic ideology and that featured shariah-compliant practices. Standard elements from the formerly employed indexes were not chosen, while only the Islamic items unique to the sector were chosen because they are already included in the GRI index.

Islamic sustainability practices are integrated within the GRI framework, in which the Maqasid Al-Shariah helps ensure that they are performed in alignment with Islamic principles. The present time encourages ethical, sustainable and responsible financing—which advocates for the value addition that financing attracts to society and the environment rather than the egoistic or individualistic benefits it offers individuals or corporations. Therefore, redefining Islamic sustainability practices in light of the Maqasid Al-Shariah is imperative and presently relevant. Given the UN's 17 SDGs, Islamic factors can be regarded in this context as a different source of funding with a commercial finance portion and a social finance segment that financially help companies.

The Maqasid Al-Shariah denote the shariah's aims, which must be attained by anyone who practices Islam (Hassan et al., 2021). The main goal of shariah is to ensure that all evil is forbidden and that all good is encouraged to protect everyone from harm. Every act, whether legal or illegal, has a valid reason in accordance with shariah. Asking 'what is the Maqasid of something' can be compared to asking why it is permissible or unlawful, and the levels of 'why' represent the Maqasid (Auda, 2008). The three categories of needs in the traditional classification of Maqasid include necessities (*Darurat*), needs (*Hajiyyat*) and luxuries (*Tahsiniyyat*), in which *Darurat* is further subdivided into maintaining one's religion, soul, money, mind and offspring. The *Tahsiniyyat* category includes anything used for beautifying purposes, such as perfume, fashionable clothing and beautiful homes, while the *Hajiyyat* category includes aspects that are less essential for human life, such as marriage, trade and modes of transportation (Auda, 2008).

To fulfil the SDGs, Islamic finance practices must be reformatted to align with Maqasid Al-Shariah, given that the SDGs demand the preservation of human progress (Khan, 2019). The 17 SDGs are currently implemented to protect society and the environment. Obaidullah (2020) mapped the SDGs onto the five primary Maqasid and each of its various corollaries, for which the scholar cited Chapra et al. (2008), who created a list of

39 corollaries for the five Maqasid. Similarly, the present research classified the Islamic sustainability indicators into the GRI's three pillars in alignment with the Maqasid Al-Shariah.

After selecting the Islamic sustainability indicators, this research transformed them into the GRI dimensions, in accordance with previous literature. This research is thus a continuation and extension of previous research that incorporated Islamic items into the GRI framework (Jan, Marimuthu, bin Mohd et al., 2019; Jan et al. 2019; Mallin et al., 2014; Thani et al., 2016). To categorise the shortlisted sustainability items into the economic, environmental and social sustainability dimensions, this research derived deductive knowledge from the frequency distribution table, in which previous items were systematically shortlisted according to high-frequency distribution aligned with previous studies (Jan et al. 2021).

The first item was the shariah screening of investments. It has been suggested that investment should align with shariah rules, which promote sustainable and responsible investing. Shariah screening is considered a form of financing that accounts for ESG concerns. The second item was Qard-e-Hassan, which promotes solidarity and social welfare and helps ensure the equitable division of resources and opportunities. The Qard-e-Hassan funding facility is more useful in developing nations, in which it can help ease social and economic hardships. Providing Qard-e-Hassan to less fortunate consumers will improve the reputation of firms among their clients and the general public. The third item was charity (*sadaqah*)—a charitable act that benefits those in need, which the shariah strongly recommends. It is practiced on a philanthropic basis, and it is similar to the concept of social responsibility.

The fourth item was the disclosure of earnings that are prohibited in Islam. According to Islamic principles, obtaining income from forbidden sources is forbidden. Consequently, organisations that willingly engage in this disclosure without documenting it may significantly affect their financial health. Organisations must stop making harmful profits to improve their economic performance. The fifth item was zakat payment, a fundamental method for preventing and combating hunger and poverty. The sixth item was compliance with Islamic laws to achieve a clean, hygienic environment, which would help people develop healthy lifestyles. Islam has generally highlighted the need for cleanliness and

healthiness by asserting that purity is an element of faith, in addition to being a Maqasid (or self-defence).

The seventh item was Islamic training and education for staff linked to social sustainability. Staff should be trained according to the Maqasid Al-Shariah approach to enhance their organisations' products and services. The eighth item was the funding of scholarship programs linked to social sustainability. The different educational standards of stakeholders will be raised through scholarships, and the stakeholders will be better equipped to use their knowledge and education to advance society. The ninth item was firms' sponsoring of pilgrimages, which would promote a strong corporate image in the community and provide ease in society. The tenth item was a charitable society for the Holy Quran memorisation, which would establish close relationships with the surrounding community and create channels for communication. The eleventh item was sporting and recreation projects, and initiatives in support of the army, linked to social aspects. Firms that consider such projects can offer the community recreation opportunities such as fitness, entertainment, student activities and travel. Firms in KSA can thus develop meaningful and long-lasting relationships with the army's consumer market.

The twelfth item was support for art, culture and health, which is linked to the social pillar of sustainability. KSA firms that participate in artistic and cultural activities strengthen the health and social wellbeing of communities. The thirteenth item was job nationalisation for Saudi Arabian people, which focuses more on the government's initiative and requires KSA business organisations to employ Saudi nationals. The fourteenth item was the empowerment of women, which is linked to the social aspect of sustainability. Non-financial firms can focus on empowering women by supporting their sense of self-worth, their freedom to make their own decisions and their right to affect social change for themselves and others. The fifteenth item included Hajj donations, which links to the social pillar of sustainability. The sixteenth item was employing other special-interest groups (i.e., persons with disabilities, ex-convicts, former drug addicts), which is also linked to the social pillar of sustainability. These items all correlate to the economic, environmental and social dimensions of sustainability—albeit from the angle of Islamic principles. KSA firms can create a strong corporate image by focusing on these items of sustainability, which will ultimately prompt improved firm performance.

Table 4.8 displays the transformed GRI 4 SR index, which was modified according to the frequency distribution of previous literature. The transformed index comprises 63 items that contain the GRI 4 items, as well as Islamic sustainability items in the context of KSA. The newly included items are displayed at the end of each section of the table (in italic font). The present research added 16 new items to the three dimensions of the GRI 4 index, and this new index is equipped to measure SR in the non-financial sector of KSA.

Table 4.8 Transformed Global Reporting Index with the inclusion of Islamic sustainability items

Aspect	Parameters for measuring individual items (0 = no reporting , 1 = reporting)
1) Economic sustainability indicators	**Measurement criteria of an individual item**
Economic performance	Community investment: Direct economic value generated and distributed
Market presence	Disclosure about minimum wages paid
Indirect economic impact	Reporting on investments in infrastructure development and supported/commercial investment
Procurement practices	Percentage of products and services that were purchased from local suppliers
Shariah screening during the investment	Reporting about the shariah screening process for investing in the shariah committee's report
Zakat payment	Procedure and disclosure regarding the total amount of zakat paid
Qard-e-Hassan	Amount of Qard-e-Hassan or benevolent funds paid
Charity (Sadaqah, Waqaf)	Reporting on total charity (*sadaqah, Waqaf*) paid by companies
Disclosure of earnings prohibited by shariah	The report of the shariah committee mentions disclosing earnings prohibited by shariah
2) Environmental sustainability indicators	**Measurement criteria of an individual item**
Material used and recycled by KSA firms	Reporting the overall weight and volume of material utilised, as well as the proportion of recycled material
Energy reduction and preservation initiatives created by KSA firms	disclosing on the methods utilised to decrease energy use for heating, cooling, and steaming
Water recycling initiatives created by KSA firms	The total volume of water that KSA firms recycle and repurpose
Biodiversity	Reporting about the habitats protected or restored because of green investment
Emission (i.e., reducing greenhouse gases and carbon emissions)	Accounting for the greenhouse gas emissions that are caused by firms' business travels and courier services
Effluents and waste cleaning	Reporting on waste management techniques used on paper and information technology items used by companies
Effects of products and services on the environment	The extent to which environmental consequences of companies' products and services are mitigated

Transport (i.e., mitigation effect, responsible automation)	Disclosing on how the environmental impacts of moving company members or employees, as well as other goods and services, are minimised
Overall environmental expenditure	Total environmental spending by category
Supplier environmental assessment	The reporting on new suppliers that were chosen based on environmental criteria
Environment grievance mechanisms	Reporting about the total number of grievances filed in relation to environmental effects, as well as the grievances that are addressed and resolved through a formal grievance mechanism
Compliance with Islamic laws for the environment	Reporting on any compliance related to Islamic or KSA law
3) Social sustainability indicators	
3A) Labour practices and decent work	**Measurement criteria of an individual item**
Employment	Reporting on the total number and rate of new employee recruits by age group, gender, and area during the reporting period.
Labour management relationship	Reporting about the minimum period required for notice before implementing operational change
Occupational health and safety	Reporting about policies designed to reduce firm robberies and money laundering used for terrorism
Diversity and equal opportunity	Reporting about diversity and equal opportunities provided to firm staff
Equal remuneration for women and men	Reporting on the ratio of basic wage and remuneration for men and women in each employee category based on important operational locations
Supplier assessment for labour practices	Reporting on the percentage of new suppliers that were screened using labour practice criteria
Labour practice grievance	Number of grievances filed about labour practices, as well as grievances that were addressed and resolved through formal grievance mechanisms
Islamic training and education for staff	Reporting about Islamic training and education provided to staff in firms' annual reports
Job nationalisation (Saudisation)	Total number of jobs for Saudi Arabian people
Empowerment of women	Total number of jobs for Saudi Arabian women
3B) Human rights	**Measurement criteria of an individual item**
Investment	The total investment firms make to train employees in human rights policies and procedures
Non-discrimination	Reporting about the total number of discriminatory incidents and corrective actions that firms take
Freedom of association and collective bargaining	Reporting about the measures that firms take to support the right to exercise, freedom of association and collective bargaining

Child labour	Reporting about identifying child labour in KSA firm operations and supplier activities, as well as the effective measures taken in response
Forced or compulsory labour	Reporting about identifying forced and compulsory labour in KSA firm operations and supplier activities, as well as the effective measures taken in response
Security practices	Percentage of security personnel who are trained in an organisation's human rights policies or procedures that are relevant to operations
Indigenous rights	Total number of incidents involving violations to the rights of indigenous peoples and actions taken
Assessment	Reporting about the total number and percentage of operations that experienced human rights reviews or impact assessments (by country)
Supplier human rights assessment	Reporting about the percentage of new suppliers that were screened using the human rights criteria
Human rights grievance mechanism	Number of grievances related to human rights impacts filed, addressed and resolved through formal grievance mechanisms
3C) Society	**Measurement criteria of an individual item**
Local communities	Initiatives that increase disadvantaged people's access to financial services
Anti-corruption	Percentage of activities reviewed for anti-corruption risks and measures taken; training offered on anti-corruption policies and procedures
Public policy	Reporting on the total monetary worth of direct and indirect financial and in-kind political donations made by corporations (by country and recipient/beneficiary)
Anti-competitive behaviour	Total number of legal actions taken for anti-competitive behaviour and anti-trust and monopoly practices, as well as the outcomes
Compliance	The monetary value of significant penalties, as well as the total number of non-monetary punishments imposed for noncompliance with laws and regulations
Supplier assessment for effect on society	Percentage of new suppliers that were screened using criteria for effects on society
Grievance mechanism for effect on society	Total number of grievances about effects on society that are filed, addressed and resolved through formal grievance mechanisms
Funding of scholarship programs	Reporting about the total sum of scholarship offered; reporting about the total money spent on offering scholarships
Sponsoring of sporting projects, recreational projects and the army	Total amount of money paid for sporting projects and army activities

Support for art, culture and health culture	Total amount of money paid for culture and health culture activities
3D) Product responsibility	**Measurement criteria of an individual item**
Consumer health and safety	Disclosing on the percentage of important product and service categories whose health and safety consequences are being evaluated for improvement
Product and service labelling	Fair design and selling policies for financial goods and services
Marketing communications	Total number of incidents involving non-compliance with regulations and voluntary codes that concern marketing communications, including advertising, promotion and sponsorship (by outcome type)
Customer privacy	Disclosure on the overall number of substantiated complaints regarding privacy violations received from customers
Compliance	The monetary worth of hefty fines imposed for failure to comply with rules and regulations governing the provision and use of goods and services
Product portfolio	Policies with specific social components that are applied to business lines
Auditing	The scope and frequency of audits conducted to evaluate the execution of social policies and risk assessment processes
Active ownership	The proportion and number of firms in a firm's portfolio that it has engaged with on social problems
Sponsoring of pilgrimages	Disclosing on the shariah committee's report's approval of product and service labelling
Charitable society for the Holy Quran memorisation	Total amount of money paid to charitable societies for the Holy Quran memorisation
Hajj donations	Total amount of money paid to various people and groups for performing Hajj
Employment of other special-interest groups (i.e., persons with disabilities, ex-convicts, former drug addicts)	Total number of people employed from special-interest groups

4.6 Validation of the modified Global Reporting Initiative index

This research's proposed index was validated by a panel of six academic experts, which included industry experts from non-financial sectors in KSA and expert academics who had previously developed indices on sustainability measurement. The following subsections describe the procedure used to propose and validate the new sustainability index in this research for empirical testing.

4.6.1 The modified GRI index: Content validity and reliability

The content validity and reliability of the items employed in this research were established by comparing them to previous literature and sustainability indices, as indicated in Tables 4.6 and 4.7. To ensure the validity of the content analysis, a pilot study was conducted on 20% of the total population of 121 companies (i.e., 24 companies; two from each sector). This pilot testing was further validated by two expert coders, who examined whether the corporate reports of these companies from 2015 to 2020 included the items that were specified in the reporting index. The pilot study's findings revealed that at least eight of the 63 items were reported in the disclosure index of the companies. Additionally, the overall criterion aligned with the GRI index, as supported by Joseph (2010), who confirmed the relevance of all items in the index when at least one organisation disclosed each item.

4.7 Method for measuring firm performance

4.7.1 Financial performance measurement

The current research used several indicators to measure the FP of its sample firms (Richard et al., 2009), which was proxied by ROA, ROE and TQ. These factors are briefly discussed in the following subsections.

4.7.1.1 Return on assets

ROA denotes the percentage of profit that a firm has earned in comparison to its total assets (Al Nimer et al., 2015; Alshatti, 2015). ROA has been used in various studies as a measure of firm performance in relation to SR (Aouadi & Marsat, 2018; Deng & Cheng, 2019; Duque-Grisales & Aguilera-Caracuel, 2019; Lins et al., 2017). The ratio of ROA in the present research was calculated using the following formula:

ROA = Profit after Tax/Total Assets

4.7.1.2 Return on equity

ROE denotes the percentage of profit that a firm has earned according to shareholder equity. ROE is used as an indicator of a firm's ability to generate revenue using equity funds. When the ROE ratio is high, the firm's efficiency in using equity funds to generate revenue is equally high. Conversely, a low ROE in firms indicates a lower efficiency in terms of using equity funds (Black et al., 2006; Claessens & Fan, 2002). Previous studies have also examined how ROE can be influenced by the level of SR (Aouadi & Marsat, 2018; Atan et al., 2018; Zhao et al., 2018). The ROE ratio in this research was calculated using the following formula:

ROE = Profit after Tax/Shareholders' Funds

4.7.1.3 Tobin's Q

TQ is used to measure a firm's market performance in comparison to its total assets (Aouadi & Marsat, 2018). TQ depicts the growth prospects of assets as indicated by their potential profitability relative to their replacement value (Leng, 2004). If a firm's market value and asset value are the same, then the ratio is equal to one. Consequently, this ratio can be used to measure how well aligned shareholder and management interests are. Firms with a high TQ ratio possess more efficient CG mechanisms and are thus more likely to perform more effective SR, which subsequently prompts better market perception of its operations and performance (Weir et al., 2002). Several studies have employed TQ as an indicator to analyse the link between SR and market performance (Aouadi & Marsat, 2018; Aybars et al., 2019; Fatemi et al., 2018; Garcia et al., 2019; Nekhili et al., 2019). TQ in this research was calculated using the following formula:

TQ = (Market Capitalisation + Firm Debt)/Total Assets

4.7.2 Non-financial performance measurement

NFP was proxied by customer perspective and IBP, which are briefly reviewed in the following subsections.

4.7.2.1 Market share

This study used MS as a measure to gauge customer acquisition and retention to determine a company's MS. MS boosts the performance of companies, so it is a vital indication of a company's performance (Kamakura et al., 2002). A company's sales are divided by the total sales of the given industry to obtain the company's MS. Previous studies have also used this metric as an indicator of NFP (Ghosh & Wu, 2012; Nezami et al., 2022; Rust & Zahorik, 1993; Weber, 2008). In the present research, it was measured using the following formula:

Market Share = Company Sales/Total Sales of Industry

4.7.2.2 Internal business perspective

IBP refers to business procedures that are implemented to enhance firm operations (Honggowati & Aryani, 2015; Ittner et al., 2003), and it is measured using a dummy variable (i.e., 1, 0). A company's business perspective is coded as 1 if business activities have been implemented to improve internal operations (e.g., employee training). Conversely, a company's business perspective will be coded as 0 if no business processes have been implemented to improve staff competence and capabilities. This dichotomous variable has been used in previous literature, with the same dummy variables of 1 and 0 (Hamad et al., 2022).

4.8 Method of measuring corporate governance mechanisms

This research examined how SR affects firm performance with the moderating role of various CG mechanisms, which included BS, IDs, ACS, audit committee independence, ACQ, board gender diversity and government and foreign ownership structures. The following list illuminates how each CG mechanism was measured in the present research:

- **BS**. This variable was measured as the total number of members on a board (Azeez, 2015; Mak & Kusnadi, 2005).
- **IDs.** This variable was measured as fraction of IDs on the board relative to the total number of board directors (Bansal et al., 2018; Bozec, 2005; Kiel & Nicholson, 2003).

- **ACS.** The audit committee's size was determined by the total number of its members (Setiany et al., 2017; Turley & Zaman, 2004).
- **Independent member of the audit committee.** This variable was measured using the percentage of independent audit committee members in relation to the total number of audit committee members (Ammer et al., 2020; Husted & de Sousa-Filho, 2019; Rubino & Napoli, 2020).
- **ACQ.** This variable assessed whether the auditor was part of the Big 4. It was measured using a dummy variable—1 if an auditor was part of the Big 4 and 0 otherwise (Bagais & Aljaaidi, 2020; Miko & Kamardin, 2015).
- **Board gender diversity.** As aligned with previous studies, the current research measured board gender diversity by calculating the proportion of female directors in relation to the total number of board members (Sarhan et al., 2019).
- **Ownership structure.** Two types of ownership structure were considered in the current research, which included
    - **Government ownership.** This variable denotes when the government owns at least 5% of a company's total number of shares, which is officially established (Alhazmi, 2017; Habbash, 2016). Government ownership is measured as the ratio of shares possessed by government institutions (Habbash, 2015).
    - **Foreign ownership.** In KSA, a registered corporation can have up to 49% of its issued shares owned by foreign investors. This is measured by the proportion of shares that is held by foreign entities (Bajaher et al., 2022).

4.9 Control variables

This research used control variables to address other aspects that could affect the relationship between SR and firm performance with the moderating role of CG. These variables are briefly reviewed in the following list:

- **Firm size.** Firm size was measured using the natural logarithm of a firm's total assets (Fisman et al., 2005; Harjoto & Jo, 2011; McWilliams & Siegel, 2001). Since firm size is typically skewed and tends to violate the assumption of normality, the natural logarithm was used to log transform the firm size variable (Arora & Dharwadkar, 2011).

- **Firm age.** Older firms benefit from more experience and reputation, which signifies that they can outperform newer firms because of the age factor. This demonstrates that firm age is a critical control variable for analysing firm performance (Ang et al., 2000; Hill & Kalirajan, 1993; Majumdar & Chhibber, 1999; Rashid, 2008; Shad et al., 2020). In the current research, firm age was measured using the natural logarithm of the number of years that a firm has been listed on the stock market.

4.10 Review of research methods

After establishing the conceptual framework and research hypotheses for this research, the focus shifted to the research method that would be employed. Because the conceptual framework supports the relationship between SR, firm performance and CG, it was critical to employ a research approach that supported this framework.

4.10.1 Research methods in previous studies

Diverse research methods have been applied in previous studies that focused on SR, CG and firm performance (see Table 4.9). Many studies used quantitative research methods such as regression analysis to investigate the relationship between SR and firm performance, which often involved using data from financial and sustainability reports to measure firm performance and SR. For example, Al-Shaer and Hussainey (2022) aimed to explore how SR influenced sustainability performance, in which they used a sample of firms that were based in the UK and that published sustainability reports between 2014 and 2018. The study employed multivariate regression to investigate the relationship between sustainability report communicative actions and SR, and it used the OLS estimator as the baseline model. Additionally, separate primary models (OLS) were performed for each explanatory variable.

Buallay (2022a) investigated the association between SR level and performance indicators pertaining to the food industry (e.g., operational, financial and market performance). This study collected data from 1,426 observations across 31 countries over the 2008–2017 period. An independent variable was constructed using ESG scores, which was then regressed against dependent performance indicators such as ROA, ROE and TQ. To assess validity and reliability, the study performed panel diagnostic tests for normality,

stationarity, collinearity, autocorrelation and heteroskedasticity, and panel regression models were further used to estimate the equations. In another study, Sehgal et al. (2022) investigated how environmental and social reporting affected FP, in which the study used the accounting ratios of ROA and ROE from 56 Indian companies over the 2014–2021 period. This study employed both the GLS FE model and the random effect (RE) model to analyse the data.

Di Leo et al. (2023) examined the sustainable practices of luxury fashion brands by analysing their official reporting documents. This study performed a qualitative content analysis of sustainability reports that was founded on the GRI to examine the sustainable practices of 31 companies from the top 100 global luxury brands. This study also performed a descriptive analysis and panel data analysis to examine the level of SR.

Bamahros et al. (2022) used data from 206 company–year observations over the 2010–2019 period to investigate the correlation between ESG disclosures and CG mechanisms in KSA listed companies. The researchers used an OLS regression model to test their study's hypotheses, as well as an OLS regression with Huber–White robust standard errors to address heteroscedasticity and serial correlation concerns. Ghardallou (2022) explored how SR affected a company's FP, in which the study focused on 34 publicly traded companies in KSA over the 2015–2020 period. This study collected data pertaining to sustainability, financial and accounting factors from both the Bloomberg database and the annual reports of the chosen companies. Firm performance was proxied with ROA, ROE and TQ. To account for unobserved heterogeneity, the study adopted a panel data model, which is often used for this purpose in the literature. The study then employed a GMM estimator to examine the relationship between corporate sustainability and firm performance.

Additionally, Ali et al. (2020) examined how SR influences the relationship between CG and firm FP (measured by ROA). This study was founded on a sample of 3,400 firms that were listed on the Shanghai Stock Exchange, and it used yearly observations from the 2009–2018 period. Ali et al. also employed a panel regression approach and used both OLS and 2SLS regression models. In another study, Buallay et al., 2021 investigated the link between SR and bank performance in developed and developing countries after the 2008 financial crisis. The study used data from 882 banks and covered an 11-year period after the 2008 crisis. SR (i.e., ESG scores) was the independent variable, while ROA,

ROE and TQ were the dependent variables. To address potential issues such as endogeneity, heteroscedasticity and weak instruments, this study employed the instrumental variable–generalised method of moments dynamic FE estimation approach.

In a related study, Shad et al. (2020) investigated Malaysia's oil and gas industry to determine how SR affected firm performance; specifically, the scholars considered the cost of capital, including cost of debt and equity. The study collected data from 41 publicly listed oil and gas companies in Malaysia between 2008 and 2017. It performed a panel data analysis and a generalised least square RE regression to explore the association between SR and the cost of capital. Moreover, Zimon et al. (2022) investigated how SR influenced corporate reputation and the CEO's involvement in opportunistic practices among companies listed on the Tehran Stock Exchange. This study analysed 178 firms between 2013 and 2020 and employed an FE regression model with the Hausman test to determine the appropriate model.

Similarly, Ebaid (2023b) investigated the correlation between SR and the FP of firms listed on the Saudi Stock Exchange. This study analysed data that were extracted from the annual reports of a selected sample of 67 companies that were listed on the Saudi Stock Exchange from 2016 to 2019. An FE regression model was employed to examine this relationship, and the model's suitability was assessed using the Hausman test. Table 4.9 provides a brief summary of the research approaches used in previous studies by summarising the empirical methodology applied in the contexts of sustainability reporting, corporate governance, and firm performance.

Table 4.9 Empirical methodologies focusing on sustainability reporting, corporate governance and firm performance

Authors	Sample size, year of study and data type	Dependent variables	Independent variables	Research method
Laskar (2018)	36 listed non-financial firms from Japan, 28 from India, 26 from South Korea and 21 from Indonesia over the 2009–2014 period; panel data	Firm performance	SR	Logistic regression model
Javeed and Lefen (2019)	133 firms from 2008–2017; panel data	Firm performance (ROA, ROE)	CSR practices	FE model, GMM
Jan et al. (2019)	Islamic banks in Malaysia from 2008 to 2017; weighted content method; panel data	Firm FP (return on average assets, return on average equity, TQ)	Sustainable business practices	GMM
Tulcanaza-Prieto et al. (2020)	304 firm–year observations from 2013 to 2018	FP (ROA, ROE) and NFP (customer brand trust, loyalty, customer satisfaction)	CSR initiatives	GMM, FE
Rehman et al. (2020)	Four Islamic banks operating in Pakistan from 2012 to 2017; panel data	FP (ROA, ROE)	CSRD	OLS, panel corrected standard errors, GLS using random effect and FE
Ammer et al. (2020)	34 firms and 170 firm–year observations from 2015 to 2019; panel data	Firm value (ROA, ROE, TQ, price to book value ratio)	Environmental sustainability practices	OLS (FE), GMM for robustness
Al-Ahdal et al. (2020)	106 companies from 2009 to 2016; panel data	FP (ROE, TQ)	CG mechanism	GMM
Ali et al. (2020)	3,400 Shanghai Stock Exchange listed firms from 2009 to 2018; panel regression	CG	Firm performance (ROA, ROE)	2SLS

Authors	Sample size, year of study and data type	Dependent variables	Independent variables	Research method
Qiu et al. (2021)	Hospitality firms from 2019 to 2020	Firm value (abnormal market returns)	CSR activities	Event study method, difference-in-differences method, OLS
Albitar et al. (2020)	1,943 firm–year observations from 2009 to 2018	Firm performance (TQ)	ESG disclosure	OLS, FE models
Ghardallou (2022)	34 publicly traded companies in KSA from 2015 to 2020; panel data	Firm performance (ROA, ROE, TQ)	Corporate sustainability	GMM
Bamahros et al. (2022)	206 company–year observations from KSA listed companies from 2010 to 2019; panel data	ESG reporting	CG mechanisms	OLS regression with Huber–White robust standard errors
Zimon et al. (2022)	178 firms listed on the Tehran Stock Exchange from 2013 to 2020	Corporate reputation	SR	FE regression
Sehgal et al. (2022)	56 Indian companies from 2014 to 2021	FP	Environmental and social reporting	GLS FE model, RE model
Di Leo et al. (2023)	31 companies from the top 100 global luxury brands in 2019; panel data	Fashion and luxury brands	Sustainable practices	OLS
Ebaid (2023b)	67 companies listed on the Saudi Stock Exchange from 2016 to 2019	FP (ROA, ROE, return on capital employed, EPS)	SR	FE regression

4.10.2 Research method used in the present study

According to previous research, various methods have been employed to investigate the relationship between SR and firm performance, such as OLS, FE, GMM and 2SLS. However, the choice of method is often influenced by the previous studies' RQs, research objectives and data type. Therefore, researchers must carefully consider these factors when selecting the most appropriate methods for their studies. According to the present research's RQs and nature of the data—panel data, which is a combination of cross-section and time series—it applied the FE panel regression model. Previous studies have also applied this approach to examine the connection between SR and firm performance (Buallay, 2019a; Ebaid, 2023b; Javeed & Lefen, 2019). Both FE and RE methods can be used to analyse panel regression models. However, to distinguish between the two approaches, the Hausman test is used with a null hypothesis that the capabilities of the FE and RE techniques are equal. If the null hypothesis is rejected, then the RE approach is not considered suitable and the FE technique is recommended instead. According to the Hausman test results, FE is the preferred method to represent the relationship between SR and performance, given that it has previously been statistically significant (Shahzad et al., 2022). The associations between the variables provided in the research model are thus investigated using an FE panel regression model. Therefore, several tests were conducted to determine the most appropriate research method for this thesis, these are discussed in the following subsections.

4.10.2.1 Nature of the data

The data used for the present research were collected from 121 KSA listed firms over the 2015–2020 period. The nature of the data is thus panel form data, which denotes data that have multiple instances (e.g., countries, persons, businesses) over two or more periods of time (Malhotra & Dash, 2016).

4.10.2.2 Testing for panel data

The following subsections illustrate the methodological procedure that was used in the present research for panel data testing. This procedure commenced by introducing the panel

unit root testing, then selecting a suitable regression model for the panel data testing, and finally performing diagnostic tests for the regression model.

4.10.2.3 Unit root test for panel data

Testing the stationary existence of data is the first step in the use of panel data. Engle and Granger (1987) concluded that applying a panel data regression test to non-stationary data could produce deceptive regression findings, such as a strong R^2, but insignificant t-statistics. Additionally, Ramirez (2007) highlighted that an econometric model using non-stationary data will contribute to the issue of spurious regression outcomes, and that the whole econometrics work becomes holistically nonsensical. Consequently, multiple experiments have been performed to establish a panel-based unit root test (Choi, 2001; Hadri, 2000; Im et al., 2003; Levin et al., 2002; Maddala & Wu, 1999). The present research applied panel unit root testing such as Levin et al.'s (2002) to verify the stationarity of the results before proceeding with diagnostic testing for the panel regression models.

4.10.2.4 Selecting an appropriate regression model: Ordinary least squares versus the generalised method of moments

The initial step in the process of applying panel data regression is deciding between the OLS method and the GMM. The OLS method comprises certain fundamental assumptions that, if violated, would render its use unsatisfactory. If this occurs, the generalised least square GMM must be incorporated into the analysis. The standard OLS assumptions include (Zahid et al., 2020):

1. linearity in parameter
2. a random sample of N observation
3. zero conditional means
4. no perfect collinearity (i.e., no multicollinearity)
5. homoscedasticity (i.e., no heteroscedasticity)
6. all independent variables being uncorrelated with the error term 'exogeneity' (i.e., no 'endogeneity' in the data).

Once these assumptions are met, the next step is selecting the appropriate regression test, which can be either OLS or GMM. The following subsections discuss the diagnostic tests that can be used to determine which type of regression test is the most suitable fit for this research's model.

4.10.2.5 Diagnostic tests

Diagnostics tests pertain to selecting an appropriate regression model (i.e., pooled OLS versus REM/FEM OLS). To decide between pooled OLS and REM OLS regarding which model is best for analysing data, this research used Breusch-Pagan Lagrange multiplier (LM) tests. Moreover, these tests helped select between pooled OLS and REM or FEM, which is described in the following list:

- **Serial correlation—Wooldridge test.** Wooldridge (2002) posited this test for serial correlation in panel data. The present research employed the Wooldridge test for serial correlation to determine whether a serial correlation existed in the panel data.
- **Heteroscedasticity test—Breusch-Pagan/Cook-Weisberg test.** The present research used this test to diagnose the heteroscedasticity problem in its model. The heteroscedasticity test was suggested by Breusch and Pagan (1979), in linear regression for OLS. Moreover, if both serial correlation and autocorrelation occur simultaneously, then a clustered robust model will be implemented, which can simultaneously eliminate heteroscedasticity and serial correlation.
- **Normality test.** The normality test was used to assess whether the residual value was normally distributed. If the residual data values were not normally distributed, then the statistical results were incorrect or biased. To identify the normality of the data, the present research used the Kolmogorov-Smirnov test to assess whether the data were normally distributed (Ghozali, 2016).
- **Multicollinearity test.** This test aims to determine whether the independent variables in a regression model have a relationship among themselves. A multicollinearity test can be performed only if the regression model comprises more than one independent variable. The variance inflation factor (VIF) values can be used to determine whether a regression model has a multicollinearity problem. If the VIF values are greater than

10, then the model is regarded as having a high level of multicollinearity (Hair et al., 2010).

4.11 Data collection and sources

Table 4.10 presents comprehensive information on the variables utilised in this research, including their respective symbols, variable types, and the data sources from which they were collected. The data has been collected from the annual reports which are extracted from the Tadawul website. The Tadawul website is the official stock exchange platform of Saudi Arabia. It is regulated and supervised by the CMA. As the primary source for disseminating financial information of listed companies, including their annual reports, it is considered the most reliable and authentic source of financial data for Saudi-listed firms. Moreover, the Tadawul website provides real-time access to the latest financial information and annual reports of listed companies. This feature ensures that researchers can access up-to-date data for their analyses, enhancing the accuracy and relevance of their findings.

Table 4.10 Data sources

Concept	Variable	Variable symbol	Variable type	Data source
SR	Total sustainability reporting	TSR	Independent	Annual report
	Economic sustainability	ECO	Independent	Annual report
	Environmental sustainability	ENV	Independent	Annual report
	Social sustainability	SOC	Independent	Annual report
Firm performance	FP	ROA, ROE, TQ	Dependent	Annual report
	NFP	MS, IBP	Dependent	Annual report
CG mechanisms	Board size	BS	Moderator	Annual report
	Independent directors	ID	Moderator	Annual report
	Audit committee size	ACS	Moderator	Annual report
	Independent member of audit committee	IMAC	Moderator	Annual report

	Audit committee quality	QAC	Moderator	Annual report
	Board gender diversity	BGD	Moderator	Annual report
	Government ownership	GOV	Moderator	Annual report
	Foreign ownership	FOR	Moderator	Annual report
Firm characteristics	Firm size	FS	Control	Annual report
	Firm age	FA	Control	Annual report

The unit of analysis denotes the primary entity that is being analysed in a study. In the present research, the unit of analysis was KSA's non-financial listed firms. As observed in Table 4.10, the sampling frame comprised a list of all members of the population from which samples could be drawn.

The sample included KSA non-financial firms listed on the Saudi Stock Exchange from 2015 to 2020. This period was chosen because it reflects the economic effect before and during the COVID-19 pandemic (see Appendices 1 and 2). The data collection process was performed in three phases:

- Phase one centred on annual financial statements, directors' profiles and the corporate information of KSA listed firms. These data were sourced from the KSA stock market's official website, and they were used to source information regarding sustainability disclosure and CG.
- Phase two focused on data pertaining to MS. These data were used as an indicator for measuring customer perspective and IBP for firms listed on the Saudi Stock Exchange.
- The final phase focused on financial data that were obtained from financial statements, which includes cash flow statements, income statements and balance sheets. These data were obtained from the annual reports of firms listed on the Saudi Stock Exchange.

To ensure the selection of an appropriate sample frame for data collection, a comprehensive view of the process is presented in Table 4.11. This table outlines the meticulous steps undertaken to arrive at the final sample size of 121 non-financial listed

firms. It also transparently outlines the excluded categories and the reasons for their exclusion, providing a clear and transparent account of the sample selection process.

Table 4.11 Data selection

Name	Number	Percentage
Total number of companies listed on Tadawul as of year–end 2015	172	100
Less insurance firms	–31	18
Less financial services and bank sector firms	–12	7
Total the number of excluded financial listed firms	(–43)	25
Initial sample size of non-financial listed firms	129	75
Less the firms with no data available	0	—
Less the delisted or suspended firms	8	4.65
Total	–(8)	4.65
Total number of listed firms included in the final sample	121	70.35

4.12 Regression models

Selecting an appropriate regression model must be founded solely on the consideration of which model fits the distribution of effect sizes, as well as which accounts for the relevant sources of error. The linear model is the foundation of the linear panel model, and it typically entails two steps, such as OLS or generalised least square (FE/RE). Selecting the OLS model is founded on meeting the basic assumptions of the regression model, which include zero heteroscedasticity, no multicollinearity, perfect linearity among parameters, zero conditional mean and a random sample of N observation. The threshold and assumption for the Hausman test are that if the p-value is greater than 0.05, then the random effect estimator should be chosen; otherwise, the FE regression model should be selected.

Before presenting the models with the variables, this thesis presents the theoretical model, which is expressed as:

$$Yit = \alpha + \beta 1Xit + \beta 2SRit + \beta 3X*Zit + \beta 3Cit + \varepsilon it$$

where Yit denotes the dependent variable for firm i in time t; Xit represents the independent variables for firm i in time t; Zi is a moderating variable for firm i in time t; Cit is a control variable for firm i in time t; α, $\beta 1$, $\beta 2$ and $\beta 3$ are the coefficients to be estimated; and εit is the error term.

Given the theoretical model discussed in the previous subsections, the current research developed the FE panel regression models as presented in Table 4.12

Table 4.12 Research models and methods

Model	Method
RQ1: How does the SR index developed for KSA listed firms differ from the standard GRI index in its ability to capture the contextual factors that are specific to the firms' operations?	
Comparative analysis	T-tests
RQ2: How does SR affect the FP of KSA listed firms?	
Model pre-COVID-19: financial performance = $\alpha + \beta 1ECO + \beta 2SOC + \beta 3ENV + \beta 4TSR + \beta 5SIZE + \beta 6AGE + \varepsilon$ Model including COVID-19: financial performance = $\alpha + \beta 1ECO + \beta 2SOC + \beta 3ENV + \beta 4TSR + \beta 5SIZE + \beta 6AGE + \varepsilon$	FEM
RQ3: How does SR affect the NFP of KSA listed firms?	
Model pre-COVID-19: non-financial performance = $\alpha + \beta 1ECO + \beta 2SOC + \beta 3ENV + \beta 4TSR + \beta 5SIZE + \beta 6AGE + \varepsilon$ Model including COVID-19: non-financial performance = $\alpha + \beta 1ECO + \beta 2SOC + \beta 3ENV\ \beta 4TSR + + \beta 5SIZE + \beta 6AGE + \varepsilon$	FEM
RQ4: Do CG mechanisms moderate the impact of SR and FP in KSA listed firms?	
Model pre-COVID-19: financial performance = $\alpha + \beta 1TSR + \beta 2BS + \beta 3ID + \beta 4ACS + \beta 5IMAC + \beta 6QAC + \beta 7BGD + \beta 6GOV + \beta 7FOR + (\beta 8TSR * BS) + (\beta 9TSR * ID) + (\beta 10TSR * ACS) + (\beta 11TSR * IMAC) + (\beta 14TSR * QAC) + (\beta 15TSR * BGD) + (\beta 12TSR * GOV) + (\beta 13TSR * FOR) + \beta 18SIZE + \beta 19AGE + \varepsilon$ Model including COVID-19: financial performance = $\alpha + \beta 1TSR + \beta 2BS + \beta 3ID + \beta 4ACS + \beta 5IMAC + \beta 6QAC + \beta 7BGD + \beta 6GOV + \beta 7FOR + (\beta 8TSR * BS) + (\beta 9TSR * ID) + (\beta 10TSR * ACS) + (\beta 11TSR * IMAC) + (\beta 14TSR * QAC) + (\beta 15TSR * BGD) + (\beta 12TSR * GOV) + (\beta 13TSR * FOR) + \beta 18SIZE + \beta 19AGE + \varepsilon$	FEM
RQ5: Do CG mechanisms moderate the impact of SR and NFP in KSA listed firms?	
Model pre-COVID-19: non-financial performance = $\alpha + \beta 1TSR + \beta 2BS + \beta 3ID + \beta 4ACS + \beta 5IMAC + \beta 6QAC + \beta 7BGD + \beta 6GOV + \beta 7FOR + (\beta 8TSR * BS) + (\beta 9TSR * ID) + (\beta 10TSR * ACS) + (\beta 11TSR * IMAC) + (\beta 14TSR * QAC) + (\beta 15TSR * BGD) + (\beta 12TSR * GOV) + (\beta 13TSR * FOR) + \beta 18SIZE + \beta 19AGE + \varepsilon$ Model including COVID-19: non-financial performance = $\alpha + \beta 1TSR + \beta 2BS + \beta 3ID + \beta 4ACS + \beta 5IMAC + \beta 6QAC + \beta 7BGD + \beta 6GOV + \beta 7FOR + (\beta 8TSR * BS) + (\beta 9TSR * ID) + (\beta 10TSR * ACS) + (\beta 11TSR * IMAC) + (\beta 14TSR * QAC) + (\beta 15TSR * BGD) + (\beta 12TSR * GOV) + (\beta 13TSR * FOR) + \beta 18SIZE + \beta 19AGE + \varepsilon$	FEM

Robustness test	
Model pre-COVID-19: financial performance = $\alpha + \beta 1TSR + \beta 2BS + \beta 3ID + \beta 4ACS + \beta 5IMAC + \beta 6QAC + \beta 7BGD + \beta 6GOV + \beta 7FOR_{+} (\beta 8TSR * BS) + (\beta 9TSR * ID) + (\beta 10TSR * ACS) + (\beta 11TSR * IMAC) + (\beta 14TSR * QAC) + (\beta 15TSR * BGD) + (\beta 12TSR * GOV) + (\beta 13TSR * FOR) + \beta 18SIZE + \beta 19AGE + \varepsilon$ Model including COVID-19: financial performance = $\alpha + \beta 1TSR + \beta 2BS + \beta 3ID + \beta 4ACS + \beta 5IMAC + \beta 6QAC + \beta 7BGD + \beta 6GOV + \beta 7FOR_{+} (\beta 8TSR * BS) + (\beta 9TSR * ID) + (\beta 10TSR * ACS) + (\beta 11TSR * IMAC) + (\beta 14TSR * QAC) + (\beta 15TSR * BGD) + (\beta 12TSR * GOV) + (\beta 13TSR * FOR) + \beta 18SIZE + \beta 19AGE + \varepsilon$	GMM
Model pre-COVID-19: non-financial performance = $\alpha + \beta 1TSR + \beta 2BS + \beta 3ID + \beta 4ACS + \beta 5IMAC + \beta 6QAC + \beta 7BGD + \beta 6GOV + \beta 7FOR_{+} (\beta 8TSR * BS) + (\beta 9TSR * ID) + (\beta 10TSR * ACS) + (\beta 11TSR * IMAC) + (\beta 14TSR * QAC) + (\beta 15TSR * BGD) + (\beta 12TSR * GOV) + (\beta 13TSR * FOR) + \beta 18SIZE + \beta 19AGE + \varepsilon$ Model including COVID-19: non-financial performance = $\alpha + \beta 1TSR + \beta 2BS + \beta 3ID + \beta 4ACS + \beta 5IMAC + \beta 6QAC + \beta 7BGD + \beta 6GOV + \beta 7FOR_{+} (\beta 8TSR * BS) + (\beta 9TSR * ID) + (\beta 10TSR * ACS) + (\beta 11TSR * IMAC) + (\beta 14TSR * QAC) + (\beta 15TSR * BGD) + (\beta 12TSR * GOV) + (\beta 13TSR * FOR) + \beta 18SIZE + \beta 19AGE + \varepsilon$	GMM

Note: Financial performance is proxied with ROA, ROE and TQ; non-financial performance is proxied with MS and IBP; TSR= total sustainability reporting; BS = board size; ID = independence directors; ACS = audit committee size; IMAC = independent member of audit committee; QAC = quality of audit committee; BGD = board gender diversity; GOV = government ownership; FOR = foreign ownership; SIZE = firm size; AGE = firm age; E = error term; FEM = fixed effect method; GMM = generalised method of moments.

4.13 Summary

This chapter presented the conceptual framework that was developed using a multi-theoretical approach that incorporated the stakeholder, legitimacy, agency and institutional theories. Founded on the conceptual framework, this research's hypotheses described the relationship between the study variables. This chapter also discussed the sample period, explained how the final sample size was determined and outlined the operationalisation of each variable that was used in this research. This chapter also discussed the measurement of each variable and its respective source, after which it discussed the various methods of data analysis and empirical analysis that were used throughout this research. The FE panel regression was implemented to investigate how SR affects firm performance, as well as the moderating role that CG plays in this relationship. Finally, the GMM technique was employed for the robustness of this study. The following chapter discusses the results that were obtained of from this research's data analysis.

Chapter 5: Data analysis and results

5.1 Introduction

The findings derived from this research's data analysis are reported in this chapter, in relation to the empirical model and methodology suggested in Chapter 4. Specifically, Section 5.2 summarises the descriptive statistics of independent, dependent, moderating and control variables while also demonstrating key features (e.g., mean, standard deviation, minimum and maximum coefficient of variation). Section 5.3 documents the results obtained from the classical assumption analysis of linear regression. The present research explored the key data features that fulfilled the basic assumptions of the classical linear regression model—that is, heteroscedasticity, autocorrelation and Spearman's rank correlation matrix. Section 5.4 discusses the results of the paired sample t-test, which was performed to compare between the standard GRI and modified GRI. Section 5.5 illustrates the hypothesis testing, which used the FE panel regression model (incl. linear and logistic regression) to provide a conclusive estimate of the findings derived from regression results to either confirm or negate the hypotheses. The periods before and including COVID-19 were studied to ascertain whether the pandemic greatly influenced the respective variables. Finally, Section 5.6 summarises and concludes the chapter.

5.2 Descriptive statistics

The descriptive statistics section encompasses summary statistics, a correlation matrix of all variables and an analysis of changes before and after regulatory adjustments. The statistics relating to the variables and their key descriptive features are tabulated below. Table 5.1 displays the relevant descriptive statistics for all variables in relation to a sample size of 121 companies (690 observations). The variables in this table comprise the following subsets: SR, CG mechanisms, firm performance and control variables.

Table 5.1 Descriptive statistics of non-binary variables

Variable	Obs.	Mean	Std. Dev.	Min	Max	CV
Independent variable: SR						
ECO	690	0.470	0.103	0.100	0.800	21.915
ENV	690	0.201	0.191	<0.001	0.830	95.025
SOC	690	0.332	0.115	0.070	0.760	35.639
TSR	690	1.003	0.356	0.170	2.200	35.494
Moderating variables: CG						
BS	690	8.462	1.488	5.000	15.000	17.584
ID	690	37.150	24.789	<0.001	90.900	60.458
ACS	690	3.497	0.697	2.000	6.000	19.931
IMAC	690	0.767	0.232	<0.001	1.000	30.248
GOV	690	0.098	0.221	<0.001	0.930	225.510
FOR	690	0.198	0.278	<0.001	0.980	140.404
Dependant variables: FP and NFP						
ROA	690	3.080	7.087	-33.477	38.195	230.097
ROE	690	4.359	13.151	-67.277	54.916	302.391
TQ	690	1.626	0.895	0.529	7.980	55.043
MS	690	9.907	14.463	0.008	77.381	145.988
Control variables						
FS	690	6.360	1.420	1.880	9.970	22.327
FA	690	28.690	14.358	2.000	65.000	50.043

Note: Obs = number of observations; Std. Dev. = standard deviation; Min = minimum value; Max = maximum value; CV = coefficient of variation; ECO = economic sustainability reporting; ENV = environmental sustainability reporting; SOC = social sustainability reporting; TSR = total of sustainability reporting; ROA = return on assets; ROE = return on equity; TQ = Tobin's Q; MS = market share; BS = board size; ID = independent director; ACS = audit committee size; IMAC = independent member of audit committee; GOV = government ownership; FOR = foreign ownership; FS = firm size; FA = firm age.

Table 5.1 clearly reveals that the mean value for ECO is 0.47, with a possible deviation of 0.103 and minimum and maximum values 0.1 and 0.8. The coefficient of variation depicted the possibility of approximately 21.915% variation in the mean score; given that this is greater than 10%, it suggests a higher possible variation. This further indicates that most observations are dispersed from the mean value. In contrast, this variability was higher for ENV, so there was a mean score of 0.201 with a standard deviation of 0.191 (i.e., approximately 95% variation). This result depicts a scenario of significantly high variation in the mean value and observational values. This research can thus argue that ENV exhibits higher variation when compared to ECO in the KSA economy.

Similarly, the SOC mean value was 0.332, with a minimum value of 0.07 and maximum value of 0.76. The standard deviation for SOC was 0.115, which demonstrates an approximately 35.639% coefficient of variation in the mean value. Further, the mean value for TSR was 1.003, with a

standard deviation of 0.356 and minimum and maximum values of 0.17 and 2.2, respectively. The coefficient of variation depicts a larger variation (i.e., 35.494% variation in the mean value). Therefore, the mean values and coefficient of variation for the respective variables (i.e., ECO, ENV, SOC and TSR) are higher, which signifies that the data are more widely dispersed around the mean. It is true that the coefficient of variation should be higher, given that the mean values obtained in Alhazmi (2017), Alotaibi and Hussainey (2016), Habbash (2016) and Issa and Fang (2019) were 0.25, 9.433, 4.114 and 0.18, respectively. The higher value identified in the present research indicates an improvement in total sustainability, which could be linked to the application of IFRS in 2017 and the KSA government's Saudi Vision 2030 economic blueprint released in 2016. Although Platonova et al. (2018) displayed a higher total sustainability score, their study focused on the Arab Gulf countries rather than solely KSA.

The ROA variable yielded a minimum value of –33.477% and maximum value of 38.195%, with the average value of 3.080% and a standard deviation and coefficient of variation of 7.087 and 230.097, respectively. This suggests that variation is relatively high, and that ROA represents 3.08%. Further, the proportion between company earnings or net income and total assets was 3.08%. Regarding ROA, other studies focusing on the KSA such as Platonova et al. (2018), Alhazmi (2017), Razak (2015) and Abdulhaq and Muhamed (2015) revealed ROA mean values of 0.0192, 0.06, 0.0488 and 0.1057, respectively. The difference in these results relates to the period adopted in the research sample; previous studies examined a sample of the banking sector from 2000 to 2014, while the present study used a sample of non-financial listed companies in KSA from 2015 to 2020.

The ROE variable displayed a minimum value of –67.277% and maximum value of 54.916%, while the average value was 4.359% and the standard deviation and coefficient of variation were 13.151 and 302.391, respectively. This implies that variation is relatively high, and that ROE represents 4.36%. This indicates that the proportion between company net income and total equity was 4.36%; it should be noted that other studies such as Mallin et al. (2014) and Issa (2017) exhibited ROE mean values of 5.71% and 6.25%, respectively. These results still comprise the same range as revealed in existing studies. Further, the TQ variable displayed a minimum value of 0.529 and maximum value of 7.98, while the average value was 1.626 and the standard deviation

and coefficient of variation were 0.895 and 55.043, respectively. This indicates again that variation was relatively high. TQ represented 1.626, indicating that the proportion between the market value of a company divided by the replacement cost of its assets is 1.626 times, which is a similar result to the results obtained by Alhazmi (2017) and Hatrash (2018), who reported mean values of 1.78 and 1.706, respectively. Further, Ammer et al. (2020) exhibited a mean value of 0.80%. The key reasons for the difference observed in the mean values were the different time period and chosen variables.

The MS variable displayed a minimum value of 0.008% and a maximum value of 77.381%, with an average value of 9.907% and standard deviation of 14.463. The coefficient of variation value was relatively high at 145.988, which indicates that great MS disparities exist in KSA firms. This signifies that MS represents 9.91% of the total MS industry. Studies such as Alsahafi (2017) found that the mean value of MS was 5.3%, which confirms differences in the results when they are compared to those from previous studies. These differences are caused by varying periods being analysed and various industries in which the companies operate. For example, Alsahafi's (2017) study used the 2009–2018 period and company sector differences in his research.

The BS variable exhibited a minimum value of five and maximum value of 15, while the average value was 8.462. Further, the standard deviation for BS and its coefficient of variation were relatively high at 1.488 and 17.584, respectively. This indicates that KSA businesses contain notable disparities in BS. BS generally numbers between eight and nine people, and it aligns with Alsahafi (2017) study of 169 firms listed on the Saudi Stock Exchange, which displayed a mean value of 8.19. The present research's results demonstrate similarities with the results of Alsahafi (2017). The independent director variable had a minimum value of 0% and maximum value of 90.90%, with an average value of 37.15% and standard deviation of 24.789. The high coefficient of variation value of 60.458 indicates the presence of great disparities in the IDs of this research's sample (IDs represent 37.32%). Alotaibi and Hussainey (2016) reported mean values for IDs of 4.064 and a standard deviation of 1.587. The difference in the results is attributed to the selected period (2013–2014) and the sector that was researched.

The ACS variable displayed a minimum value of two and a maximum value of six, while the average value was 3.497 and standard deviation was 0.697. Therefore, the audit committee's size is generally between three and four people, which aligns with Alotaibi and Hussainey (2016); these scholars reported a mean value of 3.316, although this is somewhat lower than Bagais and Aljaaidi's (2020) reported value (mean value of nine). The difference in the results is again attributed to the different sectors explored. Bagais and Aljaaidi (2020) considered the energy industry sector in KSA using 54 firm–year observations for the 2005–2018 period, which revealed similarities with the results of Alotaibi's (2016) research. The independent member of the audit committee variable exhibited a minimum value of zero and maximum value of 1, while the average was 0.767 with a standard deviation of 0.232. This signifies that average companies with their independent audit committee portrayed a value of 76.7%. Al-Matari (2022) recently reported a mean value for audit committee independence at 26.1%, while Al-Matari et al. (2012) displayed the mean value of 0.811 for audit committee independence. Therefore, similarities can be found with the results of the present research. The difference in results when compared with Al-Matari's (2022) study was caused by different sectors, model frameworks and proxies.

The government ownership variable displayed a minimum value of zero and a maximum of 0.93, while the average value was 0.098 with a standard deviation of 0.221. This signifies that government ownership represents 9.8%. Alsahafi (2017) found that the mean value of a firm with government ownership was 0.09, with a standard division of 0.18. Further, Habbash (2016) found that government-owned firms have a mean value of 0.077 and a standard deviation is 0.172. Finally, Alsulayhim (2020) discovered a mean value of 0.0699, as well as a standard deviation of 0.16154. These results are similar to the results of previous studies.

The foreign ownership variable had a minimum value of zero and a maximum value of 0.98, with an average value of 0.198 and standard deviation of 0.278. This suggests that most companies in the samples with foreign ownership amount to 19.8%. Alqahtani (2019) and Alsulayhim (2020) found that the mean value of firms with foreign ownership was 0.0834 and 0.0172, and the standard deviation were respectively 0.07048 and 0.05296. These results confirm the similarities with the results documented in the study by Alsulayhim (2020). The key difference between the current

research's results and those of Alqahtani (2019) was caused by the difference in the time being evaluated.

Firm size variable has a minimum value of 1.88 and a maximum value of 9.97, with an average value of 6.36 and a standard deviation of 1.42. This entails that the firm size logarithm of total assets amounted to 6.36. Alhazmi (2017) found that the mean value of firm size was 12.411, while Platonova et al. (2018) discovered that the mean value of firm size was 3.7292. These results further indicate only a slight difference in the results of other research, which is mainly explained by the different sectors and time periods chosen. Alsahafi (2017) used the years 2009 to 2014, while Alhazmi (2017) examined certain companies that operated in the finance sector, and Platonova et al. (2018) examined Islamic banks for the 2000–2014 period.

The firm age variable had a minimum value of two and a maximum value of 65, while the average value was 28.69 with a standard deviation of 14.358. This indicates that the average age of firms varies from 28 to 29 years. Alhazmi (2017) found that the mean value of firm age was 24.65. In their work, Al-Malkawi and Javaid (2018) studied the 10-year period from 2004 to 2013 and noted that a firm's age signified its value of 23.34. More similarities can be found regarding the results of previous studies. For the IBP variable, the frequency of zero (i.e., no IBP applied) comprised 14.8% of firms in the study, while 85.2% of firms applied an IBP. This outcome is different from research conducted by Hegazy et al. (2020), who reported a mean IBP value of 71.42%. Regarding the ACQ, less than half (44.1%) of the sample displayed a quality level that is similar to what Asiriuwa et al. (2018) documented. The minimum and maximum values for board gender diversity were 0 and 1, respectively, while the frequency of 0 was 653 and frequency of 1 was 37. This result differed from those of Wang and Sarkis (2017), who revealed a mean value of 8%. The frequency value of 0 was displayed at 94.6%, while the value of 1 amounted to 5.4%.

The results of the descriptive statistics discussed in this subsection present values that are similar to those of previous studies focusing on KSA, which suggests that the data are generalisable to KSA (Al-Bassam et al., 2018; Asiriuwa et al., 2018; Habbash, 2017; Hegazy et al., 2020). Table 5.2 below displays the descriptive statistics of the binary variables used in this study.

Table 5.2 Descriptive statistics of binary variables

Variables	Obs.	Min.	Max.	Frequency of zero	Frequency of one	% of zero	% of one
IBP	690	0	1	102	588	14.8%	85.2%
QAC	690	0	1	386	304	55.9%	44.1%
BGD	690	0	1	653	37	94.6%	5.4%
IFRS	690	0	1	230	460	33.3%	66.7%

Note: BGD = board gender diversity; QAC = quality of audit committee; IBP = internal business perspective; IFRS = International financial reporting standards, Obs. = observations.

For the IBP, quality of audit committee (QAC) and board gender diversity (BGD) variables, a zero outcome indicated that they were not available in the company, while an outcome of one indicated that they were. Regarding IFRS, the zero variable denoted a pre-IFRS implementation, while a one denoted a post-IFRS implementation. Among the 690 sample companies, the analysis of IFRS implementation revealed that 33.3% (230 companies) had a frequency of zero, while 66.7% (460 companies) had a frequency of one. These findings indicate a relatively higher level of IFRS implementation during the selected study period. For the IBP variable, 102 companies (14.8%) were not available for IBP, while 588 (85.2%) were. For the QAC variable, most companies (386; 55.9%) were available, while the remaining 304 (44.1%) were not. Regarding the BGD variable, most companies (653; 94.6%) were available for BGD, while the remaining 37 (5.49%) were not.

5.3 Classic assumption test

The classical assumption test was performed to determine whether the requirements that must be satisfied in the OLS linear regression model are met or not. If the model aims to be useful as an estimator, then it must satisfy certain assumptions, as indicated below (Garson, 2012):

1. The residual regression must have a regularly distributed distribution.
2. The dependent and independent variables have a linear relationship.
3. The residual is rectangular in form and homoscedastic.
4. The model assumes a lack of multicollinearity, which indicates that the independent variables are not closely linked.

Table 5.3 displays the results pertaining to heteroscedasticity and autocorrelation. For heteroscedasticity, the null hypothesis was rejected when the heteroscedasticity probability indicated a p-value > 0.05 and when the null hypothesis contended that heteroscedasticity was evident in the regression model. However, no heteroscedasticity was observed in the present research. Heteroscedasticity is the opposite of homoscedasticity, which denotes a condition in which an inequality of variance is caused by the error for all observations of each independent variable in the regression model. Conversely, the notion of homoscedasticity denotes when the variance in the error is the same for all observations of each independent variable in the regression model (Sekaran & Bougie, 2016). Further, the autocorrelation test aims to determine whether a correlation exists between the confounding errors (residual) in period t and errors in period t-1 (previous) in a linear regression. In brief, the autocorrelation test is a statistical analysis that determines whether a correlation of variables is observed in the prediction model with changes in time. Therefore, if the assumption of autocorrelation occurs in a prediction model, then the disturbance value is no longer in independent pairs; it is in autocorrelation pairs (Sekaran & Bougie, 2016). The decision rule for this is a p-value > 0.05, which signifies that the regression model does not have an autocorrelation problem. In addition to autocorrelation, the VIF was used to detect multicollinearity. According to Vittinghoff et al. (2012), VIF values of less than 10 indicate an absence of multicollinearity.

Table 5.3 Heteroscedasticity and autocorrelation

Model	Heteroscedasticity		Autocorrelation	
	p-value	Conclusion	p-value	Conclusion
Model 1A: ROA no interaction pre-COVID-19	0.053	No heteroscedasticity	0.067	No autocorrelation
Model 1B: ROA no interaction including COVID-19	0.064	No heteroscedasticity	0.063	No autocorrelation
Model 1C: ROA interaction model pre- COVID-19	0.057	No heteroscedasticity	0.051	No autocorrelation
Model 1D: ROA interaction including COVID-19	0.081	No heteroscedasticity	0.058	No autocorrelation
Model 2A: ROE no interaction pre-COVID-19	0.619	No heteroscedasticity	0.073	No autocorrelation
Model 2B: ROE no interaction including COVID-19	0.234	No heteroscedasticity	0.065	No autocorrelation
Model 2C: ROE interaction model pre-COVID-19	0.460	No heteroscedasticity	0.071	No autocorrelation
Model 2D: ROE interaction including COVID-19	0.252	No heteroscedasticity	0.068	No autocorrelation
Model 3A: TQ no interaction pre-COVID-19	0.063	No heteroscedasticity	0.054	No autocorrelation
Model 3B: TQ no interaction including COVID-19	0.081	No heteroscedasticity	0.059	No autocorrelation
Model 3C: TQ interaction model pre-COVID-19	0.096	No heteroscedasticity	0.066	No autocorrelation
Model 3D: TQ interaction including COVID-19	0.077	No heteroscedasticity	0.067	No autocorrelation
Model 4A: MS no interaction pre-COVID-19	0.089	No heteroscedasticity	0.059	No autocorrelation
Model 4B: MS no interaction including COVID-19	0.098	No heteroscedasticity	0.062	No autocorrelation
Model 4C: MS interaction model pre-COVID-19	0.084	No heteroscedasticity	0.069	No autocorrelation
Model 4D: MS interaction including COVID-19	0.072	No heteroscedasticity	0.064	No autocorrelation
Model 5A: IBP no interaction pre-COVID-19	0.168	No heteroscedasticity	0.052	No autocorrelation
Model 5B: IBP no interaction including COVID-19	0.254	No heteroscedasticity	0.061	No autocorrelation
Model 5C: IBP interaction model pre-COVID-19	0.095	No heteroscedasticity	0.053	No autocorrelation
Model 5D: IBP interaction including COVID-19	0.108	No heteroscedasticity	0.058	No autocorrelation

According to the results displayed in Table 5.3, no homoscedasticity or autocorrelation were observed in the present research. The LM test was the next test performed for this research. The LM test aims to choose between OLS (common effect) or RE. The RE significance test was devised by Bruesch-Pagan, while the OLS (common effect) also refers to a pooled regression effect. If the p-value < 0.05, then H0 is rejected; this indicates that the RE model was the correct estimate for the panel data regression. However, if the p-value > 0.05, then the H0 cannot be rejected; this signifies that RE model was not applicable. Instead, a model using OLS (common effect) might predict the correct estimate for the panel data regression. Table 5.4 summarises the results of this analysis.

The table results overleaf indicate that the p-value for the LM test was < 0.001. Model 1 denotes a period before COVID-19 (2015–2019), while model 2 includes the first year of the COVID-19 pandemic (2020). Consequently, the results suggest that these selected models should include OLS pooled regression.

Table 5.4 Lagrange multiplier test

Model	ROA		ROE		TQ		MS		IBP		OLS vs Random
	Chi^2	p-value	Chi^2	p-value	Chi^2	p-value	Chi^2	p-value	Chi^2	p-value	
1A: No interaction pre-COVID-19	576.33	<0.001	552.09	<0.001	601.04	<0.001	576.98	<0.001	529.74	<0.001	OLS
1B: No interaction including COVID-19	514.12	<0.001	506.82	<0.001	577.31	<0.001	521.76	<0.001	500.69	<0.001	OLS
1C: Interaction model pre-COVID-19	552.55	<0.001	554.41	<0.001	602.54	<0.001	565.99	<0.001	558.99	<0.001	OLS
1D: Interaction including COVID-19	541.62	<0.001	511.65	<0.001	546.64	<0.001	576.88	<0.001	503.65	<0.001	OLS

The next analysis performed in the present research was the Spearman correlation matrix test. Spearman rank correlation determines the level of relationship, or it tests the significance of the associated hypothesis if each variable connected to the data is in ordinal form. Notably, the data sources between variables do not have to be the same. Correlation analysis is one method for determining the direction and strength of a linear relationship between two variables. Further tests using VIF were also performed to detect multicollinearity among the model variables. The correlation values of the variables for this research period are outlined in Table 5.5.

Table 5.5 Spearman correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) IFRS	1.000														
(2) ECO	0.012	1.000													
(3) ENV	-0.021	0.344	1.000												
(4) SOC	-0.010	0.652	0.845	1.000											
(5) TSR	-0.011	0.686	0.910	0.966	1.000										
(6) BS	0.005	0.206	0.191	0.269	0.249	1.000									
(7) ID	0.016	-0.009	0.034	0.003	0.016	-0.069	1.000								
(8) ACS	-0.012	0.151	0.232	0.259	0.252	0.353	-0.019	1.000							
(9) IMAC	0.044	-0.079	-0.101	-0.106	-0.111	-0.173	0.159	-0.026	1.000						
(10) BGD	0.018	0.069	0.019	0.070	0.053	0.082	-0.102	-0.031	0.081	1.000					
(11) QAC	0.014	0.300	0.272	0.377	0.355	0.264	-0.076	0.205	-0.015	0.061	1.000				
(12) GOV	0.007	0.242	0.484	0.488	0.488	0.126	-0.089	0.170	-0.171	0.069	0.357	1.000			
(13) FOR	0.029	0.016	-0.013	0.009	0.001	-0.041	0.017	-0.050	0.095	-0.015	-0.072	0.012	1.000		
(14) FS	0.023	0.360	0.110	0.165	0.217	0.124	-0.185	0.145	-0.078	0.057	0.252	0.168	0.013	1.000	
(15) FA	0.017	-0.033	0.160	0.088	0.104	0.018	0.016	-0.014	-0.174	0.054	-0.041	-0.043	0.029	-0.045	1.000

Note: IFRS = international financial reporting standards; ECO = economic sustainability reporting; ENV = environmental sustainability reporting; SOC = social sustainability reporting; TSR = total sustainability reporting; BS =board size; ID = independent director; ACS = audit committee size; IMAC = independent member of audit committee; BGD = board gender diversity; QAC = quality of audit committee; GOV = government ownership; FOR = foreign ownership; FS = firm size; FA = firm age.

According to the results from the correlation matrix test, most variables had coefficient values within the 0.7 bound. Further tests using VIF were then employed to determine whether there were any issues with multicollinearity. The results in the model estimation tables indicated no issues of high multicollinearity among the chosen variables. This research concludes that collinearity, heteroscedasticity and multicollinearity are not evident in the selected dataset. For example, the correlation between BS and ECO was 0.206, while it was 0.191 for BS and ENV and 0.269 for BS and SOC. The findings demonstrated that all variables had a minimal or low correlation. For example, Table 5.6 revealed a –0.023 correlation coefficient between IDs and ECO, which is a low but strong negative connection, as well as a 0.482 correlation coefficient between government ownership and ENV, which is a moderate positive correlation. Therefore, the correlation matrix data in this study indicated that collinearity was not an issue.

5.4 T-test comparison between the standard GRI Index and the modified GRI Index indices

A t-test denotes a type of parametric inferential statistics that is commonly used to demonstrate the difference in the means of the two groups (Ruxton, 2006), while a paired t-test can be used on two pairs of data. In brief, the purpose of this test is to determine any difference in the means between two paired or related samples. Since this test involves a pair, the data from both samples must have the same amount, or they must originate from the same source (Sekaran & Bougie, 2016).

5.4.1 Standard GRI Index and modified GRI Index t-test

In this subsection, a paired sample t-test was performed to compare the means of the GRI index with the present research's modified GRI, which includes elements from GRI and other Islamic items (see Table 5.6). The difference between these indexes is that GRI only contains items of business sustainability; it does not incorporate Islamic items. The GRI items comprise economic indicators, such as economic value, environmental factors (e.g., materials, recycle input) and social factors (e.g., health, safety, training, diversity, equality of opportunity; GRI, 2016). The proposed GRI not includes not only the GRI items but also Islamic items (e.g., shariah screening during investments, Qardh-e-Hassan, charity, Islamic value that conserves the environment, Islamic training and education for

staff; Amran et al., 2017; Aribi & Gao, 2011; Haniffa & Hudaib, 2007). As discussed in Chapter 4, the modified GRI has been adapted after undergoing quantitative testing from the experts in the relevant field to determine the index's reliability and validity.

Table 5.6 T-test results for the standard and modified GRI Index

Paired t-test: Modified GRI—Standard GRI index, without Islamic index							
	Obs.	**Mean1**	**Mean2**	**dif**	**St. Err**	**t-value**	**p-value**
Modified GRI	690	1.011	9.752	-1.609	0.025	10.851	<0.000
	Obs.	**Mean1**	**Mean2**	**dif**	**St. Err.**	**t-value**	**p-value**
Standard GRI index	690	1.009	5.890	-2.590	0.084	8.751	<0.000

The results reveal that the Mean 1 of the modified GRI was 1.011, which indicates the mean lowest in the modified GRI. Further, the Mean 2 of the modified GRI was 9.752, which indicates the highest mean of the modified GRI. Conversely, the Mean 1 of the GRI index without Islamic items was 1.009, which indicates the lowest mean in the GRI index. The Mean 2 of the GRI Index was 5.890, which indicates the highest mean in the GRI index. These results demonstrated that the p-value for both tests was < 0.001, which demonstrates a significant difference between groups. The modified GRI (GRI + Islamic items) obtained a higher mean value than the GRI index with no Islamic items. According to the findings, the modified GRI has a higher average value than the GRI alone, which signifies that the modified GRI discloses more information than the GRI alone.

5.4.2 T-test for sub-indices of the standard GRI Index and modified GRI Index

This t-test involved comparing the sub-indices of standard GRI and the sub-indices of the modified GRI, with the sub-indices included ECO, ENV and SOC. The aim of this test was to discover which sub-indices performed more effectively between the standard GRI and modified GRI (GRI + Islamic items).

Table 5.7, which outlines the paired samples statistics, summarises the descriptive values of each variable in the paired sample.

Table 5.7 T-test sub-indices results for the standard and modified GRI Index

Paired samples statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	ECO GRI	0.4643	690	0.10601	0.00404
	ECO modified GRI	0.6268	690	0.16782	0.00639
Pair 2	ENV GRI	0.2014	690	0.19165	0.00730
	ENV modified GRI	0.2051	690	0.19991	0.00761
Pair 3	SOC GRI	0.2693	690	0.11663	0.00444
	SOC modified GRI	0.3292	690	0.12850	0.00489

Paired samples correlations				
		N	**Correlation**	**Sig.**
Pair 1	ECO GRI and ECO modified GRI	690	0.656	<0.001
Pair 2	ENV GRI and ENV modified GRI	690	0.963	<0.001
Pair 3	SOC GRI and SOC modified GRI	690	0.759	<0.001

The results reveal that ECO GRI has a mean of 0.4643, while ECO modified GRI has a mean of 0.6268. This demonstrates that ECO modified GRI in the data performs better than ECO GRI. Further, ENV GRI had a mean of 0.2014, while ENV modified GRI had a mean of 0.2051. This signifies that the GRI ENV in the data was less effective than the ENV modified GRI. Finally, SOC GRI had a mean of 0.2693, while SOC modified GRI had a mean of 0.3292. This demonstrates that the SOC GRI in the data was less effective than the SOC modified GRI.

The paired samples correlations in Table 5.7 illustrates the relationship between each pair of variables in the paired sample tests. These results were obtained from the bivariate Pearson correlation coefficient (with a two-tailed significance test) for each pair of variables included. The result indicating the relationship between the sub-indices of GRI and those of the modified GRI demonstrated a fairly strong relationship. This can be evidenced by the correlation value of 0.656 for ECO, 0.963 for ENV and 0.759 for SOC. The highest correlation was between the ENV sub-index of GRI, which further demonstrated that the ENV sub-index performed much better than the ECO and SOC sub-indexes.

5.4.3 Paired t-test results for the sub-indices of the standard and modified GRI Index

Paired sample t-tests compare the sub-indices of the standard GRI and modified GRI, in order to determine which of them performed better. As mentioned, the paired t-test is a parametric test that can be used to investigate two paired data. The test intends to determine if there is a difference in the means between two paired or related samples. The paired sample t-test was performed in this comparative research by comparing the scores of two related groups and are presented in Table 5.8 below.

Table 5.8 T-test results between the sub-indices of the standard and modified GRI Index

Paired samples test									
		Paired differences					T	df	Sig. (2-tailed)
		Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
					Lower	Upper			
Pair 1	ECO GRI—ECO modified GRI	0.16246	0.12668	0.00482	-0.17193	0.15299	33.687	689	<0.001
Pair 2	ENV GRI—ENV modified GRI	0.00372	0.05358	0.00204	-0.00028	0.00773	1.826	689	0.068
Pair 3	SOC GRI—SOC modified GRI	0.05996	0.08575	0.00326	0.05355	0.06637	18.367	689	<0.001

The t-test results for the sub-indices revealed that the ECO sub-indices of the modified GRI had a higher mean than other sub-indices, so it can be concluded that the ECO sub-indices of the modified GRI were more effective than those of the GRI index.

The paired sample test results indicated a strongly significant difference between ECO GRI and ECO modified GRI, which leaned in favour of ECO modified GRI (p-value < 0.001). Therefore, the results of ECO GRI and ECO modified GRI underwent significant meaningful changes. Additionally, a strongly significant difference was observed between SOC GRI and SOC modified GRI, which leaned in favour of SOC modified GRI (p-value < 0.001). The results pertaining to SOC GRI and SOC modified GRI thus experienced a significant meaningful change. However, a moderate significant difference was observed between ENV GRI and ENV modified GRI, which leaned in favour of ENV modified GRI (p-value < 0.10) that was significant at the 10% level.

The results involving the use of GRI with the modified GRI indicate a significant difference at the 5% significance level for ECO and SOC, as well as a significant difference at the 10% significance level for ENV. When this difference was considered using the theme of disclosure in the GRI and modified GRI, many differences were generally observed. The difference in the level of SR disclosure that uses the GRI and Islamic indexes is that the SR standard (generally accepted or internationally standardised) is the most popular one for companies worldwide, while the Islamic index is the result of research founded on the need for standards. Reporting evidence that has been documented in this research can be used as a guideline for shariah-compliant companies in SR disclosure. The t-value is positive, and it indicates that the modified GRI is more effective than the GRI.

According to Dusuki and Dar (2007), social responsibility is critical when discussing the Islamic index for three reasons, which mandate that it functions in accordance with moral, ethical and social responsibility rules. The research findings indicate that the CSRD of shariah-compliant banks in certain areas—such as in energy, workplace health and safety, improving society and products and goods/services—is equal to or more effective than the CSRD of conventional banks. This research supports the findings of Anuar et al. (2004), who determined that shariah-compliant corporations engaged in more social reporting than non-compliant businesses. Additionally, according to Maali et al. (2006), the degree of social disclosure for shariah-compliant banks was still well below the standard, and voluntary social reporting in such banks varied greatly. Further, according to Chintaman (2014), Islamic banks are more imaginative in terms of implementing CSR strategies and programs.

5.5 Model selection and hypothesis testing

5.5.1 Model selection

In addition to the LM test, a Hausman test examined the basis for choosing the best model between FE and RE models. The Hausman test states that the null hypothesis can be rejected when the p-value is < 0.05, which indicates that an FE model should be employed. For Model 5, which is a logistic regression, the Hausman test was not needed (Ghozali, 2016). The results of the Hausman test are listed in Table 5.9.

Table 5.9 Hausman test results

Model	Hausman's specification test
Model 1A: ROA no interaction pre-COVID-19	0.030
Model 1B: ROA no interaction including COVID-19	0.032
Model 1C: ROA interaction model pre-COVID-19	0.022
Model 1D: ROA interaction including COVID-19	0.021
Model 2A: ROE no interaction pre-COVID-19	0.025
Model 2B: ROE no interaction including COVID-19	0.038
Model 2C: ROE interaction model pre-COVID-19	0.036
Model 2D: ROE interaction including COVID-19	0.032
Model 3A: TQ no interaction pre-COVID-19	0.033
Model 3B: TQ no interaction including COVID-19	0.045
Model 3C: TQ interaction model pre-COVID-19	0.035
Model 3D: TQ interaction including COVID-19	0.032
Model 4A: MS no interaction pre-COVID-19	0.042
Model 4B: MS no interaction including COVID-19	0.036
Model 4C: MS interaction model pre-COVID-19	0.041
Model 4D: MS interaction including COVID-19	0.037

According to the Hausman test results in Table 5.9, the p-values were less than 5% for all models that the current research assessed. Therefore, it can be concluded that the current study relied on the FE model because all diagnostic tests support its validity, and because it is thus better suited than the RE and panel regression models. The FE model estimates panel data by using dummy variables to capture differences in intercepts. The definition of FE is founded on the difference in the intercept between individuals, in which the intercept is the same across time (time-invariant). The FE model assumes that the difference between cross-sections is accommodated by a constant value (the intercept).

Estimates were made using a dummy variable that captures the difference in the constants between cross-sections when using the FE method. To test FE, this research conducted the first heteroscedasticity, autocorrelation and multicollinearity tests as previously described. After checking for the existence of FE in error terms, the model was summarised according to the following aspects (Ghozali, 2016):

1. H0: $A\ ci$=0 (no time-invariant factor in the error terms)

2. Modified Wald test for GroupWise heteroscedasticity in the FE regression model
3. H0: $\sigma\sigma ii2=\sigma\sigma 2$ for all i (no heteroscedasticity)
4. Wooldridge test for serial correlation
5. H0: No first-order autocorrelation
6. Test of over-identifying restrictions: FE versus RE
7. H0: Difference in coefficients that are not systematic (or the preferred model comprises RE).

An endogeneity test was then performed using Wooldridge's test to determine any endogeneity problems. The decision rule states that if p-value > 0.05, then H0 is rejected, and the decision is made that no significant correlation was found; it can thus be stated that no autocorrelation was found in the model. Regarding IBP, the Wooldridge test was not needed when a logistic regression was performed because its results do not behave like linear regression results. As Winkelmann and Xu (2022) highlighted regarding logistic regression, it is not necessary to specify how each individual effect relates to the regressors, nor is it necessary to assume how the individual effects are distributed. The results in Table 5.10 suggest that all variables have a Wooldridge test value > 0.05, which consequently indicates that no autocorrelation was found for any model.

Table 5.10 Woolridge test

	ROA	**ROE**	**TQ**	**MS**
Model 1A–D : No interaction pre-COVID-19	0.087	0.568	0.084	0.090
Model 2A–D: No interaction including COVID-19	0.090	0.076	0.077	0.086
Model 3A–D : Interaction pre-COVID-19	0.091	0.069	0.071	0.083
Model 4A–D: Interaction including COVID-19	0.092	0.077	0.078	0.092

5.5.2 Hypothesis testing

The FE model removes omitted variable bias by measuring changes within groups across time, usually by establishing dummy variables to represent the missing or unknown characteristics (Hsiao et al., 2002). The common effect model estimates parameters using the OLS method or the least squares method. The error component structure can be

ignored in the FE method model, which signifies that the parameters are estimated using the OLS method and that a dummy variable was added to the estimation process (Hsiao et al., 2002).

5.5.2.1 Fixed effects model 1A: Return on assets pre-COVID-19

This subsection discusses the FE of Model 1A, in which the dependent variable was ROA with no interaction. The independent variables in this model included the four variables of TSR, ECO, ENV and SOC, which have been used in previous studies (see Albitar et al., 2020; Hongming et al., 2020). Table 5.11 illustrates the results relating to the pre-COVID-19 selected period.

Table 5.11 Linear regression for return on assets pre-COVID-19 (2015–2019)

ROA	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	8.538	10.834	2.79	0.016	-29.817	12.741	3.717
ENV	+	18.827	10.151	1.85	0.032	-38.764	1.111	4.497
SOC	+	2.875	9.461	0.32	0.321	-14.87	10.897	2.867
TSR	+	10.001	7.012	1.43	0.077	-3.772	23.773	6.037
FS	+	-0.160	0.226	-0.71	0.760	-0.283	0.603	1.192
FA	+	0.069	0.021	3.27	0.001	0.027	0.110	1.046
Constant		-1.828	1.848	-0.99	0.162	-5.457	1.801	

Mean dependent variable	3.354	SD dependent variable	7.179
Adjusted R squared	0.327	Number of observations	581
F-test	3.642	Prob > F	0.003
Akaike crit. (AIC)	3932.117	Bayesian crit. (BIC)	3958.306

Notes: p-values have been adjusted where appropriate; ECO = economic sustainability reporting; ENV = environmental sustainability reporting; SOC = social sustainability reporting; TSR = total sustainability reporting; ROA = return on assets; ROE = return on equity; MS = market share; FS = firm size; FA = firm age.

Probability F value was 0.003 < 0.05, so the model can be said to fit. Adjusted R square 0.327 signified that 32.7% of the total variance of the dependent variable can be explained by the independent variables in the model. According to the VIF results, in which obtained values < 10 for all existing independent variables, it can be stated that no multicollinearity was observed in the present research. According to the estimation results, ROA can be expressed as a linear function of SR and control variables, as expressed by the following formula:

ROA = – 1.828 + 8.538** ECO + 18.827** ENV + 2.875 SCO + 10.001* TSR – 0.160 FS + 0.069*** FA

Regarding the relationship between ECO, ENV, SOC, TSR, FS, FA and ROA, the regression results suggest that ECO (prob = 0.016) and ENV (prob = 0.032) positively and significantly affected ROA. The variable of TSR (prob = 0.077) also positively and moderately significantly affected ROA. However, SOC had a positive coefficient but did not significantly affect ROA (prob = 0.321).

The regression results also revealed that although the control variable FA (prob = 0.001) positively and significantly affected ROA, FS (prob = 0.760) insignificantly and negatively affected ROA. These results indicate that when ECO, ENV and TSR increase, the company's performance as measured by ROA will subsequently improve.

5.5.2.2 Fixed effects model 1B: Return on assets including COVID-19

This subsection discusses the FE of Model 1B, in which the dependent variable was ROA with no interaction. Table 5.12 presents the results relating to the inclusion of COVID-19.

Table 5.12 Linear regression for return on assets including COVID-19 (2015–2020)

ROA	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	13.324	6.278	2.12	0.017	0.997	25.651	5.884
ENV	+	2.811	4.506	0.62	0.073	-6.035	11.658	1.309
SOC	+	4.918	7.613	2.65	0.074	-10.029	19.865	8.352
TSR	+	16.228	12.662	1.28	0.090	-41.089	8.633	5.402
FS	+	-0.015	0.207	-2.07	0.960	-0.392	0.423	1.211
FA	+	0.066	0.019	3.45	0.001	0.028	0.103	1.051
Constant		-3.650	3.981	-0.92	0.180	-11.466	4.165	

Mean dependent variable	3.087	SD dependent variable	7.084
Adjusted R squared	0.321	Number of observations	690
F-test	2.912	Prob > F	0.008
Akaike crit. (AIC)	4655.526	Bayesian crit. (BIC)	4687.283

Notes: p-values have been adjusted where appropriate.

As demonstrated in Table 5.12 above, the probability of the F-test was 0.008 < 0.05, so it can be stated that the model fits. Adjusted R square was 0.321, which signifies that 32.1% of the total variance of the dependent variable can be explained by the independent

variables in the model. According to the VIF results, which obtained values < 10 for all existing independent variables, it can be stated that no multicollinearity was observed in the present research. According to the estimation results, ROA can be expressed as a linear function of SR and control variables, as expressed by the following formula:

$$ROA = – 3.650 + 13.324^{**} ECO + 2.811^{*} ENV + 4.918^{*} SOC + 16.228^{*} TSR – 0.015 FS + 0.066^{***} FA$$

Regarding the relationship between ECO, ENV, SOC, TSR, FS, FA and ROA, the regression results indicated that ECO (prob = 0.017) positively and significantly affected ROA. Further, ENV (prob = 0.073), SOC (prob = 0.074) and TSR (prob = 0.090) positively and moderately significantly affected ROA.

The regression results also demonstrated that the control variable FA (prob = 0.001) positively and significantly affected ROA, while the control variable FS (prob = 0.960) had no significant effect on ROA.

5.5.2.3 Fixed effects model 1C: Return on assets pre-COVID-19 with interactions

This subsection discusses the FE of Model 1C, which included the dependent variable of ROA and an interaction between total SR and CG and control variables. Table 5.13 outlines the results relating to the pre-COVID-19 selected period.

Table 5.13 Linear regression for return on assets pre-COVID-19 (2015–2019)

ROA	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf. Interval		VIF
						Lower	Upper	
ECO	+	14.476	7.757	1.87	0.031	-0.762	29.714	7.773
ENV	+	3.058	6.287	0.49	0.313	-9.291	15.408	7.685
SOC	+	2.967	9.103	0.33	0.372	-14.914	20.849	3.228
TSR	+	0.054	0.014	1.35	0.138	-0.041	0.092	5.145
BS	+	0.632	0.695	0.91	0.182	-0.734	1.998	3.366
ID	+	-0.004	0.029	-0.13	0.550	-0.061	0.054	6.824
ACS	+	1.921	1.605	1.20	0.116	-1.232	5.073	3.221
IMAC	+	-2.345	2.436	-0.96	0.832	-7.130	2.441	3.941
BGD	+	1.966	3.800	0.52	0.302	-5.498	9.430	7.325
QAC	+	3.258	1.013	3.22	<0.001	1.268	5.248	3.221
GOV	+	0.881	1.724	0.51	0.304	-2.505	4.267	1.844
FOR	+	-5.125	1.619	-3.17	0.999	-8.305	-1.945	2.757
TSR*BS	+	-3.985	12.21	-0.33	0.628	-27.970	19.999	6.094
TSR*ID	+	1.086	1.312	0.83	0.204	-1.492	3.664	7.079
TSR*ACS	+	-21.255	13.562	-1.57	0.941	-47.893	5.384	6.052
TSR*IMAC	+	-1.737	3.740	-0.46	0.679	-9.084	5.609	5.107
TSR*BGD	+	-0.765	3.512	-0.22	0.586	-7.663	6.133	7.346
TSR*QAC	+	3.779	7.907	0.48	0.031	-11.751	19.310	4.930
TSR*GOV	+	1.537	1.352	2.14	0.021	-1.118	4.192	1.220
TSR*FOR	+	-2.075	0.657	-3.16	0.999	-3.365	-0.785	3.155
IFRS	+	-0.177	0.606	-0.29	0.615	-1.368	1.014	1.032
FS	+	-0.340	0.236	-1.44	0.925	-0.804	0.124	1.449
FA	+	0.080	0.021	3.78	<0.001	0.039	0.122	1.176
Constant		-0.331	6.351	-0.05	0.479	-12.805	12.143	

Mean dependent variable	3.336	SD dependent variable	7.193
Adjusted R squared	0.341	Number of observations	578
F-test	4.713	Prob > F	0.000
Akaike crit. (AIC)	386.152	Bayesian crit. (BIC)	3967.422

Notes: p-values have been adjusted where appropriate; ECO = economic sustainability reporting; ENV = environmental sustainability reporting; SOC = social sustainability reporting: TSR = total sustainability reporting; ROA = return on assets; ROE = return on equity; MS = market share; BS =board size; ID = independent directors; ACS = audit committee size; IMAC = independent member of audit committee; BGD = board gender diversity; QAC = quality of audit committee; GOV = government ownership; FOR = foreign ownership; TSR*BS = interaction between TSR (ECO, ENV, SOC) with BZ; TSR*ID = interaction between TSR (ECO, ENV, SOC) with BI; TSR*ACS = interaction between TSR (ECO, ENV, SOC) with AC; TSR*IMAC = interaction between TSR (ECO, ENV, SOC) with IMAC; TSR*QAC = interaction between TSR (ECO, ENV, SOC) with QAC; TSR*BGD = interaction between TSR (ECO, ENV, SOC) with BDG; TSR*GOV = interaction between TSR (ECO, ENV, SOC) with GOV; TSR*FOR = interaction between TSR (ECO, ENV, SOC) with FOR; FS = firm size; FA = firm age

The probability F value was 0.000 < 0.05, so the model can be said to fit. Adjusted R square was 0.341, which indicates that 34.1% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value < 10, so it can be stated that no multicollinearity was observed in this part of the research. According to the estimation results, ROA can be expressed as a linear function of SR, CG factors, interactions variables and control variables, as expressed by the following formula:

ROA = – 0.331+ 14.476** ECO + 3.058 ENV + 2.967 SOC + 0.054 TSR + 0.632 BS – 0.004 ID + 1.921 ACS – 2.345 IMAC + 1.966 BGD + 3.258*** QAC + 0.881 GOV – 5.125 FOR – 3.985 TSRxBS + 1.086 TSRxID – 21.255 TSRxACS – 1.737 TSRxIMAC – 0.765 TSRxBGD + 3.779** TSRxQAC + 1.537** TSRxGOV – 2.075 TSRxFOR – 0.177 IFRS – 0.340 FS + 0.080*** FA

Concerning the relationship between SR factors, CG and ROA,[5] the regression results revealed that ECO (prob = 0.031), QAC (prob < 0.001), the interaction between TSR and QAC (prob = 0.031) and the interaction between TSR and GOV (prob = 0.021) all positively and significantly affected ROA. Further, ENV (prob = 0.313), SOC (prob = 0.372), TSR (prob = 0.138), BS (prob = 0.182), ACS (prob = 0.116), BGD (prob = 0.302), GOV (prob = 0. 304) and the interaction between TSR and ID (prob = 0.204) all had a positive coefficient, though they did not significantly affect ROA. However, ID (prob = 0.550), IMAC (prob = 0.832), FOR (prob = 0.999), the interaction between TSR and BS (prob = 0.628), the interaction between TSR and ACS (prob = 0.941), the interaction between TSR and IMAC (prob = 0.679), the interaction between TSR and BGD (prob = 0.586), the interaction between TSR and FOR (prob = 0.999) and IFRS (prob = 0.615) all had a negative coefficient, though they did not significantly affect ROA. For the moderation hypothesis test, the most important variable was the interaction term (TSR*QAC). The independent variable and the moderating variables may be significant separately throughout the moderation process; however, this does not directly test the moderating hypothesis. The control variable, FA (prob < 0.001) positively and

[5] BS, ID, ACS, IMAC, BGD, QAC, GOV and FOR are moderating variables that represent the components of CG. These variables interact with the main independent variable, TSR (i.e., a composite of ECO, ENV, SOC) to examine how it affects the dependent variable (i.e., ROA). To support or reject this research's developed hypothesis for moderating variables, the interaction effect of these variables with the independent factor (i.e., SR) should be significant. The independent variable and moderating variables may be significant separately throughout the moderation process; however, this does not directly test the moderating hypothesis (Baron et al. 1986).

significantly affected ROA, but FS (prob = 0.925) negatively and insignificantly affected ROA.

5.5.2.4 Fixed effects model 1D: Return on assets including COVID-19 with interactions

This subsection discusses the FE of Model 1D, which included the dependent variable of ROA and an interaction between total SR and CG and control variables. Table 5.14 shows the results relating to the inclusion of the COVID-19 selected period.

Table 5.14 Linear regression for return on assets including COVID-19 (2015–2020)

ROA	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf. Interval		VIF
						Lower	Upper	
ECO	+	7.814	8.377	2.93	0.017	-8.635	24.263	8.648
ENV	+	-0.386	7.080	-0.05	0.522	-14.287	13.515	2.402
SOC	+	-11.717	8.003	-1.46	0.928	-27.430	3.997	1.176
TSR	+	0.018	0.011	1.63	0.103	-0.004	0.039	5.017
BS	+	0.054	0.760	2.07	0.022	-1.547	1.440	4.157
ID	+	-0.015	0.028	-0.56	0.712	-0.069	0.039	6.745
ACS	+	1.100	1.619	0.68	0.248	-2.079	4.279	2.402
IMAC	+	-3.457	2.079	2.66	0.952	-7.539	0.625	3.579
BGD	+	1.669	3.099	0.54	0.295	-4.417	7.755	7.510
QAC	+	2.523	0.912	2.77	0.003	0.732	4.313	3.197
GOV	+	0.234	1.533	0.15	0.439	-2.777	3.245	1.786
FOR	+	4.432	1.511	2.93	0.001	-7.399	-1.464	2.679
TSR*BS	+	7.819	13.763	0.57	0.285	-19.207	34.844	7.278
TSR*ID	+	1.547	1.217	1.27	0.102	-0.843	3.937	7.001
TSR*ACS	+	-13.051	13.708	-0.95	0.829	-39.968	13.866	8.404
TSR*IMAC	+	-2.501	3.226	-0.78	0.781	-8.835	3.833	4.471
TSR*BGD	+	-0.014	2.658	-0.01	0.502	-5.233	5.206	7.683
TSR*QAC	+	6.821	7.119	0.96	0.069	-7.157	20.799	5.238
TSR*GOV	+	1.925	1.269	1.52	0.065	-0.568	4.417	1.234
TSR*FOR	+	-2.023	0.614	-3.30	0.999	-3.229	-0.818	3.166
IFRS	+	-0.577	0.549	-1.05	0.853	-1.656	0.501	1.019
FS	+	-0.413	0.217	-1.90	0.971	-0.840	0.014	1.423
FA	+	0.067	0.019	3.47	0.005	0.029	0.104	1.163
Constant		-6.743	7.899	-0.85	0.197	-22.252	8.767	

Mean dependent variable	3.069	SD dependent variable	7.078
Adjusted R squared	0.308	Number of observations	690
F-test	4.454	Prob > F	0.000
Akaike crit. (AIC)	4575.518	Bayesian crit. (BIC)	4679.694

Notes: p-values have been adjusted where appropriate.

The probability F value was 0.000 < 0.05, so the model is said to fit. The adjusted R square was 0.308, which signifies that 30.8% of the total variance of the dependent variable can be explained by the independent variables in the model. This finding closely correlates to that of Alotaibi and Hussainey (2016), who reported an adjusted R square outcome of 0.31 or 31%. The VIF value < 10, so it can be stated that no multicollinearity was observed in this part of the research. According to the estimation results, ROA can be expressed as a linear function of SR, CG factors, interactions variables and control variables, as expressed by the following formula:

ROA = – 6.743 + 7.814** ECO – 0.386 ENV – 11.717 SOC + 0.018 TSR + 0.054** BS – 0.015 ID + 1.100 ACS – 3.457 IMAC + 1.669 BGD + 2.523** QAC + 0.234 GOV + 4.432*** FOR + 7.819 TSRxBS + 1.547 TSRxID – 13.051 TSRxACS – 2.501 TSRxIMAC – 0.014 TSRxBGD + 6.821** TSRxQAC + 1.925* TSRxGOV – 2.023 TSRxFOR – 0.577 IFRS – 0.413 FS + 0.067*** FA

Regarding the relationship between SR factors, CG and ROA, the regression results indicated that ECO (prob = 0.017), BS (prob = 0.022), QAC (prob = 0.003) and FOR (prob = 0.001) positively and significantly affected ROA. The interaction between TSR and QAC (prob = 0.069) and interaction between TSR and GOV (prob = 0.065) positively and moderately significantly affected ROA. Further, ENV (prob = 0.522), SOC (prob = 0.928), ID (prob = 0.712), IMAC (prob = 0.952), the interaction between TSR and ACS (prob = 0.829), the interaction between TSR and IMAC (prob = 0.781), the interaction between TSR and BGD (prob = 0.502), the interaction between TSR and FOR (prob = 0.999) and the IFRS (prob = 0.853) all had a negative coefficient, though they did not significantly affect ROA. Additionally, TSR (prob = 0.103), ACS (prob = 0.248), BGD (prob = 0.295), GOV (prob = 0.439), the interaction between TSR and BS (prob = 0.285) and the interaction between TSR and ID (prob = 0.102) all had positive coefficient, though they did not significantly affect ROA.

The regression results highlighted that the control variable FA (prob = 0.005) positively and significantly affected ROA, but that FS (prob = 0.971) had a negative coefficient and did not significantly affect ROA. The summary results on ROA from these four models are presented in Table 5.15.

Table 5.15 Summary of return on assets results

	Model 1A—Before COVID-19	Model 1B—Including COVID-19	Model 1C—Interaction before COVID-19	Model 1D—Interaction including COVID-19
ECO	8.538**	13.324**	14.476**	7.814**
ENV	18.827**	2.811**	3.058	-0.386
SOC	2.875	4.918*	2.967	-11.717
TSR	10.001*	16.228*	0.054	0.018
BS			0.632	0.054**
ID			-0.004	-0.015
ACS			1.921	1.1
IMAC			-2.345	-3.457
BGD			1.966	1.669
QAC			3.258***	2.523***
GOV			0.881	0.234
FOR			-5.125	4.432***
TSR*BS			-3.985	7.819
TSR*ID			1.086	1.547
TSR*ACS			-21.255	-13.051
TSR*IMAC			-1.737	-2.501
TSR*BGD			-0.765	-0.014
TSR*QAC			3.779**	6.821*
TSR*GOV			1.537**	1.925*
TSR*FOR			-2.075	-2.023
IFRS			-0.177	-0.577
FS	-0.160	-0.015	-0.340	-0.413
FA	0.069***	0.066***	0.08***	0.067***

Note: *** p<0.01; ** p< 0.05; * p< 0.1; p-values have been adjusted where appropriate.

Tables 5.16 and 5.17 present a comparative analysis of hypothesised variables for Models 1A, 1B, 1C, and 1D with interactions and no interactions. These tables shed light on the changes observed in the relationships between variables before and including the COVID-19 pandemic. These tables show that five variables changed while 16 variables did not change during these periods.

Table 5.16 Comparison of hypothesised variables: Models 1A and 1B

Variable	Before COVID-19	Including COVID-19	Summary
ECO	Positive, significant	Positive, significant	No change
ENV	Positive, significant	Positive, significant	No change
SOC	Positive, not significant	Positive, significant	Change
TSR	Positive, significant	Positive, significant	No change
Control variables			
FS	Negative, not significant	Negative, not significant	No change
FA	Positive, significant	Positive, significant	No change

Table 5.17 Comparison of hypothesised variables: Models 1C and 1D

Variable	Before COVID-19	Including COVID-19	Summary
ECO	Positive, significant	Positive, significant	No change
ENV	Positive, not significant	Negative, not significant	Change
SOC	Positive, not significant	Negative, not significant	Change
TSR	Positive, not significant	Positive, not significant	No change
TSR*BS	Negative, not significant	Positive, not significant	Change
TSR*ID	Positive, not significant	Positive, not significant	No change
TSR*ACS	Negative, not significant	Negative, not significant	No change
TSR*IMAC	Negative, not significant	Negative, not significant	No change
TSR*BGD	Negative, not significant	Negative, not significant	No change
TSR*QAC	Positive, significant	Positive, not significant	No change
TSR*GOV	Positive, significant	Positive, not significant	No change
TSR*FOR	Negative, not significant	Negative, not significant	No change
IFRS	Negative, not significant	Negative, not significant	No change
Control variables			
FS	Negative, not significant	Negative, not significant	No change
FA	Positive, significant	Positive, significant	Change

The variables BS, ID, AC, IMAC, BGD, QAC, GOV and FOR are moderating variables that represent certain CG components. They were not hypothesised initially, but the interaction effect of all these variables on the independent variable (TSR) was noted. Additionally, the present research developed the hypotheses for each interaction variable in the summary hypothesis section (see section 4.3). For the moderation hypothesis test, the most critical variable was the interaction term (i.e., TSR*BS). Table 5.17 demonstrates that in the two selected periods (before COVID-19 and including COVID-19), four variables changed and 11 variables did not change, including control variables.

5.5.2.5 Fixed effects model 2A: Return on equity pre-COVID-19

This subsection discusses the FE of Model 2A, in which the dependent variable was ROE with no interaction. Table 5.18 summarises the results for the before COVID-19.

Table 5.18 Linear regression for return on equity pre-COVID-19 (2015–2019)

ROE	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	26.634	19.567	2.36	0.047	-65.065	11.797	3.717
ENV	+	41.487	18.333	2.26	0.012	-77.495	-5.480	4.497
SOC	+	12.312	16.213	0.53	0.310	-20.121	45.121	2.867
TSR	+	24.658	12.664	1.95	0.026	-0.216	49.532	6.037
FS	+	-0.414	0.408	-1.02	0.845	-0.386	1.215	1.192
FA	+	0.080	0.038	2.11	0.018	0.006	0.155	1.046
Constant		-3.822	3.337	-1.15	0.127	-10.376	2.732	

Mean dependent variable	4.931	SD dependent variable	12.905
Adjusted R squared	0.318	Number of observations	581
F-test	2.550	Prob > F	0.027
Akaike crit. (AIC)	4619.010	Bayesian crit. (BIC)	4645.199

Notes: p-values have been adjusted where appropriate.

The probability F was 0.027 (< 0.05), so it can be stated that the model fits. Adjusted R squared was 0.318, which indicates that 31.8% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it can be stated that no multicollinearity was observed in this part of the research. According to the estimation results, ROE can be expressed as a linear function of SR and control variables, as expressed by the following formula:

ROE = – 3.822 + 26.634** ECO + 41.487** ENV + 12.312 SOC + 24.658** TSR – 0.414 FS + 0.080** FA

Regarding the relationship between ECO, ENV, SOC, TSR, FS, FA and ROE, the regression results indicate that ECO (prob = 0.047), ENV (prob = 0.012) and TSR (prob = 0.026) positively and significantly affected ROE. Further, SOC (prob = 0.310) exerted no significant effect on ROE.

The regression results also demonstrated that the control variable FA (prob = 0.018) positively and significantly affected ROE, while FS (prob = 0.845) exerted no significant effect on ROE.

5.5.2.6 Fixed effects model 2B: Return on equity including COVID-19

This subsection examines the FE of Model 2B, in which the dependent variable was ROE with no interaction. The summarised results for the selected period, including COVID-19, are presented in Table 5.19.

Table 5.19 Linear regression for return on equity including COVID-19 (2015–2020)

ROE	Predicted Sign	Coef.	St Err	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	-21.287	11.721	1.82	0.965	-1.726	44.300	5.884
ENV	+	7.407	8.412	2.88	0.010	-9.108	23.923	1.309
SOC	+	15.923	14.212	1.12	0.132	-11.981	43.827	8.352
TSR	+	36.590	23.639	-1.55	0.061	-83.003	9.823	5.402
FS	+	-0.219	0.387	0.57	0.714	-0.541	0.979	1.211
FA	+	0.081	0.036	2.26	0.012	0.011	0.151	1.051
Constant		-3.704	7.431	-0.50	0.309	-18.295	10.886	

Mean dependent variable	4.367	SD dependent variable	13.149
Adjusted R squared	0.311	Number of observations	690
F-test	1.569	Prob > F	0.013
Akaike crit. (AIC)	5517.003	Bayesian crit. (BIC)	5548.760

Notes: p-values have been adjusted where appropriate.

Probability F was 0.013 (< 0.05), so it can be stated that the model already fits. Adjusted R squared was 0.311, indicating that 31.1% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it can be stated that no multicollinearity was observed in this part of the research. According to the estimation results, ROE can be expressed as a linear function of SR and control variables, as expressed in the following formula:

ROE = – 3.704 – 21.287 ECO + 7.407** ENV + 15.923 SOC + 36.590* TSR – 0.219 FS + 0.081** FA

Regarding the relationship between ECO, ENV, SOC, TSR, FS, FA and ROE including COVID-19, the regression results indicated that ENV (prob = 0.010) positively and significantly affected ROE, and that TSR (prob = 0.061) had a positive and moderately significant effect on ROE. Further, ECO (prob = 0.965) and SOC (prob = 0.132) did not significantly affect ROE.

The regression results revealed that the control variable FA (prob = 0.012) positively and significantly affected ROE. However, FS (prob = 0.714) had negative coefficient and no significant effect on ROA.

5.5.2.7 Fixed effects model 2C: Return on equity pre-COVID-19 with interactions

This section examines the FE of Model 2C, in which the dependent variable was ROE and an interaction between TSR with CG and control variables was observed. Table 5.20 displays the results for the selected period before COVID-19.

Table 5.20 Linear regression for return on equity pre-COVID-19 (2015–2019)

ROE	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	24.955	14.217	1.76	0.040	-2.972	52.881	7.773
ENV	+	6.442	11.523	0.56	0.288	-16.192	29.076	7.685
SOC	+	12.719	16.684	0.76	0.223	-20.053	45.491	3.228
TSR	+	0.081	2.915	-0.32	0.618	-10.128	32.055	5.041
BS	+	1.157	1.274	0.91	0.182	-1.346	3.660	3.366
ID	+	-0.076	0.054	-1.42	0.922	-0.182	0.029	6.824
ACS	+	4.495	2.942	1.53	0.063	-1.283	10.273	3.221
IMAC	+	1.092	4.465	0.24	0.403	-7.678	9.863	3.941
BGD	+	0.647	6.964	0.09	0.463	-13.032	14.326	7.325
QAC	+	6.307	1.857	3.40	<0.001	2.660	9.954	3.221
GOV	+	2.580	3.159	0.82	0.207	-3.625	8.786	1.844
FOR	+	-7.350	2.967	-2.48	0.993	-13.179	-1.522	2.757
TSR*BS	+	-7.854	22.379	-0.35	0.637	-51.811	36.103	6.094
TSR*ID	+	4.379	2.405	1.82	0.034	-0.346	9.103	7.079
TSR*ACS	+	-39.039	24.855	-1.57	0.941	-87.860	9.783	6.052
TSR*IMAC	+	1.270	6.854	0.19	0.426	-12.194	14.734	5.107
TSR*BGD	+	0.160	6.436	0.02	0.490	-12.482	12.802	7.346
TSR*QAC	+	-6.302	14.491	-0.43	0.668	-34.766	22.161	4.930
TSR*GOV	+	1.243	2.477	0.50	0.038	-3.623	6.109	1.220
TSR*FOR	+	-3.003	1.203	-2.50	0.993	-5.367	-0.640	3.155
IFRS	+	-0.185	1.111	-0.17	0.566	-2.368	1.997	1.032
FS	+	-0.473	0.433	-1.09	0.862	-1.323	0.378	1.449
FA	+	0.106	0.039	2.73	0.003	0.030	0.182	1.176
Constant		-12.757	11.639	-1.10	0.863	-35.619	10.104	

Mean dependent variable	4.947	SD dependent variable	12.934
Adjusted R squared	0.309	Number of observations	578
F-test	3.594	Prob > F	0.000
Akaike crit. (AIC)	4567.472	Bayesian crit. (BIC)	4667.742

Note: p-values have been adjusted where appropriate.

The probability F was 0.000 (< 0.05), so it can be stated that the model already fits. The adjusted R squared was 0.309, signifying that 30.9% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it can be stated that no multicollinearity was observed in this part of the research. According to the estimation results, ROE can be expressed as a linear function of SR, CG factors, interactions variables and control variables, as expressed by the following formula:

ROE = – 12.757 + 24.955** ECO + 6.442 ENV + 12.719 SOC + 0.081 TSR + 1.157 BS – 0.076 ID + 4.495* ACS + 1.092 IMAC + 0.647 BGD + 6.307*** QAC + 2.580 GOV – 7.350 FOR – 7.854 TSRxBS + 4.379** TSRxID – 39.039 TSRxACS + 1.270 TSRxIMAC + 0.160 TSRxBGD – 6.302 TSRxQAC + 1.243** TSRxGOV – 3.003 TSRxFOR – 0.185 IFRS – 0.473 FS + 0.106*** FA

Regarding the relationship between SR factors, CG and ROE, the regression results indicated that ECO (prob = 0.040), QAC (prob < 0.001), the interaction between TSR and ID (prob = 0.034) and the interaction between TSR and GOV (prob = 0.038) positively and significantly affected ROE. Further, ACS (prob = 0.063) had a positive and moderately significant effect on ROE. Additionally, ENV (prob = 0.288), SOC (prob = 0.223), TSR (prob = 0.618), BS (prob = 0.182), IMAC (prob = 0.403), BGD (prob = 0.463), GOV (prob = 0.207), the interaction between TSR and IMAC (prob = 0.426) and the interaction between TSR and BGD (prob = 0.490) had positive coefficient, though they did not significantly affect ROE. Finally, although ID (prob = 0.922), FOR (prob = 0.993), the interaction between TSR and BS (prob = 0.637), the interaction between TSR and ACS (prob = 0.941), the interaction between TSR and QAC (prob = 0.668), the interaction between TSR and FOR (prob = 0.993) and IFRS (prob = 0.566) had a negative coefficient, they did not significantly affect ROE.

The control variable FS (prob = 0.862) had a negative and non-significant effect on ROE, while FA (prob = 0.003) positively and significantly affected ROE.

5.5.2.8 Fixed effects model 2D: Return on equity including COVID-19 with interactions

This section analyses Model 2D, which focuses on the FE of the dependent variable ROE, along with the interaction between TSR, CG, and control variables. The results for the selected period, including COVID-19, are presented in Table 5.21.

Table 5.21 Linear regression for return on equity including COVID-19 (2015–2020)

ROE	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	13.028	15.912	0.82	0.206	-18.216	44.272	8.648
ENV	+	1.406	13.447	2.10	0.048	-24.998	27.810	2.402
SOC	+	-17.624	15.200	-1.16	0.876	-47.471	12.223	1.176
TSR	+	0.007	0.021	0.34	0.734	-0.034	0.048	5.761
BS	+	0.114	1.444	2.08	0.018	-2.722	2.951	4.157
ID	+	0.126	0.052	-2.41	0.008	-0.229	-0.023	6.745
ACS	+	2.459	3.075	2.80	0.012	-3.580	8.498	2.402
IMAC	+	0.160	3.949	0.04	0.484	-7.594	7.914	3.579
BGD	+	-0.285	5.887	-0.05	0.519	-11.844	11.275	7.510
QAC	+	4.826	1.732	2.79	0.002	1.425	8.227	3.197
GOV	+	1.721	2.912	0.59	0.277	-3.998	7.439	1.786
FOR	+	6.019	2.871	-2.10	0.018	-11.655	-0.382	2.679
TSR*BS	+	10.844	26.143	0.41	0.339	-40.489	62.176	7.278
TSR*ID	+	6.295	2.312	2.72	0.003	1.755	10.834	7.001
TSR*ACS	+	-21.592	26.038	-0.83	0.796	-72.719	29.535	8.404
TSR*IMAC	+	1.068	6.127	0.17	0.431	-10.963	13.100	4.471
TSR*BGD	+	1.736	5.049	0.34	0.365	-8.178	11.651	7.683
TSR*QAC	+	-2.592	13.521	-0.19	0.576	-29.141	23.958	5.238
TSR*GOV	+	2.305	2.411	0.96	0.069	-2.429	7.039	1.234
TSR*FOR	+	-2.922	1.166	-2.51	0.994	-5.211	-0.633	3.166
IFRS	+	-1.079	1.043	-1.03	0.849	-3.127	0.970	1.019
FS	+	-0.577	0.413	-1.40	0.918	-1.388	0.234	1.423
FA	+	0.086	0.036	2.34	0.009	0.014	0.157	1.163
Constant		-21.290	15.003	-1.42	0.922	-50.748	8.169	

Mean dependent variable	4.336	SD dependent variable	13.155
Adjusted R squared	0.342	Number of observations	690
F-test	0.326	Prob > F	0.000
Akaike crit. (AIC)	5453.549	Bayesian crit. (BIC)	5557.726

Notes: p-values have been adjusted where appropriate.

The probability F was 0.000 (< 0.05), so it can be suggested that the model fits. Adjusted R square was 0.342, which indicates that 34.2% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, it can be stated that no multicollinearity was observed in this part of the research. According to the estimation results, ROE can be expressed as a linear function of SR, CG factors, interaction variables and control variables, as expressed by the following formula:

ROE = – 21.290 + 13.028 ECO + 1.406** ENV – 17.624 SOC + 0.007 TSR + 0.114** BS + 0.126*** ID + 2.459** ACS + 0.160 IMAC – 0.285 BGD + 4.826*** QAC + 1.721 GOV + 6.019** FOR + 10.844 TSRxBS + 6.295*** TSRxID – 21.592 TSRxACS + 1.068 TSRxIMAC + 1.736 TSRxBGD – 2.592 TSRxQAC + 2.305* TSRxGOV – 2.922 TSRxFOR – 1.079 IFRS – 0.577 FS + 0.086** FA

Regarding the relationship between SR factors, CG and ROE for the period including COVID-19, the regression results indicated that ENV (prob = 0.048), BS (prob = 0.018), ID (prob = 0.008), ACS (prob = 0.012), QAC (prob = 0.002) and the interaction between TSR and ID (prob = 0.003) positively and significantly affected ROE. The interaction between TSR and GOV (prob = 0.069) had a positive and moderately significant effect on ROE. Further, ECO (prob = 0.206), TSR (prob = 0.734), IMAC (prob = 0.484), GOV (prob = 0.277), the interaction between TSR and BS (prob = 0.339), the interaction between TSR and IMAC (prob = 0.431) and the interaction between TSR and BGD (prob 0.365) had a positive but not significant effect on ROE. Additionally, SOC (prob = 0.876), BGD (prob = 0.519), the interaction between TSR and ACS (prob = 0.796), the interaction between TSR and QAC (prob = 0.576), the interaction between TSR and FOR (prob = 0.994) and the IFRS (prob = 0.849) had a negative and insignificant effect on ROE. The interaction terms TSR*ID and TSR*GOV have emerged as the most significant variables for the moderation hypothesis test, given that they have the lowest p-values. The independent variable and moderating variables may each be significant separately throughout the moderation process; however, this does not directly test the moderating hypothesis. The control variable FS (prob = 0.918) had a negative and insignificant effect on ROE, while FA (prob = 0.009) positively and significantly affected ROE. Table 5.22 presents the summary results on ROE from these four models.

Table 5.22 Summary of return on equity results

	Model 2A— Before COVID-19	Model 2B— Including COVID-19	Model 2C— Interaction before COVID-19	Model 2D— Interaction including COVID-19
ECO	26.634**	-21.287	24.955**	13.028
ENV	41.487**	7.407**	6.442	1.406**
SOC	12.312	15.923	12.719	-17.624
TSR	24.658**	36.590*	0.081	0.007
BS			1.157	0.114**
ID			0.076	0.126***
ACS			4.495*	2.459**
IMAC			1.092	0.160
BGD			0.647	- 0.285
QAC			6.307***	4.826***
GOV			2.580	1.721
FOR			-7.350	6.019**
TSR*BS			-7.854	10.844
TSR*ID			4.379**	6.295**
TSR*ACS			-39.039	-21.592
TSR*IMAC			1.270	1.068
TSR*BGD			0.160	1.736
TSR*QAC			-6.302	-2.592
TSR*GOV			1.243**	2.305*
TSR*FOR			-3.000	-2.922
IFRS			-0.185	-1.079
FS	-0.414	-0.219	- 0.473	- 0.577
FA	0.080**	0.081**	0.106***	0.086***

Note: *** p < 0.01; **p < 0.05; *p < 0.1; p-values have been adjusted where appropriate.

Tables 5.23 and 5.24 present a comparative analysis of hypothesised variables for Models 2A, 2B, 2C, and 2D with interactions and no interactions. These tables shed light on the changes observed in the relationships between variables before and including the COVID-19 pandemic. These tables demonstrate that five variables changed and 16 variables did not change, including control variables.

Table 5.23 Comparison of hypothesised variables for Models 2A and 2B

Variable	Before COVID-19	Including COVID-19	Summary
ECO	Positive, significant	Negative, not significant	Change
ENV	Positive, significant	Positive, significant	No change
SOC	Positive, not significant	Positive, not significant	No change
TSR	Positive, significant	Positive, significant	No change
Control variables			
FS	Negative, not significant	Negative, not significant	No change
FA	Positive, significant	Positive, significant	No change

Table 5.24 Comparison of hypothesised variables for Models 2C and 2D

Variable	Before COVID-19	Including COVID-19	Summary
ECO	Positive, significant	Positive, not significant	Change
ENV	Positive, not significant	Positive, significant	Change
SOC	Positive, not significant	Negative, not significant	Change
TSR	Positive, not significant	Positive, not significant	No change
TSR*BS	Negative, not significant	Positive, not significant	Change
TSR*ID	Positive, significant	Positive, significant	No change
TSR*ACS	Negative, not significant	Negative, not significant	No change
TSR*IMAC	Positive, not significant	Positive, not significant	No change
TSR*BGD	Positive, not significant	Positive, not significant	No change
TSR*QAC	Negative, not significant	Negative, not significant	No change
TSR*GOV	Positive, significant	Positive, significant	No change
TSR*FOR	Negative, not significant	Negative, not significant	No change
IFRS	Negative, not significant	Negative, not significant	No change
Control variables			
FS	Negative, not significant	Negative, not significant	No change
FA	Positive, significant	Positive, significant	No change

5.5.2.9 Fixed effects model 3A: Tobin's Q pre-COVID-19

This section describes the FE of Model 3A, in which the dependent variable was TQ with no interaction. Table 5.25 displays the results for the period before COVID-19.

Table 5.25 Linear regression for Tobin's Q pre-COVID-19 (2015–2019)

TQ	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	1.281	1.199	-1.07	0.014	-3.636	1.074	3.717
ENV	+	2.310	1.123	-2.06	0.020	-4.516	-0.103	4.497
SOC	+	2.312	1.543	2.53	0.002	0.881	5.019	2.867
TSR	+	1.126	0.776	1.45	0.074	-0.398	2.650	6.037
FS	+	-0.068	0.025	-2.74	0.997	-0.117	-0.019	1.192
FA	+	0.010	0.002	4.31	<0.001	0.005	0.015	1.046
Constant		1.662	0.204	8.13	<0.001	1.260	2.063	

Mean dependent variable	1.574	SD dependent variable	0.809
Adjusted R squared	0.361	Number of observations	581
F-test	8.140	Prob > F	0.000
Akaike crit. (AIC)	1374.311	Bayesian crit. (BIC)	1400.499

Note: p-values have been adjusted where appropriate.

The probability of F was 0.000 (< 0.05), so it can be asserted that the model fits. The adjusted R squared was 0.361, which indicates that 36.1% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it is stated that no multicollinearity was observed. According to the estimation results, TQ can be expressed as a linear function of SR and control variables, as expressed by the following formula:

TQ = 1.662 + 1.281** ECO + 2.310** ENV + 2.312*** SOC + 1.126* TSR – 0.068 FS + 0.010** FA

Concerning the relationship between SR factors and TQ pre-COVID-19, the regression results indicated that ECO (prob = 0.014), ENV (Prob = 0.020) and SOC (prob = 0.002) positively and significantly affected TQ. Further, TSR (prob = 0.074) had a moderately significant effect on TQ. The control variable, FS (prob = 0.997) had negative and not significant effect on TQ, while FA (prob < 0.001) positively and significantly affected TQ.

5.5.2.10 Fixed effects model 3B: Tobin's Q including COVID-19

This section describes the FE of Model 3B, in which the dependent variable was TQ with no interaction. Table 5.26 illustrates the results for the period including COVID-19.

Table 5.26 Linear regression for Tobin's Q including COVID-19 (2015–2020)

TQ	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	3.634	0.765	4.75	<0.001	2.133	5.135	5.884
ENV	+	1.824	0.549	3.32	0.001	0.747	2.902	1.309
SOC	+	2.215	0.927	2.39	0.009	0.395	4.035	8.352
TSR	+	-6.770	1.542	-4.39	0.999	-9.798	-3.743	5.402
FS	+	-0.079	0.025	-3.13	0.999	-0.129	-0.029	1.211
FA	+	0.013	0.002	5.39	<0.001	0.008	0.017	1.051
Constant		0.644	0.485	1.33	0.092	-0.308	1.596	

Mean dependent variable	1.626	SD dependent variable	0.895
Adjusted R squared	0.386	Number of observations	690
F-test	11.885	Prob > F	0.000
Akaike crit. (AIC)	1749.817	Bayesian crit. (BIC)	1781.574

Notes: p-values have been adjusted where appropriate.

The probability F was 0.000 (< 0.05), so the model evidently indicates a good fit. The adjusted R squared was 0.386, signifying that 38.6% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it can be stated that no multicollinearity was observed. According to the estimation results, TQ can be expressed as a linear function of SR and control variables, which was expressed by the following formula:

TQ = 0.644 + 3.634*** ECO + 1.824*** ENV + 2.215** SOC – 6.770 TSR – 0.079 FS + 0.013*** FA

Regarding the relationship between SR factors and TQ including COVID-19, the regression results indicated that ECO (prob < 0.001), ENV (prob = 0.001), SOC (prob = 0.009) positively and significantly affected TQ. Further, TSR (prob = 0.999) exerted no significant effect on TQ. The control variable, FA (prob < 0.001) also positively and

significantly affected TQ, while FS (prob = 0.999) had negative coefficient and did not significantly affect TQ.

5.5.2.11 Fixed effects Model 3C: Tobin's Q pre-COVID-19 with interactions

This subsection addressed the FE of Model 3C, in which the dependent variable was TQ with interactions between SR and CG and the control variables. Table 5.27 demonstrates the results for the period before COVID-19.

Table 5.27 Linear regression for Tobin's Q pre-COVID-19 (2015–2019)

TQ	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	2.743	0.862	3.18	0.001	1.050	4.435	7.773
ENV	+	0.785	0.698	1.12	0.130	-0.587	2.157	7.685
SOC	+	2.877	1.011	2.85	0.002	0.891	4.863	3.228
TSR	+	0.185	0.995	1.91	0.945	2.121	-3.411	5.916
BS	+	0.342	0.077	4.42	<0.001	0.190	0.493	3.366
ID	+	-0.004	0.003	-1.38	0.915	-0.011	0.002	6.824
ACS	+	-0.190	0.178	-1.07	0.856	-0.540	0.160	3.221
IMAC	+	0.114	0.271	0.42	0.336	-0.417	0.646	3.941
BGD	+	-0.249	0.422	-0.59	0.722	-1.078	0.580	7.325
QAC	+	0.181	0.113	1.61	0.054	-0.040	0.402	3.221
GOV	+	-0.071	0.191	-0.37	0.645	-0.447	0.305	1.844
FOR	+	-0.357	0.180	-1.99	0.976	-0.711	-0.004	2.757
TSR*BS	+	-6.648	1.356	-4.90	0.999	-9.312	-3.984	6.094
TSR*ID	+	0.147	0.146	1.01	0.157	-0.140	0.433	7.079
TSR*ACS	+	0.984	1.506	0.65	0.257	-1.975	3.943	6.052
TSR*IMAC	+	-0.279	0.415	-0.67	0.749	-1.095	0.537	5.107
TSR*BGD	+	0.152	0.390	0.39	0.034	-0.614	0.918	7.346
TSR*QAC	+	0.843	0.878	0.96	0.168	-0.882	2.568	4.930
TSR*GOV	+	-0.080	0.150	-0.54	0.703	-0.375	0.215	1.220
TSR*FOR	+	-0.118	0.073	-1.62	0.947	-0.261	0.025	3.155
IFRS	+	-0.091	0.067	-1.36	0.912	-0.224	0.041	1.032
FS	+	-0.099	0.026	-3.78	0.999	-0.151	-0.048	1.449
FA	+	0.013	0.002	5.64	<0.001	0.009	0.018	1.176
Constant		2.759	0.705	3.91	<0.001	1.374	4.145	

Mean dependent variable	1.577	SD dependent variable	0.810
Adjusted R squared	0.303	Number of observations	578
F-test	5.588	Prob > F	0.000
Akaike crit. (AIC)	1326.745	Bayesian crit. (BIC)	1427.015

Notes: p-values have been adjusted where appropriate

The probability F was 0.000 (< 0.05), so it can be asserted that the model already fits. The adjusted R squared was 0.303, whish signifies that 30.3% of the total variance of the dependent variable can be explained by the independent variables in the model. VIF value < 10, so it can be stated that no multicollinearity was observed. According to the estimation results, TQ can be expressed as a linear function of SR, CG factors, interactions variables and control variables, as expressed by the following formula:

TQ = 2.759 + 2.743*** ECO + 0.785 ENV + 2.877*** SOC + 0.185 TSR + 0.342*** BS – 0.004 ID – 0.190 ACS + 0.114 IMAC – 0.249 BGD + 0.181** QAC – 0.071 GOV – 0.357 FOR – 6.648 TSRxBS + 0.147 TSRxID + 0.984 TSRxACS – 0.279 TSRxIMAC + 0.152** TSRxBGD + 0.843 TSRxQAC – 0.080 TSRxGOV – 0.118 TSRxFOR – 0.091 IFRS – 0.099 FS + 0.013*** FA

Regarding the relationship between SR factors, CG and TQ pre-COVID-19, the regression results asserted that ECO (prob = 0.001), SOC (prob = 0.002), BS (prob < 0.001), QAC (prob = 0.054) and the interaction between TSR and BGD (prob = 0.034) positively and significantly affected TQ. Further, although ENV (prob = 0.130), TSR (prob = 0.945), IMAC (prob = 0.336), the interaction between TSR and ID (prob = 0.157), the interaction between TSR and ACS (prob = 0.257) and the interaction between TSR and QAC (prob = 0.168) had a positive coefficient, these variables did not exhibit an insignificant effect on TQ. Nevertheless, ID (prob = 0.915), ACS (prob = 0.856), BGD (prob = 0.722), GOV (prob = 0.645), FOR (prob = 0.976), the interaction between TSR and ID (prob = 0.999), the interaction between TSR and IMAC (prob = 0.749), the interaction between TSR and GOV (prob = 0.703), the interaction between TSR and FOR (prob = 0.947) and the IFRS (prob = 0.912) had a negative coefficient, and they did not significantly affect TQ.

The control variable FS (prob = 0.999) revealed a negative and not significant effect on TQ. However, FA (prob < 0.001) did positively and significantly affect TQ.

5.5.2.12 Fixed effects Model 3D: Tobin's Q including COVID-19 with interactions

This subsection addressed the FE of Model 3D, in which the dependent variable was TQ with interactions between SR and CG and the control variables. Table 5.28 summarises the results for the period including COVID-19.

Table 5.28 Linear regression for Tobin's Q including COVID-19 (2015–2020)

Tobin's Q	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	2.378	0.910	2.61	0.004	0.591	4.165	8.648
ENV	+	0.516	0.754	0.68	0.247	-0.965	1.996	2.402
SOC	+	2.576	1.026	2.51	0.006	0.563	4.590	1.176
TSR	+	-0.002	0.001	-1.13	0.996	0.001	-1.518	6.714
BS	+	0.313	0.080	3.91	<0.001	0.156	0.470	4.157
ID	+	-0.006	0.003	-1.69	0.954	-0.012	0.001	6.745
ACS	+	-0.295	0.196	-1.51	0.933	-0.679	0.090	2.402
IMAC	+	0.156	0.261	0.60	0.275	-0.356	0.669	3.579
BGD	+	-0.307	0.385	-0.80	0.787	-1.063	0.448	7.510
QAC	+	0.136	0.114	1.19	0.116	-0.088	0.361	3.197
GOV	+	-0.105	0.191	-0.55	0.707	-0.481	0.271	1.786
FOR	+	-0.420	0.188	-2.24	0.987	-0.789	-0.051	2.679
TSR*BS	+	-6.847	1.423	-4.81	0.999	-9.640	-4.053	7.278
TSR*ID	+	0.205	0.147	1.40	0.081	-0.083	0.493	7.001
TSR*ACS	+	1.826	1.663	1.10	0.136	-1.441	5.092	8.404
TSR*IMAC	+	-0.317	0.405	-0.78	0.783	-1.113	0.478	4.471
TSR*BGD	+	0.326	0.331	0.99	0.162	-0.323	0.976	7.683
TSR*QAC	+	0.710	0.896	0.79	0.214	-1.049	2.470	5.238
TSR*GOV	+	-0.034	0.156	-0.22	0.587	-0.340	0.272	1.234
TSR*FOR	+	-0.115	0.076	-1.51	0.934	-0.265	0.034	3.166
IFRS	+	-0.158	0.068	-2.31	0.989	-0.291	-0.024	1.019
FS	+	-0.081	0.027	-3.02	0.998	-0.133	-0.028	1.423
FA	+	0.015	0.002	6.12	<0.001	0.010	0.019	1.163
Constant		3.332	0.717	4.65	<0.001	1.924	4.739	

Mean dependent variable	4.947	SD dependent variable	12.934
Adjusted R squared	0.309	Number of observations	690
F-test	3.594	Prob > F	0.000
Akaike crit. (AIC)	4567.472	Bayesian crit. (BIC)	4667.742

Notes: p-values have been adjusted where appropriate.

The probability F was 0.000 (< 0.05), so it can be determined that the model already fits. The adjusted R squared was 0.309, which reveals that 30.9% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it can be stated that no multicollinearity was observed. According to the estimation results, TQ can be expressed as a linear function of SR, CG factors, interactions variables and control variables, as expressed by the following formula:

TQ = 3.332 + 2.378** ECO + 0.516 ENV + 2.576*** SOC – 0.002 TSR + 0.313*** BS – 0.006 ID – 0.295 ACS + 0.156 IMAC – 0.307 BGD + 0.136 QAC – 0.105 GOV – 0.420 FOR – 6.847 TSRxBS + 0.205* TSRxID + 1.826 TSRxACS – 0.317 TSRxIMAC + 0.326 TSRxBGD + 0.710 TSRxQAC – 0.034 TSRxGOV – 0.115 TSRxFOR – 0.158 IFRS – 0.081 FS + 0.015*** FA

Regarding the relationship between SR factors, CG and TQ including COVID-19, the regression results indicated that ECO (prob = 0.004), SOC (prob = 0.006) and BS (prob < 0.001) positively and significantly affected TQ, and that the interaction between TSR and ID (prob = 0.081) had a positive and moderately significant effect on TQ. Further, ENV (prob = 0.247), IMAC (prob = 0.275), QAC (prob = 0.116), the interaction between TSR and ACS (prob = 0.136), the interaction between TSR and BGD (prob = 0.162) and the interaction between TSR and QAC (prob = 0.214) had a positive coefficient, though it did not significantly affect TQ. However, TSR (prob = 0.996), ID (prob = 0.954), ACS (prob = 0.933), BGD (prob = 0.787), GOV (prob = 0.707), FOR (prob = 0.987), the interaction between TSR and BS (prob = 0.999), the interaction between TSR and IMAC (prob = 0.783), the interaction between TSR and GOV (prob = 0.587), the interaction between TSR and FOR (prob = 0.934) and IFRS (prob =0.989) all had a negative coefficient and did not significantly affect TQ. The interaction term TSR*ID was the most crucial variable for the moderation hypothesis test. During the moderation process, each independent and moderating factor could be independently significant. However, the moderating hypothesis was not being directly tested.

The control variable FS (prob = 0.998) had a negative and non-significant effect on TQ, while FA (prob < 0.001) positively and significantly affected TQ. The summary results on TQ from these four models are presented in Table 5.29.

Table 5.29 Summary of Tobin's Q results

	Model 3A— Before COVID-19	Model 3B— Including COVID-19	Model 3C— Interaction before COVID-19	Model 3D— Interaction including COVID-19
ECO	1.281**	3.634***	2.743***	2.378***
ENV	2.310**	1.824***	0.785	0.5160
SOC	2.312***	2.215***	2.877***	2.576***
TSR	1.126*	-6.770	0.185	-0.002
BS			0.342***	0.313***
ID			-0.004	-0.006
ACS			-0.190	-0.295
IMAC			0.114	0.156
BGD			-0.249	-0.307
QAC			0.181**	0.136
GOV			- 0.071	-0.105
FOR			- 0.357	-0.420
TSR*BS			-6.648	-6.847
TSR*ID			0.147	0.205*
TSR*ACS			0.984	1.826
TSR*IMAC			-0.279	-0.317
TSR*BGD			0.152**	0.326
TSR*QAC			0.843	0.710
TSR*GOV			-0.080	-0.034
TSR*FOR			- 0.099	-0.115
IFRS			- 0.091	-0.158
FS	- 0.068	- 0.079	-0.099	-0.081
FA	0.010***	0.013***	0.013***	0.015***

Note: ***p < 0.01; **p < 0.05; *p <0.1; p-values have been adjusted where appropriate.

Tables 5.30 and 5.31 present a comparative analysis of hypothesised variables for Models 3A, 3B, 3C, and 3D with interactions and no interactions. These tables shed light on the changes observed in the relationships between variables before and including the COVID-19 pandemic. These tables show that four variables changed and 17 variables did not change.

Table 5.30 Comparison of hypothesised variables for Models 3A and 3B

Variable	Before COVID-19	Including COVID-19	Summary
ECO	Positive, significant	Positive, significant	No change
ENV	Positive, significant	Positive, significant	No change
SOC	Positive, significant	Positive, significant	No change
TSR	Positive, significant	Negative, not significant	Change
Control variables			
FS	Negative, not significant	Negative, not significant	No change
FA	Positive, significant	Positive, significant	No change

Table 5.31 Comparison of hypothesised variables Models 3C with 3D

Variable	Before COVID-19	Including COVID-19	Summary
ECO	Positive, significant	Positive, significant	No change
ENV	Positive, not significant	Positive, not significant	No change
SOC	Positive, significant	Positive, significant	No change
TSR	Positive, not significant	Negative, not significant	Change
TSR*BS	Negative, not significant	Negative, not significant	No change
TSR*ID	Positive, not significant	Positive, significant	Change
TSR*ACS	Positive, not significant	Positive, not significant	No change
TSR*IMAC	Negative, not significant	Negative, not significant	No change
TSR*BGD	Positive, significant	Positive, not significant	Change
TSR*QAC	Positive, not significant	Positive, not significant	No change
TSR*GOV	Negative, not significant	Negative, not significant	No change
TSR*FOR	Negative, not significant	Negative, not significant	No change
IFRS	Negative, not significant	Negative, not significant	No change
Control variables			
FS	Negative, not significant	Negative, not significant	No change
FA	Positive, significant	Positive, significant	No change

5.5.2.13 Fixed effects model 4A: Market share pre-COVID-19

This subsection explains the FE of Model 4A, in which the dependent variable is demonstrated to be MS with no interaction. Table 5.32 displays the results for the period before COVID-19.

Table 5.32 Linear regression for market share pre-COVID-19 (2015–2019)

MS	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	136.872	20.598	6.64	<0.001	-177.329	-96.415	3.717
ENV	+	106.063	19.300	5.50	<0.001	-143.97	-68.157	4.497
SOC	+	5.423	2.912	3.918	<0.001	3.121	7.412	2.867
TSR	+	87.168	13.332	6.54	<0.001	60.982	113.353	6.037
FS	+	0.962	0.429	2.24	0.013	0.119	1.805	1.192
FA	+	-0.052	0.040	-1.30	0.952	-0.130	0.027	1.046
Constant		3.525	3.513	1.00	0.158	-3.375	10.425	

Mean dependent variable	9.865	SD dependent variable	14.310
Adjusted R squared	0.103	Number of observations	581
F-test	15.426	Prob > F	0.000
Akaike crit. (AIC)	4678.724	Bayesian crit. (BIC)	4704.913

Notes: p-values have been adjusted where appropriate.

The probability F was 0.000 (< 0.05), so it can be asserted that the model fits. The adjusted R squared was 0.103, signifying that 10.3% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it can be stated that no multicollinearity was observed. According to the estimation results, MS can be expressed as a linear function of SR and control variables, as expressed by the following formula:

MS = 3.525 + 136.872*** ECO + 106.063*** ENV + 5.423*** SOC + 87.168*** TSR + 0.962** FS – 0.052 FA

Regarding the relationship between SR factors and MS in the pre-COVID-19 period, the regression results revealed that ECO (prob < 0.001), ENV (prob < 0.001), SOC (prob < 0.001) and TSR (prob < 0.001) positively and significantly affected MS. The

control variable FS (prob = 0.013) also positively and significantly affected MS, while FA (prob = 0.952) had a negative and non-significant effect on MS.

5.5.3 Fixed effects model 4B: Market share including COVID-19

This subsection discusses the FE of Model 4B, where the dependent variable is MS with no interaction. The results for the period including COVID-19 are displayed in Table 5.33.

Table 5.33 Linear regression for market share including COVID-19 (2015–2020)

MS	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	104.582	11.211	9.33	<0.001	82.570	126.593	5.884
ENV	+	106.502	8.046	13.24	<0.001	90.705	122.300	1.309
SOC	+	158.046	13.594	11.63	<0.001	131.356	184.737	8.352
TSR	+	307.353	22.610	13.59	<0.001	-351.747	-262.959	5.402
FS	+	-0.579	0.370	-1.56	0.940	-0.149	1.306	1.211
FA	+	0.008	0.034	0.23	0.049	-0.075	0.059	1.051
Constant		8.006	7.108	1.13	0.130	-5.950	21.962	

Mean dependent variable	9.907	SD dependent variable	14.463
Adjusted R squared	0.249	Number of observations	690
F-test	38.792	Prob > F	0.000
Akaike crit. (AIC)	5455.630	Bayesian crit. (BIC)	5487.387

Notes: p-values have been adjusted where appropriate.

The probability F was 0.000 (< 0.05), so it could be argued that the model fits. The adjusted R squared was 0.249, which indicates that 24.9% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it can be stated that no multicollinearity was found. According to the estimation results, MS can be expressed as a linear function of SR and control variables, which is expressed using the following formula:

MS = 8.006 + 104.582*** ECO + 106.502*** ENV + 158.046*** SOC + 307.353*** TSR – 0.579 FS + 0.008** FA

Regarding the relationship between SR factors and MS including COVID-19, the regression results indicated that ECO (prob < 0.001), ENV (prob < 0.001), SOC (prob < 0.001) and TSR (prob < 0.001) all positively and significantly affected MS. In contrast, the control variable FS (prob = 0.940) had a negative and non-significant effect on MS, while FA (prob = 0.049) positively and significantly affected MS.

5.5.3.1 Fixed effects model 4C: Market share pre-COVID-19 with interactions

This subsection discusses the FE of Model 4C, in which the dependent variable was MS and an evident interaction between SR and CG and the control variables was observed. Table 5.34 depicts the results before COVID-19.

Table 5.34 Linear regression for market share pre-COVID-19 (2015–2019)

MS	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	62.621	10.598	5.91	<0.001	41.803	83.439	7.685
ENV	+	171.811	15.346	11.20	<0.001	141.668	201.953	3.228
SOC	+	5.686	1.172	4.85	<0.001	3.385	7.987	3.366
TSR	+	74.149	0.212	2.51	0.015	-0.084	-0.011	6.018
BS	+	-0.193	0.049	-3.93	0.999	-0.290	-0.097	6.824
ID	+	18.129	2.705	6.70	<0.001	12.816	23.442	3.221
ACS	+	2.783	4.105	0.68	0.249	-5.279	10.846	3.941
IMAC	+	-7.942	6.404	-1.24	0.892	-20.520	4.637	7.325
BGD	+	2.810	1.707	1.65	0.050	-0.544	6.164	3.221
QAC	+	1.740	2.905	0.60	0.274	-3.965	7.446	1.844
GOV	+	3.746	2.719	1.38	0.084	-1.594	9.086	2.757
FOR	+	-97.175	20.579	-4.72	0.999	-137.597	-56.752	6.094
TSR*BS	+	7.447	2.212	3.37	<0.001	3.101	11.793	7.079
TSR*ID	+	-129.275	22.857	-5.66	0.999	-174.171	-84.378	6.052
TSR*ACS	+	2.242	6.305	0.36	0.036	-10.142	14.625	5.107
TSR*IMAC	+	3.195	5.915	0.54	0.294	-8.424	14.814	7.346
TSR*BGD	+	-15.958	13.320	-1.20	0.884	-42.122	10.206	4.930
TSR*QAC	+	2.710	2.278	1.19	0.117	-1.764	7.184	1.220
TSR*GOV	+	2.416	1.100	2.20	0.014	0.256	4.576	3.155
TSR*FOR	+	-0.313	0.398	-0.79	0.784	-1.094	0.468	1.449
IFRS	+	74.149	13.076	5.67	<0.001	48.464	99.833	7.773
FS	+	0.010	0.036	0.00	0.499	-0.070	0.070	1.176
FA	+	-60.121	10.700	-5.62	0.999	-81.139	-39.102	2.811
Constant		74.149	13.076	5.67	<0.001	48.464	99.833	

Mean dependent variable	9.896	SD dependent variable	14.339
Adjusted R squared	0.385	Number of observations	578
F-test	17.393	Prob > F	0.000
Akaike crit. (AIC)	4469.835	Bayesian crit. (BIC)	4565.746

Notes: p-values have been adjusted where appropriate.

The probability F was 0.000 (< 0.05) so the model does appear to have a good fit. The adjusted R squared was 0.385, which signifies that 38.5% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it can be stated that no multicollinearity was observed. According to

the estimation results, MS can be expressed as a linear function of SR, CG factors, interactions variables and control variables, as expressed by the following formula:

MS = 74.149 + 62.621*** ECO +171.811*** ENV + 5.686*** SOC + 74.149** TSR – 0.193 BS + 18.129*** ID + 2.783ACS – 7.942 IMAC + 2.810** BGD + 1.740 ACS + 3.746* GOV – 97.175 FOR + 7.447*** TSRxBS –129.275 TSRxID + 2.242** TSRxAC + 3.195 TSRxIMAC – 15.958 TSRxBGD + 2.710 TSRxQAC + 2.416** TSRxGOV – 0.313 TSRxFOR + 74.149 IFRS*** + 0.010 FS – 60.121 FA

Regarding the relationship between SR factors, CG and MS pre-COVID-19, the regression results confirmed that ECO (prob < 0.001), ENV (prob < 0.001), SOC (prob < 0.001), TSR (prob =0.015), ID (prob < 0.001), BGD (prob = 0.050), the interaction between TSR and BS (prob < 0.001), the interaction between TSR and ACS (prob = 0.036), the interaction between TSR and GOV (prob = 0.014) and the IFRS (prob < 0.001) all positively and significantly affected MS, while GOV (prob = 0.084) also had a positive and moderately significant effect on MS. Further, BS (prob = 0.999), IMAC (prob = 0.892), FOR (prob = 0.999), the interaction between TSR and ID (prob = 0.999), the interaction between TSR and BGD (prob = 0.884) and the interaction between TSR and FOR (prob = 0.784) all had a negative coefficient and did not significantly affect MS. However, ACS (prob = 0.249), QAC (prob = 0.274), the interaction between TSR and IMAC (prob = 0.294) and the interaction between TSR and QAC (prob = 0.117) all had a positive coefficient, though they did not significantly affect MS.

Although the control variable FS (prob = 0.499) had a positive coefficient, it did not significantly affect MS, while FA (prob = 0.999) had a negative coefficient and non-significant effect on MS.

5.5.3.2 Fixed effects model 4D: Market share including COVID-19 with interactions

This subsection discusses the FE of Model 4D, where the dependent variable is MS with an interaction between SR, CG, and the control variables. The results, including COVID-19, are depicted in Table 5.35.

Table 5.35 Linear regression for market share including COVID-19 (2015–2020)

MS	Predicted Sign	Coef.	St. Err.	t-value	p-value	95% Conf Interval		VIF
						Lower	Upper	
ECO	+	80.513	12.379	6.50	<0.001	56.206	104.820	7.773
ENV	+	71.153	10.257	6.94	<0.001	51.014	91.293	7.685
SOC	+	173.259	13.951	12.42	<0.001	45.867	20.652	3.228
TSR	+	0.053	0.021	2.52	0.012	-0.095	-0.012	5.915
BS	+	5.083	1.090	4.66	<0.001	2.943	7.222	3.366
ID	+	-0.185	0.045	-4.16	0.999	-0.273	-0.098	6.824
ACS	+	20.774	2.663	7.80	<0.001	15.545	26.004	3.221
IMAC	+	3.350	3.551	0.94	0.173	-3.623	10.323	3.941
BGD	+	-9.725	5.234	-1.86	0.968	-20.002	0.551	7.325
QAC	+	4.094	1.554	2.63	0.004	1.042	7.145	3.221
GOV	+	2.191	2.604	0.84	0.200	-2.923	7.304	1.844
FOR	+	0.814	2.554	0.32	0.375	-4.201	5.828	2.757
TSR*BS	+	-90.603	19.351	-4.68	0.999	-28.601	-52.606	6.094
TSR*ID	+	7.343	1.994	3.68	<0.001	3.427	11.259	7.079
TSR*ACS	+	-151.553	22.627	-6.70	0.999	-19.983	-17.124	6.052
TSR*IMAC	+	4.078	5.511	0.74	0.230	-6.743	14.899	5.107
TSR*BGD	+	6.377	4.498	1.42	0.078	-2.455	15.209	7.346
TSR*QAC	+	-30.893	12.19	-2.53	0.994	-54.828	-6.957	4.930
TSR*GOV	+	2.563	2.121	1.21	0.113	-1.601	6.727	1.220
TSR*FOR	+	1.040	1.036	1.00	0.158	-0.994	3.074	3.155
IFRS	+	0.783	0.927	0.84	0.199	-1.037	2.602	1.032
FS	+	-0.523	0.364	-1.44	0.924	-1.237	0.191	1.449
FA	+	0.001	0.032	0.04	0.483	-0.062	0.065	1.176
Constant		-62.028	9.751	-6.36	<0.001	-81.174	-42.881	

Mean dependent variable	9.896	SD dependent variable	14.339
Adjusted R squared	0.343	Number of observations	690
F-test	16.580	Prob > F	0.000
Akaike crit. (AIC)	4471.727	Bayesian crit. (BIC)	4571.997

Notes: p-values have been adjusted where appropriate.

The probability F was 0.000 (< 0.05), so it can be argued that the model already fits. The adjusted R squared was 0.343, indicating that 34.3% of the total variance of the dependent variable can be explained by the independent variables in the model. The VIF value was < 10, so it can be stated that no multicollinearity was observed. According to the estimation results, MS can be expressed as a linear function of SR, CG factors, interactions variables and control variables, as expressed by the following formula:

MS = – 62.028 + 80.513*** ECO + 71.153*** ENV + 173.259*** SOC + 0.053** TSR + 5.083*** BS – 0.185 ID + 20.774*** ACS + 3.35 IMAC – 9.725 BGD + 4.094*** QAC + 2.191GOV + 0.814FOR – 90.603 TSRxBS + 7.343*** TSRxID – 151.553 TSRxAC + 4.078 TSRxIMAC + 6.377* TSRxBGD – 30.893 TSRxQAC + 2.563 TSRxGOV + 1.040 TSRxFOR + 0.783 IFRS – 0.523 FS + 0.001 FA

Referring to the relationship between SR factors, CG and MS including COVID-19, the regression results demonstrated that ECO (prob < 0.001), ENV (prob < 0.001), SOC (prob < 0.001), TSR (prob = 0.012), BS (prob < 0.001), ACS (prob < 0.001), QAC (prob = 0.004) and the interaction between TSR and ID (prob < 0.001) all positively and significantly affected MS. The interaction between TSR and BGD (prob = 0.078) also had a positive and moderately significant effect on MS. Further, ID (prob = 0.999). BGD (prob = 0.968), the interaction between TSR and BS (prob = 0.999), the interaction between TSR and ACS (prob = 0.999) and the interaction between TSR and QAC (prob = 0.994) all had a negative coefficient and did not significantly affect MS. However, IMAC (prob = 0.173), GOV (prob = 0.200), FOR (prob = 0.375), the interaction between TSR and IMAC (prob = 0.230), the interaction between TSR and GOV (prob = 0.113), the interaction between TSR and FOR (prob = 0.158) and the IFRS (prob = 0.199) all had a positive coefficient, though they did not significantly affect MS. According to the p-value levels, the interaction terms TSR*ID and TSR*BGD have become the most significant variable for the moderation hypothesis test. The independent variable and the moderating variables can each be considered significant separately throughout the moderation process; however, this does not directly test the moderating hypothesis. The control variable FS (prob = 0.924) had a negative and non-significant effect on MS, while FA (prob = 0.483) had a positive but non-significant effect on MS. Table 5.36 presents the summary results on MS from these four models.

Table 5.36 Summary of market share results

	Model 4A— Before COVID-19	Model 4B— Including COVID-19	Model 4C— Interaction before COVID-19	Model 4D— Interaction Including COVID-19
ECO	136.872***	104.582***	62.621***	80.513***
ENV	6.063***	106.502***	171.811***	71.153***
SOC	5.423***	158.046***	5.686***	173.259***
TSR	87.168***	307.353***	74.149**	0.053**
BS			-0.193	5.083***
ID			18.129***	-0.185
ACS			2.783	20.774***
IMAC			-7.942	3.350
BGD			2.810**	-9.725
QAC			1.740	4.094***
GOV			3.746*	2.191
FOR			-97.175	0.814
TSR*BS			7.447***	-90.603
TSR*ID			-129.275	7.343***
TSR*ACS			2.242**	-151.553
TSR*IMAC			3.195	4.078
TSR*BGD			-15.958	6.377*
TSR*QAC			2.710	-30.893
TSR*GOV			2.416**	2.563
TSR*FOR			-0.313	1.040
IFRS			4.149***	0.783
FS	0.962**	- 0.579	0.010	-0.523
FA	0.052	0.008**	-60.121	0.001

Note: ***p < 0.01; **p < 0.05; *p < 0.10; p-values have been adjusted where appropriate.

Tables 5.37 and 5.38 present a comparative analysis of hypothesised variables for Models 4A, 4B, 4C, and 4D with interactions and no interactions. These tables shed light on the changes observed in the relationships between variables before and including the COVID-19 pandemic. These tables demonstrate that 12 variables changed and nine variables did not change.

Table 5.37 Comparison of hypothesised variables for Models 4A and 4B

Variable	Before COVID-19	Including COVID-19	Summary
ECO	Positive, significant	Positive, significant	No change
ENV	Positive, significant	Positive, significant	No change
SOC	Positive, significant	Positive, significant	No change
TSR	Positive, significant	Positive, significant	No change
Control variables			
FS	Positive, significant	Negative, not significant	Change
FA	Negative, not significant	Positive, significant	Change

Table 5.38 Comparison of hypothesised variables for Models 4C and 4D

Variable	Before COVID-19	Including COVID-19	Summary
ECO	Positive, significant	Positive, significant	No change
ENV	Positive, significant	Positive, significant	No change
SOC	Positive, significant	Positive, significant	No change
TSR	Positive, significant	Positive, significant	No change
TSR*BS	Positive, significant	Negative, not significant	Change
TSR*ID	Negative, not significant	Positive, significant	Change
TSR*ACS	Positive, not significant	Negative, not significant	Change
TSR*IMAC	Positive, not significant	Positive, not significant	No change
TSR*BGD	Negative, not significant	Positive, not significant	Change
TSR*QAC	Positive, not significant	Negative, not significant	Change
TSR*GOV	Positive, significant	Positive, not significant	Change
TSR*FOR	Negative, not significant	Positive, not significant	Change
IFRS	Positive, significant	Positive, not significant	Change
Control variables			
FS	Positive, not significant	Negative, not significant	Change
FA	Negative, not significant	Positive, not significant	Change

5.5.3.3 Model 5A: The internal business perspective logistic model pre-COVID-19 (2015–2019)

This section focuses on the FE of Model 5A, in which the dependent variable was IBP with no interaction. Table 5.39 displays the results relating to before COVID-19, which

were derived from testing the FE model for IBP, which is the dummy variable that this research used for logistic regression.

Table 5.39 Fit model test pre-COVID-19 (2015–2019)

Fit test model	Value
Sig. F	<0.001
Cox and Snell R Square	0.085
Nagelkerke R Square	0.149
Sig. Hosmer and Lemeshow	0.066
Prediction Accuracy (classification plot)	85.900

The F-test is employed to determine simultaneously the model fit and explanatory power according to the prediction that the independent variable will affect the dependent variable in a regression equation model. According to the results discussed in previous subsections, the F-test value was 0.000 < 0.05, which indicates that the data are good. Moreover, when combined, the four goodness-of-fit measures—Cox and Snell R2, Nagelkerke R2, Hosmer and Lemeshow, and prediction accuracies—are considered acceptable. Moreover, the value of the Hosmer and Lemeshow test was 0.066. Because this value is greater than 0.05, the data is considered good, and it deserves further analysis. Additionally, the prediction accuracy amounted to 85.9%, signifying that the prediction accuracy was high. Considering these statistics collectively, it is concluded that the model fits the data. Table 5.40 displays the results relating to before COVID-19.

Table 5.40 Logistic regression for internal business perspective pre-COVID-19 (2015–2019)

Variables in the equation										
		Predicted Sign	B	SE	Wald	df	Sig.	Exp(B)	95% CI for EXP(B)	
									Lower	Upper
Step 1[a]	ECO	+	-5.224	2.161	5.842	1	0.984	0.005	0.532	1.713
	ENV	+	3.384	2.748	3.748	1	0.065	1.034	<0.001	0.013
	SOC	+	16.486	3.647	20.434	1	<0.001	1.342	<0.001	0.213
	TSR	+	11.342	9.421	3.423	1	0.019	10.213	0.131	2.013
	FS	+	0.131	0.094	1.950	1	0.163	1.140	0.813	1.343
	FA	+	0.004	0.009	0.225	1	0.636	1.004	0.954	1.041
	Constant		-1.175	0.744	2.496	1	0.114	0.309		

a. Variable(s) entered in step 1: ECO, ENV, SOC, TSR, FS, FA

Note: ECO = economic sustainability reporting; ENV = environmental sustainability reporting; SOC = social sustainability reporting; TSR = total of sustainability reporting; ROA = return on assets; ROE = return on equity; MS = market share; FS = firm size; FA = firm age.

The estimated equation below depicts the effects of SR on IBP (pre COVID-19):

IBP = – 1.175 – 5.224 ECO + 3.384* ENV +16.486*** SOC + 11.342** TSR + 0.131 FS + 0.004 FA

Regarding the relationship between SR factors and IBP pre-COVID-19, the regression results indicated that ENV (prob = 0.065) had a positive and moderately significant effect on IBP, while SOC (prob < 0.001) and TSR (prob = 0.019) positively and significantly affected IBP. However, ECO (prob = 0.984) had a positive but non-significant effect on IBP. Additionally, both control variables FS (prob = 0.163) and FA (prob = 0.636) had positive but non-significant effects on IBP.

5.5.3.4 Model 5B: Internal business perspective logistic model including COVID-19

This section focuses on the FE of Model 5B, in which the dependent variable was IBP with no interaction. Table 5.41 displays the results relating to including COVID-19.

Table 5.41 Fit model test including COVID-19 (2015–2020)

Fit test model	Value
Sig. F	<0.001
Cox and Snell R Square	0.085
Nagelkerke R Square	0.149
Sig. Hosmer and Lemeshow	0.325
Prediction Accuracy (classification plot)	85.500

According to the results discussed previously, the F-test value was 0.000 (< 0.05), which indicates that the data are good. Moreover, when combined, the four goodness-of-fit measures—Cox and Snell R2, Nagelkerke R2, Hosmer and Lemeshow, and the prediction accuracies—are considered acceptable. Table 5.42 present the results for the period including COVID-19.

Table 5.42 Logistic regression including COVID-19 (2015–2020)

Variables in the equation									
	Predicted Sign	B	SE	Wald	df	Sig.	Exp(B)	95% CI for EXP(B)	
								Lower	Upper
ECO	+	-5.748	1.993	8.315	1	0.996	0.003	0.531	1.141
ENV	+	3.266	1.593	4.202	1	0.096	1.038	<0.001	0.141
SOC	+	16.585	3.372	24.189	1	<0.001	1.677	<0.001	0.411
Step 1[a] TSR	+	10.813	8.421	4.128	1	0.023	9.824	0.125	2.413
FS	+	0.129	0.087	2.170	1	0.141	1.137	0.741	1.314
FA	+	0.005	0.008	0.379	1	0.538	1.005	0.623	1.311
Constant		-1.004	0.690	2.117	1	0.146	0.366		

a. Variable(s) entered in step 1: ECO, ENV, SOC, TSR, FS, FA.

The estimated equation below depicts the effects of SR on IBP (including COVID-19):

IBP = –1.004 – 5.748 ECO + 3.266* ENV + 16.585*** SOC + 10.813** TSR + 0.129 FS + 0.005 FA

Regarding the relationship between SR factors and MS including COVID-19, the regression results indicated that ENV (prob = 0.096) had a positive and moderately significant effect on IBP, while SOC (prob < 0.001) and TSR (prob = 0.023) positively and significantly affected IBP. However, ECO (prob = 0.996) had a negative and non-significant effect on IBP. Further, both the control variables FS (prob = 0.141) and FA (prob = 0.538) exerted a positive but non-significant effect on IBP.

5.5.3.5 Model 5C: Internal business perspective logistic model pre-COVID-19 with interactions

This subsection discusses the FE of Model 5C, in which the dependent variable is IBP with interactions between SR and CG and the control variables, before COVID-19, as per Table 5.43 below.

Table 5.43 Fit model test pre-COVID-19 (2015–2019)

Fit test model	Value
Sig. F	<0.001
Cox and Snell R Square	0.148
Nagelkerke R Square	0.261
Sig. Hosmer and Lemeshow	0.138
Prediction Accuracy (Classification plot)	86.100

According to the results obtained previously, the F-test value was 0.000 (< 0.050 which strongly suggests that the data are good. Moreover, when combined, the four goodness-of-fit measures—Cox and Snell R2, Nagelkerke R2, Hosmer and Lemeshow, and the prediction accuracies—are considered acceptable. Moreover, the value of the Hosmer and Lemeshow test was 0.138. This value is greater than 0.05, which indicates that the data are good and that they deserve further investigation. Additionally, the prediction accuracy in the present research was 86.1%, so the prediction accuracy was high. Considering these statistics collectively, it is concluded that the model fits the data. Table 5.44 presents the results for the period pre COVID-19.

Table 5.44 Logistic regression for the internal business perspective pre-COVID-19 (2015–2019)

	Predicted Sign							95% CI for EXP(B)	
		B	SE	Wald	df	Sig.	Exp(B)	Lower	Upper
ECO	+	11.776	3.919	9.029	1	0.030	1.911	<0.001	0.017
ENV	+	7.502	3.190	5.532	1	0.090	1.999	<0.001	0.286
SOC	+	14.031	5.004	7.861	1	0.050	1.014	2.566	8.221
TSR	+	11.791	8.415	2.935	1	0.070	1.622	0.185	2.053
BS	+	-1.003	0.519	3.742	1	0.970	0.633	0.133	1.013
ID	+	0.031	0.015	4.510	1	0.040	1.032	1.002	1.062
ACS	+	0774	1.303	0.353	1	0.520	2.169	0.169	2.888
IMAC	+	1.136	1.415	0.644	1	0.420	3.114	0.194	4.881
BGD	+	-0.584	3.410	0.029	1	0.840	0.442	0.001	4.522
QAC	+	-0.737	0.448	2.706	1	0.100	0.521	0.199	1.151
GOV	+	-1.011	0.891	1.285	1	0.270	0.636	0.063	2.088
FOR	+	0.363	0.857	0.179	1	0.620	1.437	0.268	7.709
TSR*BS	+	16.739	9.451	3.137	1	0.070	1.863	0.168	2.904
TSR*ID	+	-1.736	0.720	5.813	1	0.940	0.824	0.043	0.723
TSR*ACS	+	-4.513	10.901	0.171	1	0.310	0.989	<0.001	2.813
TSR*IMAC	+	3.136	2.137	2.153	1	0.120	2.002	-8.424	9.814
TSR*QAC	+	1.776	4.382	0.164	1	0.650	5.904	0.001	1.009
TSR*BGD	+	11.628	3.994	8.477	1	0.040	1.227	-2.455	5.209
TSR*GOV	+	-1.677	0.515	10.610	1	0.990	0.813	0.068	0.513
TSR*FOR	+	-0.431	0.323	1.783	1	0.880	0.352	0.346	1.223
IFRS	+	-0.030	0.287	0.011	1	0.960	0.031	0.553	1.703
FS	+	0.085	0.108	0.619	1	0.410	1.088	0.881	1.344
FA	+	0.007	0.010	0.442	1	0.560	1.007	0.987	1.027
Constant		-2.864	4.567	0.393	1	0.510	0.943	-2.864	

Note: p-values have been adjusted where appropriate.

The estimated equation below depicts the effects of SR on IBP (pre COVID-19, with interaction):

IBP = –2.864 + 11.776** ECO + 7.502* ENV + 14.031** SOC + 11.791* TSR – 1.003 BS + 0.031 ID + 0.774 ACS + 1.136 IMAC – 0.584 BGD – 0.737 QAC – 1.011 GOV + 0.363*** FOR + 16.739* TSRxBS – 1.736 TSRxID – 4.513 TSRxAC + 3.136 TSRxIMAC + 1.776 TSRxQAC + 11.628** TSRxBGD – 1.677 TSRxGOV – 0.431 TSRxFOR – 0.030 IFRS + 0.085 FS + 0.007 FA

Regarding the relationship between SR factors, CG and IBP pre-COVID-19, the regression results indicated that ECO (prob = 0.030), SOC (prob = 0.050), ID (prob = 0.040) and the interaction between TSR and BGD (prob = 0.040) positively and significantly affected IBP. Further, ENV (prob = 0.090), TSR (prob = 0.070) and the interaction between TSR and BS (prob = 0.070) had a positive and moderately significant effect on IBP. Additionally, BS (prob = 0.970), BGD (prob = 0.840), QAC (prob = 0.100), GOV (prob = 0.270), the interaction between TSR and ID (prob = 0.940), the interaction between TSR and ACS (prob = 0.310), the interaction between TSR and GOV (prob = 0.999), the interaction between TSR and FOR (prob = 0.880) and IFRS (prob = 0.960) all had negative and non-significant effects on IBP. However, ACS (prob = 0.520), IMAC (prob 0.420), FOR (prob = 0.620), the interaction between TSR and IMAC (prob = 0.120) and the interaction between TSR and QAC (prob =0.650) had a positive coefficient, though they did not significantly affect IBP.

The control variables FS (prob = 0.410) and FA (prob = 0.560) both had a positive coefficient, but they did not significantly affect IBP.

5.5.3.6 Model 5D: Internal business perspective logistic model including COVID-19 with interactions

This subsection discusses the FE of Model 5D, in which the dependent variable is IBP with interactions between SR and CG and the control variables, including COVID-19, as demonstrated in Table 5.45.

Table 5.45 Fit model test including COVID-19 (2015–2020)

Fit test model	Value
Sig. F	<0.001
Cox and Snell R Square	0.144
Nagelkerke R Square	0.253
Sig. Hosmer and Lemeshow	0.240
Prediction Accuracy (Classification plot)	86.400

According to the results documented above, the estimated equation for the study period exhibited a high level of significance (F-test value was 0.000 < 0.05) for the logistic model. Moreover, when combined, the four goodness-of-fit measures—Nagelkerke R2,

Cox and Snell R2, Hosmer and Lemeshow, and prediction accuracies—are considered acceptable.

The Hosmer–Lemeshow test determines conformity (i.e., goodness-of-fit) according to the predictive values of opportunities. This test is commonly employed to test model suitability using large data. However, using large data in logistic regression analysis can create some test stability issues. Moreover, the value of the Hosmer–Lemeshow test was 0.240. This value is greater than 0.05, which indicates that the research data are good and that they deserve further analysis. The prediction accuracy in this research was 86.4%, which signifies that the prediction accuracy was high (i.e., above 50%). Considering these statistics collectively, it is concluded that this model fits the data. Table 5.46 presents the results for the period including COVID-19.

Table 5.46 Logistic regression for internal business perspective including COVID-19 (2015–2020)

	Predicted Sign	B	SE	Wald	df	Sig.	Exp(B)	95% CI	
								Lower	Upper
ECO	+	-13.393	3.713	13.013	1	0.999	<0.001	0.017	1.065
ENV	+	-8.243	2.967	7.720	1	0.995	<0.001	0.007	0.952
SOC	+	11.849	4.534	6.830	1	0.009	1.795	1.658	3.658
TSR	+	11.919	9.435	3.058	1	0.019	1.261	1.095	2.365
BS	+	-1.241	0.553	5.042	1	0.975	0.289	11.326	20.625
ID	+	0.023	0.013	2.900	1	0.089	1.023	10.265	15.621
ACS	+	0.984	1.400	0.494	1	0.482	2.676	9.517	12.630
IMAC	+	1.478	1.304	1.286	1	0.257	4.386	2.625	5.625
BGD	+	-0.690	3.026	0.052	1	0.180	0.502	3.260	6.251
QAC	+	-0.597	0.406	2.164	1	0.859	0.550	1.326	4.326
GOV	+	-0.835	0.813	1.054	1	0.695	0.434	2.568	6.519
FOR	+	0.633	0.782	0.654	1	0.419	1.883	5.657	7.115
TSR*BS	+	20.915	10.143	4.252	1	0.039	2.826	1.129	2.598
TSR*ID	+	-1.332	0.648	4.222	1	0.960	0.264	3.268	4.651
TSR*ACS	+	-5.641	11.767	0.230	1	0.368	0.004	4.447	5.269
TSR*IMAC	+	3.996	2.002	3.983	1	0.013	1.478	3.261	5.659
TSR*QAC	+	2.226	3.880	0.329	1	0.566	1.265	1.054	3.265
TSR*BGD	+	8.356	3.478	5.773	1	0.032	1.976	6.312	9.558
TSR*GOV	+	-1.557	0.480	10.497	1	0.999	0.211	1.265	3.641
TSR*FOR	+	-0.365	0.285	1.635	1	0.799	0.694	0.584	1.329
IFRS	+	-0.218	0.262	0.695	1	0.596	0.804	0.458	1.775
FS	+	0.095	0.101	0.868	1	0.352	1.099	0.697	1.958
FA	+	0.004	0.009	0.215	1	0.643	1.004	0.668	1.657
Constant		-3.773	4.613	0.669	1	0.587	0.023	0.007	0.987

Note: p-values have been adjusted where appropriate.

The estimated equation below depicts the effects of SR on IBP (including COVID-19, with interaction):

IBP = – 3.773 – 13.393 ECO – 8.243 ENV + 11.849*** SOC + 11.919*** TSR – 1.241 BS + 0.023* ID + 0.984 ACS + 1.478 IMAC – 0.690 BGD – 0.597 QAC – 0.835 GOV + 0.633 FOR + 20.915** TSRxBS – 1.332 TSRxID – 5.641 TSRxACS + 3.996** TSRxIMAC + 2.226 TSRxQAC + 8.356** TSRxBGD – 1.557 TSRxGOV – 0.365 TSRxFOR – 0.218 IFRS + 0.095 FS + 0.004 FA

Concerning the relationship between SR factors, CG and IBP including COVID-19, the regression results demonstrated that SOC (prob = 0.009), TSR (prob = 0.019), the interaction between TSR and BS (prob = 0.039), the interaction between TSR and IMAC (prob = 0.013) and the interaction between TSR and BGD (prob = 0.032) positively and significantly affected IBP, while ID (prob = 0.089) had a positive and moderate significant effect on IBP. Further, ACS (prob = 0.482), IMAC (prob = 0.257), FOR (prob = 0.419) and the interaction between TSR and QAC (prob = 0.566) all had a positive coefficient, though they did not significantly affect IBP. Nevertheless, ECO (prob = 0.999), ENV (prob = 0.995), BS (prob = 0.975), BGD (prob = 0.180), QAC (prob = 0.859), GOV (prob = 0.695), the interaction between TSR and ID (prob = 0.960), the interaction between TSR and ACS (prob = 0.368), the interaction between TSR and GOV (prob = 0.999), the interaction between TSR and FOR (prob = 0.799) and the IFRS (prob = 0.596) all had negative and non-significant effects on IBP. The interaction term TSR*ID was the most crucial variable for the moderation hypothesis test. The independent variable and the moderating variables cane each be significant separately throughout the moderation process; however, this does not directly test the moderating hypothesis. Finally, the control variables FS (prob = 0.352) and FA (prob = 0.643) had a positive but non-significant effect on IBP. The summary results on IBP from these four models are presented in Table 5.47.

Table 5.47 Summary of internal business perspective results

	Model 5A— Before COVID-19	Model 5B— Including COVID-19	Model 5C— Interaction before COVID-19	Model 5D— Interaction Including COVID-19
ECO	–5.224	–5.748	11.776**	-13.393
ENV	3.384*	3.266*	7.502*	-8.243
SOC	16.486***	16.585***	14.031**	11.849***
TSR	11.342**	10.8132**	11.791*	11.919**
BS			-1.003	-1.241
ID			0.031**	0.023*
ACS			0.774	0.984
IMAC			1.136	1.478
BGD			- 0.584	- 0.690
QAC			- 0.737	- 0.597
GOV			- 1.011	-0.835
FOR			0.363	0.633
TSR*BS			16.739*	20.915**
TSR*ID			-1.736	-1.332
TSR*ACS			-4.513	-5.641
TSR*IMAC			3.136	3.996**
TSR*BGD			11.628**	8.356**
TSR*QAC			1.776	2.226
TSR*GOV			- 1.677	-1.557
TSR*FOR			- 0.431	-0.365
IFRS			- 0.030	-0.218
FS	0.131	0.129	0.085	0.095
FA	0.004	0.005	0.007	0.004

Note: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$; p-values have been adjusted where appropriate.

Tables 5.48 and 5.49 present a comparative analysis of hypothesised variables for Models 5A, 5B, 5C, and 5D with interactions and no interactions. These tables shed light on the changes observed in the relationships between variables before and including the COVID-19 pandemic. These tables reveal that three variables exhibited changes, while 18 variables, including control variables, remained consistent.

Table 5.48 Comparison of hypothesised variables for Models 5A and 5B

Independent variables	Before COVID-19	Including COVID-19	Summary
ECO	Negative, not significant	Negative, not significant	No change
ENV	Positive, significant	Positive, significant	No change
SOC	Positive, significant	Positive, significant	No change
TSR	Positive, significant	Positive, significant	No change
Control variables			
FS	Positive, not significant	Positive, not significant	No change
FA	Positive, not significant	Positive, not significant	No change

Table 5.49 Comparison of hypothesised variables for Models 5C and 5D

Independent variables	Before COVID	Including COVID	Summary
ECO	Positive, significant	Negative, not significant	Change
ENV	Positive, significant	Negative, not significant	Change
SOC	Positive, significant	Positive, significant	No change
TSR	Positive, significant	Positive, significant	No change
TSR*BS	Positive, significant	Positive, significant	No change
TSR*ID	Negative, not significant	Negative, not significant	No change
TSR*ACS	Negative, not significant	Negative, not significant	No change
TSR*IMAC	Positive, not significant	Positive, significant	Change
TSR*BGD	Positive, significant	Positive, significant	No change
TSR*QAC	Positive, not significant	Positive, not significant	No change
TSR*GOV	Negative, not significant	Negative, not significant	No change
TSR*FOR	Negative, not significant	Negative, not significant	No change
IFRS	Negative, not significant	Negative, not significant	No change
Control variables			
FS	Positive, not significant	Positive, not significant	No change
FA	Positive, not significant	Positive, not significant	No change

5.5.4 Robustness test

The robustness test is a common process used in empirical studies. It involves a researcher examining how certain regression coefficient estimates behave when the regression specification is modified with the addition or removal of predictors. If the coefficients are robust, then this is considered evidence for structural validity. Hausman (1978) provided a robustness test for critical core coefficients and additional diagnostics that can help explain why robustness test rejection occurs.

The GMM (Hansen, 1982) tests for endogenous structural breaks, and it ensures a uniformly bounded asymptotic sensitivity of level and power under general local departures from a reference model. GMM-based test statistics that define tests for structural breaks are typically obtained as the minimum, average or related function of sequences of quadratic GMM statistics, each of which is asymptotically chi-square distributed under the null of no (Ronchetti & Trojani, 2001). Therefore, the present research uses the GMM estimation technique to control the influence of unobservable firm-specific factors and endogenous problems. Additionally, GMM diminishes the effect of reverse causality by allowing the lagged value of dependent variables to be included as one of the repressor's independent variables in the dynamic model specification.

Further, by applying a weighted orthogonality function that limits the effect of general local deviations from a specific reference model, GMM statistics with unbounded asymptotic sensitivity can be made resilient (Ronchetti & Trojani, 2001). Specifically, a finite influence function of the GMM estimator that defines the statistic is a crucial asymptotic robustness or stability condition for a GMM test founded on an asymptotically chi-square distributed statistic. Table 5.50 presents the results FP for the period pre COVID-19.

Table 5.50 Financial performance pre-COVID-19 (2015–2019)

	Model 1A: ROA		Model 2A: ROE		Model 3A: TQ	
Independent variables	**FE**	**GMM**	**FE**	**GMM**	**FE**	**GMM**
ECO	14.476**	7.238**	24.955**	14.248**	2.743***	1.091**
ENV	3.058	-3.746	6.442	1.288	0.785	0.675
SOC	2.967	2.430	12.719	7.311	2.877**	1.299**
TSR	0.054	0.058	0.081	0.079	0.185	0.183
BS	0.632	0.244	1.157	0.526	0.342***	0.271**
ID	-0.004	0.010	-0.076	-0.073	-0.004	-0.005
ACS	1.921	1.831	4.495**	4.357**	-0.190	-0.198
IMAC	-2.345	-2.750	1.092	0.556	0.114	0.072
BGD	1.966	1.585	0.647	0.037	-0.249	-0.299
QAC	3.258***	3.276***	6.307***	6.432***	0.181**	0.213*
GOV	0.881	-0.041	2.580	1.120	-0.071	-0.226
FOR	-5.125	-5.768	-7.350	8.430	-0.357	-0.502
TSR*BS	-3.985	2.121	-7.854	2.253	-6.648	-5.493
TSR*ID	1.086	1.927	4.379**	4.219*	0.147	0.151
TSR*ACS	-21.255	-20.648	-39.039	-38.013	0.984	1.062
TSR*IMAC	-1.737	-2.085	1.270	0.857	-0.279	-0.288
TSR*BGD	-0.765	-0.046	0.160	1.392	0.152**	0.276**
TSR*QAC	3.779**	4.055**	-6.302	-6.310	0.843	0.785
TSR*GOV	1.537**	1.446**	1.243**	1.107*	-0.080	-0.087
TSR*FOR	-2.075	-2.449	-3.003	3.643	-0.118	-0.205
IFRS	-0.177	4.196	-0.185	3.322	-0.091	-0.021
Control variables						
FS	-0.340	-0.170	-0.473	-0.229	-0.099	-0.082
FA	0.080***	0.071**	0.106***	0.090**	0.013***	0.011***
Constant	-6.743	3.585	-12.757	-6.241	2.759	3.458

Note: *** p < 0.01; ** p < 0.05; * p < 0.1; p-values have been adjusted where appropriate.

In Model 1A of Table 5.50, the result of the FE regression supports the influence of variable ECO, QA, the interaction between TSR and QAC and the interaction between TSR and GOV in terms of positively and significantly affecting ROA. This result is also proven by Model 1A for GMM. Indeed, Model 2A for ROE proved that ECO, QAC, the interaction between TSR and ID and the interaction between TSR and GOV also had positive and significant effects, which is further confirmed by the GMM model. The results for Model 3A (TQ) demonstrated that ECO, SOC, QAC and the interaction

between TSR and BGD had a positive and significant effect, which is once again proven by the GMM model. Regarding control variables, only FA exerted a significant effect for all models (1A, 2A, 3A), as well as for the GMM and FE models. Further, these robustness results derived from the GMM model regarding FP (measured by ROA, ROE, TQ) confirmed the results of the original estimation FE FP models. This outcome also correlates with previous research conducted by Javeed and Lefen (2019), Lu et al. (2021) and Ali et al. (2020). Table 5.51 presents the results for FP for the period including COVID-19.

Table 5.51 Financial performance including COVID-19 (2015–2020)

Independent variables	Model 1B: ROA		Model 2B: ROE		Model 3B: TQ	
	FE	GMM	FE	GMM	FE	GMM
ECO	7.814**	3.556**	13.028	7.268	2.378**	0.091**
ENV	-0.386	-8.126	1.406**	7.144**	0.516	-1.104
SOC	-11.717	0.652	-17.624	3.136	2.576**	0.781**
TSR	0.018	0.018	0.007	0.007	-0.002	-0.002
BS	0.054**	0.080*	0.114**	0.277**	0.313***	1.047***
ID	-0.015	-0.004	0.126***	0.106**	-0.006	0.246
ACS	1.100	1.710	2.459**	3.652**	-0.295	-0.005
IMAC	-3.457	-3.997	0.160	-0.698	0.156	-0.283
BGD	1.669	1.681	-0.285	0.080	-0.307	0.073
QAC	2.523**	2.477**	4.826***	4.794***	0.136	-0.307
GOV	0.234	-0.495	1.721	0.560	-0.105	0.153
FOR	4.432**	4.772***	6.019**	6.490**	-0.420	-0.235
TSR*BS	7.819	4.428	10.844	6.433	-6.847	0.582
TSR*ID	1.547	1.067	6.295***	5.431**	0.205**	-5.680**
TSR*ACS	-13.051	-18.504	-21.592	-32.002	1.826	0.175
TSR*IMAC	-2.501	-2.972	1.068	0.418	-0.317	1.735
TSR*BGD	-0.014	0.073	1.736	1.578	0.326	-0.357
TSR*QAC	6.821**	6.850*	-2.592	-2.836	0.710	0.386
TSR*GOV	1.925**	1.619*	2.305**	1.667**	-0.034	0.829
TSR*FOR	-2.023	-2.245	-2.922	3.290	-0.115	-0.049
IFRS	-0.577	4.526	-1.079	3.077	-0.158	0.085
Control variables						
FS	-0.413	-0.203	-0.577	-0.272	-0.081	-0.206
FA	0.067***	0.064***	0.086***	0.082**	0.015***	0.066***
Constant	-6.743	4.985	-21.290	-4.103	-0.158	0.013

Note: ***p < 0.01; **p < 0.05; *p < 0.1; p-values have been adjusted where appropriate.

For Model 1B in Table 5.51, the result of the FE regression support the influence of variable ECO, BS, QAC, FOR, the interaction between TSR and QAC, the interaction between TSR and GOV in terms of exerting a positive and significant effect on ROA. This result is also proven by Model 1B for the GMM method. Indeed, Model 2B (ROE) proved that ENV, TSR, ID, ACS, QAC, FOR, the interaction between TSR and ID and the interaction between TSR and GOV also exerted a positive and significant effect, which was further confirmed by the GMM model. In Model 3 (TQ), the results revealed that ECO, ENV, BS and the interaction between TSR and ID exerted a positive and significant effect, which was again supported by the GMM model. Regarding the control variables, only FA exhibited a significant effect for all models (1B, 2B, 3B), as well as the GMM and FE models. These robustness results derived from the GMM model regarding FP (measured in ROA, ROE, TQ) also confirmed the results of the original estimation FE FP models. Additionally, this research's findings are supported by other studies performed by Lu et al. (2021), Javeed and Lefen (2019) and Ammer et al. (2020). Table 5.52 presents the results NFP for the period pre COVID-19.

Table 5.52 Non-financial performance pre-COVID-19 (2015–2019)

Independent variables	Model 4C: MS		Model 5C: IBP	
	FE	GMM	FE	GMM
ECO	62.621***	20.660**	11.776**	11.919**
ENV	171.811***	75.737**	7.502*	25.213*
SOC	5.686***	94.129***	14.031**	19.983**
TSR	-74.149	-0.053	11.791*	10.002**
BS	-0.193	5.224	-1.003	1.245
ID	18.129***	10.231***	0.031**	0.023**
ACS	2.783	18.232	0.774	1.026
IMAC	-7.942	4.214	1.136	1.416
BGD	2.810**	7.974**	-0.584	-0.750
QAC	1.740	4.414	-0.737	-0.595
GOV	3.746*	1.291*	-1.011	-0.863
FOR	-97.175	2.100	0.363	0.560
TSR*BS	7.447***	-86.847	16.739*	20.908**
TSR*ID	-129.275	8.941	-1.736	-1.331
TSR*ACS	2.242**	-1.619*	-4.513	-5.968
TSR*IMAC	3.195	4.467	3.136	3.940
TSR*BGD	-15.958	4.688	11.628**	2.293**
TSR*QAC	2.710	-22.688	1.776	8.346
TSR*GOV	2.416**	2.892**	-1.677	-1.559
TSR*FOR	-0.313	1.288	-0.431	-0.394
IFRS	74.149***	44.108**	-0.030	-0.095
Control variables				
FS	0.010	-0.727	0.085	0.092
FA	-60.121	-0.024	0.007	0.004
Constant	74.149	53.780	-2.864	-3.840

Note: *** p < 0.01; ** p < 0.05; * p < 0.1; p-values have been adjusted where appropriate.

In Model 4C of Table 5.52, the result of the FE regression supports the influence of variable ECO, ENV, SOC, ID, BGD, the interaction between TSR and SB, the interaction between TSR and ACS, the interaction between TSR and GOV, and the IFRS in terms of exerting a positive and significant effect on MS. This result is further proven by Model 4C regarding the GMM model. Indeed, Model 5C (IBP) proved that ECO, ENV, SOC, TSR, ID, the interaction between TSR and BS and the interaction between TSR and BGD also exhibited a positive and significant effect, which was again confirmed by the GMM

model. These robustness results derived from the GMM model regarding NFP (measured by MS, IBP) also confirmed the results of the original estimation FE NFP models. Previous studies by Tulcanaza-Prieto et al. (2020), Ammer et al. (2020) and Javeed and Lefen (2019) support the present research's findings. Table 5.53 presents the results NFP for the period including COVID-19.

Table 5.53 Non-financial performance including COVID-19 (2015–2020)

Independent variables	Model 4D: MS		Model 5D: IBP	
	FE	GMM	FE	GMM
ECO	71.153***	44.336***	-13.393	11.919
ENV	173.259***	22.076***	-8.243	25.213
SOC	5.083***	78.641***	11.849**	19.983***
TSR	0.053**	-0.053**	11.919**	11.919**
BS	5.083***	101.53***	-1.241	-1.245
ID	-0.185	4.784	0.023*	0.023*
ACS	20.774***	-0.212***	0.984	1.026
IMAC	3.350	21.095	1.478	1.416
BGD	-9.725	3.910	-0.690	-0.750
QAC	4.094**	-9.563***	-0.597	-0.595
GOV	2.191	5.363	-0.835	-0.863
FOR	0.814	2.067	0.633	0.560
TSR*BS	-90.603	-0.900*	20.915**	20.908**
TSR*ID	7.343***	-83.265***	-1.332	-1.331
TSR*ACS	-151.553	8.239	-5.641	-5.968
TSR*IMAC	4.078	-12.311	3.996**	3.940**
TSR*BGD	6.377*	5.284***	8.356**	2.293**
TSR*QAC	-30.893	7.309	2.226	8.346
TSR*GOV	2.563	-34.088	-1.557	-1.559
TSR*FOR	1.040	2.705	-0.365	-0.394
IFRS	80.513	0.958	-0.218	-1.035
Control variables				
FS	-0.523	-0.113	0.095	0.092
FA	0.001	-0.930	0.004	0.004
Constant	-62.028	-55.018	-3.773	-3.840

Note: *** p < 0.01; ** p < 0.05; * p < 0.1; p-values have been adjusted where appropriate.

In Model 4D of Table 5.53, the result of the FE regression supports the influence of variables ECO, ENV, SOC, TSR, BS, AC, QAC, the interaction between TSR and ID

and the interaction between TSR and BGD in terms of positively and significantly affecting MS. This result is also proven by Model 4D for GMM. Indeed, Model 5D (IBP) determined that SOC, TSR, ID, the interaction between TSR and BS, the interaction between TSR and IMAC and the interaction between TSR and BGD also exhibited a positive and significant effect. This was further confirmed by the GMM model. These robustness results derived from the GMM model regarding NFP (measured by MS, IBP) confirmed the results of the original estimation FE NFP models. Additionally, this result correlates with the findings reported by Tulcanaza-Prieto et al. (2020) and Javeed and Lefen (2019).

5.6 Summary

This chapter presented descriptive statistics regarding SR influence, the interaction between SR and CG, and the FP and NFP of KSA companies. The sample comprised 121 companies (690 observations). SR implemented ECO, ENV, SOC and TSR variables, while CG was represented by the BS, ID, ACS, IMAC, QAC, BGD, GOV and FOR variables. FP and NFP used ROA, ROE, TQ, MS and IBP as variables, with the control variables being FS and FA. The variable descriptive statistics comprised mean, standard deviation, coefficient of variation and maximum and minimum values. This chapter also implemented a simultaneous equation model that used OLS estimation to detail the relationship between SR, FP and the interactions between TSR and firm performance in the period before and including the COVID-19 pandemic. Standard model validation criteria, including the appropriate LM test, were calculated to determine the validation and significance of the OLS estimate—which involved testing the correlation between variables using the Spearman correlation matrix. Exogenous variable coefficients were used to identify positive or negative relationships with endogenous variables, and relevant tests related to heteroscedasticity, autocorrelation, and the Hausman and Woolridge tests were used to assess the models' suitability.

This research measured and compared the selected indices: GRI and modified GRI. The modified GRI obtained a higher mean value than the sole GRI. Hypothesis testing that was founded on the analysis of OLS estimates for SR demonstrated a positive influence between SR and FP and NFP. However, different results were obtained regarding each dependent variable. A positive influence was observed between SR and CG interactions regarding FP and NFP, though some results established no effect. Nevertheless,

differences in the results were also found for each dependent variable. The analysis's outcomes revealed differences in the results regarding the period before and including COVID-19. The following chapter discusses the various findings reported in Chapter 5.

Chapter 6: Discussion

6.1 Introduction

This thesis aimed to investigate how SR affected FP and NFP, as well as the moderating effect of CG mechanisms. This chapter discusses the study's findings in relation to its RQs. Section 6.1 presents the first objective, regarding the two approaches for measuring the SR index in KSA. Sections 6.2–6.5 discuss the findings associated with each RQ in the context of previous findings. Section 6.6 compares the period before and after IFRS adoption, while Section 6.7 summarises this chapter.

6.2 Comparing sustainability reporting indices

This section discusses the study's results regarding the first RQ:

> RQ1: How does the SR index developed for KSA listed firms differ from the standard GRI in its ability to capture the contextual factors that are specific to the firms' operations?

To measure the level of SR implementation among KSA listed companies, a modified SR index was developed. To help assess its effectiveness, a comparison was made between the standard GRI and this research's modified GRI (i.e., the GRI that includes Islamic items). To reiterate, the modified GRI includes not only conventional product characteristics but also Islamic product characteristics for the purpose of providing a more comprehensive assessment of sustainability practices. The modified GRI comprises 63 items, which include 47 from the standard GRI and an additional 16 that reflect the perspective of Islamic sustainability in the KSA context. The modified index was designed to measure sustainability practices in KSA's non-financial sector. A panel of academic experts confirmed the proposed index's validity, and the experts included industry experts from non-financial KSA sectors, as well as academic experts who had previously developed indices for measuring sustainability. A paired sample t-test was also performed to compare the means of the GRI and modified GRI indices.

The findings indicate that the modified GRI received a higher mean value, which suggests that it can more strongly represent or measure the variable being assessed. This further implies that the modified GRI framework encompasses a more extensive set of criteria,

which subsequently contributes to a more comprehensive evaluation of SR implementation for KSA listed firms. This research's results demonstrated a statistically significant difference between the average SR calculated using the modified GRI and the average SR calculated using the GRI at the 5% significance level. Therefore, the SR of the two indices appeared to be different. Further, the average SR obtained by using the modified GRI was higher than the average SR obtained by using the GRI, as discussed in Chapter 5.

This research's findings align with those of previous studies, which demonstrated that a modified SR index provides a more comprehensive perspective than the GRI regarding the present stage of SR implementation. For example, Rehman et al. (2020) and Amran et al. (2017) previously developed an SR index by integrating GRI with the Accounting and Auditing Organisation of Islamic Financial Institutions—as well as indices from previous studies (e.g., Haniffa et al., 2004; Hassan & Harahap, 2010)—to provide a more accurate measure of social responsibility or CSR implementation in Islamic countries. Although these studies have demonstrated that the modified indices provide accurate measures of CSR or social responsibility implementation in Islamic countries, they contain limitations. Notably, these studies have primarily focused on specific dimensions (e.g., social SR rather than whole SR) or sectors, with a specific emphasis placed on the financial sector. Additionally, their findings may not be generalisable to other contexts or regions. Several studies have used either the GRI or Islamic index to measure the level of SR implementation, as demonstrated by Platonova et al. (2018). However, in a recent study, Abu Al-Haija et al. (2021) used content analysis to examine the annual and sustainability reports of banks in the UAE, with reference to the GRI. The discretionary nature of CSR reporting in the UAE, as an Islamic country, prompted the omission of several critical considerations, such as religious or cultural factors. Consequently, the present research developed a modified GRI that provides a more comprehensive framework through which to assess SR in Islamic countries such as KSA. Nevertheless, content analysis must still be performed to obtain a complete understanding of SR implementation.

Previous research has demonstrated that SR scores in Islamic countries like KSA are relatively low (Ammer et al., 2020; Ebaid, 2023a; Sarraj, 2018). One reason why is the use of the standard GRI framework, which lacks Islamic items even though companies in

these countries adhere to Islamic principles. Islamic law mandates that Islamic businesses support social welfare, the advancement of the socially disadvantaged and the preservation of societal necessities. Therefore, a low SR score can create ambiguity among stakeholders in terms of a company's SR practices, which ultimately affects their firm performance. Incorporate Islamic items is crucial for obtaining a more accurate score of SR implementation in Islamic countries. Companies in Islamic countries can use this research's modified GRI as a guide for reporting and complying with SR, which would ultimately increase the average score of Islamic SR. Additionally, Islamic businesses can also benefit from current knowledge about social responsibility, which emphasises the importance of the comprehensive index compared to the GRI.

6.3 The effect of sustainability reporting on financial performance

This subsection discusses the results obtained in relation to this research's second RQ:

RQ2: How does SR affect the FP of KSA listed firms?

6.3.1 Sustainability reporting's effect on return on assets

According to the FE panel regression model results, the variable TSR significantly and positively affected firm ROA in the period before and including COVID-19 (see Table 6.1), which supports hypotheses H1d and H1h. This finding enhances the case for corporations to invest in SR initiatives even when facing economic hardships. This finding also aligns with the findings of several studies, including Al Hawaj and Buallay (2022), Platonova et al. (2018) and Ebdane (2016), who all found that SR positive affected ROA. However, the trend in other countries regarding SR's effect on ROA contrasts this research's findings, such as Deng and Cheng's (2019) study in China. This implies that SR may not be associated with greater ROA. This variation could be caused by the different approaches used, different populations researched or different factors analysed.

This result strongly supports the stakeholder and legitimacy theories. It also highlights that stakeholder awareness and demand for SR is growing, and that stakeholders integrate SR disclosures alongside other investment information. Consequently, maintaining stakeholder needs can result in organisations performing more effectively and in adding more value to TSR. Given this context, investing in social causes beneficially causes the

market to rebound favourably, net profits to rise and the stability of overall FP to be bolstered (Javeed & Lefen, 2019).

The effects of SR components (ECO, ENV, SOC) on ROA varied in the period before and including COVID-19 (see Table 6.1). For example, the ECO component of SR significantly and positively influenced ROA in the period before and including COVID-19—which supports Hypotheses H1a and H1e. Companies that are considered more transparent, devoted and morally responsible are more likely to provide economic data; this subsequently indicates that such companies effectively invest in initiatives that promote economic sustainability and that result in long-term economic development and stability (Crane & Matten, 2004; Rehman et al., 2020). Similarly, ENV also significantly and positively affected ROA in the period before and including COVID-19, which supports Hypotheses H1b and H1f. This finding further supports studies by Akben-Selcuk (2019) and Ammer et al. (2020), which stated that disclosing information about environmental practices improved ROA. This was because market advantage over non-environmentally conscious competitors can be gained by adopting environmentally friendly business practices (Ammer et al., 2020). In contrast, the SOC element yielded distinct results in the period before and including COVID-19. The research's results did not support the pre-COVID-19 hypothesis (i.e., the results were insignificant); however, the hypothesis was supported in the period including the COVID-19 pandemic. Therefore, H1g was supported. This indicated a significant relationship between social sustainability and ROA in the period including COVID-19. These results also align with previous findings, such as those discovered by Arora et al. (2022), Buallay (2022b) and Hwang et al. (2021). Accordingly, disclosing social sustainability in times of crisis such as the COVID-19 pandemic will positively influence firm performance via ROA. This finding indicates that the COVID-19 pandemic is an exogenous shock that seems to have raised awareness of businesses' social and environmental engagement, which subsequently allowed a clear determination of whether SR adds value during difficult times (Bae et al., 2021).

One reason for the insignificant relationship between SOC and ROA before COVID-19 is that the GRI framework was only launched in 2016, and that companies only began implementing it after receiving encouragement from regulatory bodies. In KSA, SR was highlighted as a voluntary practice in the modified version of the CG codes in 2017, after

which companies began to adopt it. However, SR practices were not yet mature during the pre-COVID period, which could have contributed to the lack of a significant effect on ROA. The unprecedented circumstances caused by the pandemic could have prompted companies to focus on SR as a means of enhancing their reputation and mitigating the crisis's negative effects on their FP. Therefore, the significant association between SR and SR within the COVID-19 period can reflect a shift in corporate priorities towards more sustainable practices.

These results suggest that disclosing SR items (e.g., ECO, ENV, SOC) will help improve a firm's ROA. Although ROA is established by a combination of investment and turnover, providing additional information about SR can improve the perception of a company's overall FP. According to Arora et al. (2022) and Mangalagiri and Bhasa (2022), a positive relationship exists between SR and ROA. This supports the notion that meeting the needs of internal and external stakeholders improves firms' operational performance by fostering relationships and boosting employee motivation and loyalty (Buallay et al., 2020a; Perrini et al., 2009). Further, as Kamaliah (2020) asserted, profitability is a characteristic that allows management the freedom and flexibility to inform shareholders about SR. Therefore, the larger the disclosure of sustainability information, the higher the level of company profitability; additionally, the greater the level of disclosure, the more socially conscious the firm will become, which subsequently motivates management to increase profitability. An additional positive outcome could result if businesses that are more transparent about their SR efforts more effectively attract and retain skilled workers (Fatemi et al., 2018; Greening & Turban, 2000).

6.3.2 Effect of sustainability reporting on return on equity

The results from the FE panel regression model revealed that the variable TSR significantly and positively affected ROE in the period before and including COVID-19. Therefore, Hypotheses H2d and H2h were supported (see Table 6.1). These findings also correlate with those of Al Hawaj and Buallay (2022), Whetman (2018), Aouadi and Marsat (2018) and Zhao et al. (2018), who found that SR initiatives improve a firms' FP (measured as ROE). Therefore, the emergence of COVID-19 has not changed the connection between SR and FP. Consequently, SR disclosures are crucial for enhancing companies' continuous financial success. However, this result contrasts Atan et al.'s (2018) study, which found no relationship between SR and ROE in the Malaysian context.

This could be caused by SR frameworks and regulations varying across different countries, which prompts differences in reporting quality and transparency. Additionally, cultural and societal differences can influence stakeholder expectations of and reactions to SR, which subsequently affects their effect on firm performance. Economic and institutional factors such as market structure and government policies can also affect the relationship between SR and firm performance in different countries. According to Eccles et al. (2014), the link between sustainability and FP is meaningful not just in the long term but also in terms of persuading long-term investors to buy stocks. This suggests that business sustainability initiatives may be expected to produce long-term financial returns, which are significant for long-term investors.

These findings are supported by stakeholder theory, which contends that funding SR initiatives builds the reputations of businesses and raises the quality of the services that they provide to stakeholders; notably, this gradually enhances those businesses' financial success (Buallay, 2022b; Hull & Rothenberg, 2008). Similarly, stakeholder-focused SR initiatives can exert indirect effects, such as strengthening a reputation for quality and dependability, which can cause product differentiation and revenue generation for companies (Lev et al. 2010). Additionally, SR efforts improve stakeholder attitudes about firms and their products (Lee et al., 2013). The higher the ROE value, the better the company's financial success will be signalled to its stakeholders, who will subsequently encourage enterprises to make more positive contributions and publicly disclose all social actions in a more comprehensive and complete SR disclosure process. Therefore, these findings demonstrate that more SR disclosures can improve FP via ROE as a proxy.

The effect of SR components (ECO, ENV, SOC) on ROE were also examined in the period before and including COVID-19. These results were positive and significant in relation to the effect of ECO and ENV on ROE in the period before COVID-19, which supports Hypotheses H2a and H2b. However, the effect of SOC on ROE was insignificant. This insignificant result for SOC suggests that disclosing social information does not help improve ROE. To further explain this conclusion, it has been suggested that shareholders could more strongly value financial success than social disclosure, and that extensively emphasising volunteer work might hurt a company's bottom line (Li & Yang, 2016). Additionally, it was hypothesised that social transparency requires additional costs, which lowers a firm's ability to compete and achieve financial success (Mathuva

& Kiweu, 2016). Further, different results were obtained in relation to the economic aspect of SR. The COVID-19 crisis exerted a negligible effect on ROE. Nevertheless, the global recession could have influenced when firms experienced reduced FP because of the pandemic. This is supported by Yi et al. (2022), who stated that companies who had higher levels of CSR participation in the pre-COVID-19 crisis also had a lower level of post-crisis operating performance in China. Additionally, the element of environmental sustainability demonstrates a significant and positive effect on ROE in the period before and including COVID-19. Accordingly, Hypotheses H2b and H2f were supported. These results also support Abilasha and Tyagi (2019), Ammer et al. (2020) and Rehman et al. (2020), who found that economic and environmental disclosure were favourably correlated with ROE in India, Pakistan and KSA. This implies that the more profit that a firm earns and reveals through its ROE ratio, the greater the number of SR disclosures that it makes. Further, the higher the ROE value, the stronger the company's level of financial success will be signalled to stakeholders. Subsequently, these stakeholders will encourage enterprises to make more positive contributions, as well as disclose all SR activities in a more thorough and comprehensive SR process.

According to investor sentiment, the benefits of SR disclosure outweigh the associated costs for companies in certain industries. Findings from studies that linked SR with improved financial results supported the notion that providing stockholders what they want can boost a company's bottom line, given that the company improves its standing in the eyes of its investors. Consistent with findings from other research (Aouadi & Marsat, 2018; Zhao et al., 2018), one positive correlation was observed between SR and ROE in the current research.

6.3.3 Effect of sustainability reporting on Tobin's Q

This research's results indicated that TSR positively and significantly affected TQ in the period before COVID-19, while the results were insignificant in the period including COVID-19. Therefore, Hypothesis H3d was supported, while H3h was not. Consequently, before COVID-19, TQ results appeared to be positive and significant at normal periods; therefore, this factor is relevant for SR and FP. The change to insignificance, including COVID-19, can indicate that COVID-19 affected FP and obscured the true effect of the variables, as evidenced by their significant effect in the period before COVID-19. Pre-COVID-19 outcomes align with the findings of Deng and

Cheng (2019) and Aybars et al. (2019), who found a positive relationship between SR and TQ. However, the current research's pre-COVID-19 findings contradict those of Atan et al. (2018), Karaman et al. (2018) and Tamayo-Torres et al. (2019), who found no evidence of a link between SR and TQ. Despite this, investors generally perceive SR as a crucial factor driving improved firm growth, as reflected in the proxy measure of TQ. However, during crises such as COVID-19, investors disregard the role of SR in improving the firm's growth.

The three components of SR (ECO, ENV, SOC) significantly and positively affected TQ in the period before and including COVID-19. Accordingly, Hypotheses H3a, H3b, H3c, H3e, H3f and H3g were supported. These findings infer that although KSA listed firms minimise damage to the environment, they should report on environmental issues to stakeholders. This finding indicates that businesses may acquire customer support and a competitive advantage to develop environmental sustainability activity reporting. Similarly, increased environmental activity allows businesses to increase the value of their intangible assets (Albertini, 2013; Konar & Cohen, 2001). Improvements in businesses' environmental practices cause investors to expect stronger FP growth through income growth and increased efficiency. Consequently, investors will be willing to pay more for these companies' stocks, which increases the company's worth (Melnyk et al., 2003). This outcome aligns with previous studies, such as Ammer et al. (2020) and Tan et al. (2017).

The economic and social dimensions were also found to positively and significantly affect TQ. These findings also correlate with those from a previous study that demonstrated how a company's ECO increased its value (Rehman et al., 2020). These results indicated that social disclosure is positively related to firm market performance (measured by TQ). This indicates that social disclosure is significant for KSA listed firms in terms of KSA market performance. However, this result indicates an insignificant relationship between social disclosure and ROA and ROE. This could be because firms who engaged in socially responsible practices suffer from more financial costs and have lower operational performance and FP. This result aligns with Alareeni and Hamdan (2020) and Arora et al. (2022), who demonstrated that social disclosure and market performance have a positive relationship. These findings are also further confirmed by recent KSA research

(Al-Malkawi & Javaid, 2018; Ghardallou, 2022; Omer et al., 2020)—which revealed that companies who are involved in corporate SR have a higher FP level (measured by TQ).

Al-Tuwaijri et al. (2004), Deswanto and Siregar (2018) and Gerged et al. (2021) claimed that environmentally friendly companies that highly value SR are more likely to have experience in being environmentally conscious, which enhances the demand for disclosures and reports. Therefore, according to the results obtained to answer RQ2, KSA businesses can boost their FP by cultivating relationships with stakeholders, raising their firms' reputation and establishing their legitimacy (Barnett, 2007; Perrini et al., 2009). Additionally, it should also be noted that SR can be considered an investment that boosts a business's value (Perrini et al., 2009).

Increased SR activities are a sign of caring for society, the community, environment, employees and business rules (McWilliams & Siegel, 2011; Russo & Fouts, 1997). Additionally, these actions boost businesses' intangible assets, such as their innovation, brand and reputation, which eventually favourably affects their financial success (Surroca et al., 2010). Table 6.1 summarises the results obtained for RQ2.

Table 6.1 Summary of results relating to research question two

Variable	ROA		ROA		ROE		ROE		TQ		TQ	
	Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19	
ECO	PS	H1a *supported*	PS	H1e *supported*	PS	H2a *supported*	PI	H2e *not supported*	PS	H3a *supported*	PS	H3e *supported*
ENV	PS	H1b *supported*	PS	H1f *supported*	PS	H2b *supported*	PS	H2f *supported*	PS	H3b *supported*	PS	H3f *supported*
SOC	PI	H1c *not supported*	PS	H1g *supported*	PI	H2c *not supported*	PI	H2g *not supported*	PS	H3c *supported*	PS	H3g *supported*
TSR	PS	H1d *supported*	PS	H1h *supported*	PS	H2d *supported*	PS	H2h *supported*	PS	H3d *supported*	NI	H3h *not supported*

Note: In reporting the hypothesis-testing results, the descriptions of 'supported' or 'not supported' refer to the alternative hypothesis, which implies rejecting or not rejecting the null hypothesis, respectively; PS = positive and statistically significant; NS = negative and statistically significant; PI = positive and not statistically significant; NI = negative and not statistically significant; confidence level is 10%.

6.4 The effect of sustainability reporting on non-financial performance

This subsection discusses the results pertaining to the third RQ in the present research:

RQ3: How does SR affect the NFP of KSA listed firms?

6.4.1 Effect of sustainability reporting on market share

This research's results revealed that SR (ECO, ENV, SOC, TSR) significantly and positively affected NFP (measured by MS) in the period before and including COVID-19. Therefore, Hypotheses H4a–H4h were supported (see Table 6.2). These results correlate with the claims made by Salam et al. (2022), Tulcanaza-Prieto et al. (2020) and Kang et al. (2015), who also revealed that SR positively affects FP and NFP. Firms that engage in SR disclosure possess a stronger reputation, greater customer loyalty and more effective support from governing bodies (Vu et al., 2020). Further, this result supports the work of Abbasi et al. (2022), who found that perceived CSR practice indirectly influences customer loyalty through the mediatory effects of customer trust and customer–company identification (especially during the COVID-19 period). Further, Eltoum et al. (2021) demonstrated that Dubai companies that adopted SR initiatives before the COVID-19 crisis were more likely to support society and achieve better NFP during the crisis. This is most likely because of increased public support, social status and brand trust—all of which might prompt larger sales and more consumer loyalty.

The positive and significant effect on MS regarding the components of SR (economic, environmental and social sustainability) supports findings presented by Bozzolan et al. (2015), Nguyen et al. (2019) and Kang et al. (2015). These scholars stated that the company's stakeholder orientation will be met with positive responses from stakeholders. Further, the extent to which the public and government recognise and value a company's products or services is reflected in the company's MS. From the investor's perspective, investment returns can be maximised more easily when businesses produce higher-quality goods that meet societal demands. Additionally, this research found that the FP of KSA companies improved when management prioritised and disclosed more information about factors unrelated to FP in their annual reports.

Stakeholder theory acknowledges that strong bonds between businesses and their staff are essential for improving performance and value delivery to customers (Freudenreich et al., 2020). This theory supports the notion that employees and managers are key drivers of a company's growth, reputation and performance. Therefore, investing in these resources is essential for firms to build strong relationships with their employees and supervisors, as well as eventually improve their MS and other NFP measurements.

For KSA listed companies to gain legitimacy in KSA society, as well as attract the investment capital necessary for their continued operation and expansion, they must effectively manage their relationships with numerous stakeholder groups (Ammer et al., 2020; Habbash, 2015; Pfeffer & Salancik, 2003). By participating in SR practices, businesses can improve their image in the eyes of the public and subsequently boost their competitive advantages (Mahadeo et al., 2011; Reverte, 2009).

6.4.2 Effect of sustainability reporting on internal business perspective

SR's effect on NFP (as measured by IBP) was investigated in the period before and including COVID-19. The findings revealed that TSR positively and significantly affected a firm's IBP, which supports Hypotheses H5d and H5h (see Table 6.2). These findings also support the conclusions of previous studies such as Tulcanaza-Prieto et al. (2020), González-Rodríguez et al. (2019) and Kang et al. (2015), who highlighted the link between CSR practices, customer-oriented approaches, IBP and reputation building. According to current findings and previous studies, CSR activities in the form of SR can enhance NFP. Branco and Matos (2016) supported this statement because they noted how SR positively affected NFP (proxied by corporate image). Similarly, Pérez and del Bosque (2015) discovered that customers preferred to associate with firms that possessed good histories and habits in SR policies and initiatives. This lasting and positive impression created by SR engagement cultivates brand trust and customer loyalty, which are key factors in a firm's long-term performance. According to Kaplan (2009), this perspective relates to organisational aspects such as customer satisfaction and employee engagement, which influence the creation of customer value, including customer retention (Oliveira et al., 2021). This consequently encourages improvements in services, customer management and internal business processes—and consequently prompts improved customer experience.

The present research obtained similar results regarding ENV and SOC in the period before and including COVID-19. Both factors were found to be significant and positive, which consequently supports Hypotheses H5b, H5c, H5f and H5g. This implies that providing more information to support these causes may benefit businesses. These findings align with those of previous studies that also found a positive relationship between environmental and social factors and NFP (as measured by IBP; Al-Hosaini & Sofian, 2015; Kang et al., 2015; Tulcanaza-Prieto et al., 2020). These studies also

highlight the importance of these factors in improving access to skills, knowledge and abilities for all employees (Camilleri, 2017; Ismail & Sakr, 2022). However, ECO was found to not significantly influence IBP, neither in the period before nor the one including COVID-19. Consequently, Hypotheses 5a and 5e was not supported. One possible reason why ECO does not have this effect is because economic sustainability focuses primarily on the financial aspects of a company's operations, such as profitability, cost reduction and revenue growth. Although these factors are essential for a company's long-term survival, they may not affect the company's daily operations and production processes.

Overall, the results pertaining to TSR, ENV and SOC further reinforce the stakeholder theory and support the notion that companies are not entities that only operate for their own interests; rather, they must offer benefits to their stakeholders, who include shareholders, creditors, consumers, suppliers, the government, society, analysts and other parties (Freeman, 1984; Nguyen et al., 2019).

Table 6.2 Summary of results related to research question three

Variable	MS		MS		IBP		IBP	
	Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19	
ECO	PS	H4a *supported*	PS	H4e *supported*	NI	H5a *not supported*	NI	H5e *not supported*
ENV	PS	H4b *supported*	PS	H4f *supported*	PS	H5b *supported*	PS	H5f *supported*
SOC	PS	H4c *supported*	PS	H4g *supported*	PS	H5c *supported*	PS	H5g *supported*
TSR	PS	H4d *supported*	PS	H4h *supported*	PS	H5d *supported*	PS	H5h *supported*

Note: In reporting the hypothesis-testing results, the descriptions of 'supported' and 'not supported' refer to the alternative hypothesis, which imply rejecting or not rejecting the null hypothesis, respectively; PS = positive and statistically significant; NS = negative and statistically significant; PI = positive and not statistically significant; NI = negative and not statistically significant; confidence level is 10%.

6.5 The role of corporate governance mechanisms in moderating the effect of sustainability reporting on financial performance

This subsection discusses the results related to this research's fourth RQ:

> RQ4: Do CG mechanisms moderate the impact of the SR and FP in KSA listed firms?

Aligned with RQ4, the objective of the FE panel regression model was to determine the moderating effect of CG mechanisms on the relationship between SR and FP. CG was

proxied by eight mechanisms: BS, ID, AC, IMAC, BGD, QAC, GOV and FOR. To test this research's hypotheses, FP measures (ROE, ROA, TQ) were regressed with TSR, as well as the interaction effect of TSR with each CG mechanism (TSR*BS, TSR*ID, TSR*AC, TSR*IMAC, TSR*BGD, TSR*QAC, TSR*GOV and TSR*FOR). The analysis was first performed in the period before and then in the period including COVID-19. The previous chapter's findings demonstrated that among the CG mechanisms, ID, ACQ and GOV significantly moderated the effect on the relationship between SR and FP. That is, SR*ID, SR*ACQ and SR*GOV exhibited a significant interaction effect for predicting the FP of KSA listed firms. Finally, the CG mechanisms of BS, AC, IMAC, BGD and FOR had no significant moderating influence (see Table 6.3).

6.5.1 Effect of board size in moderating the effect of sustainability reporting on financial performance

BS's influence as a moderator on the relationship between SR and all three FP indicators (ROA, ROE, TQ) was negative and insignificant for the period before and including COVID-19 (see Table 6.4). Therefore, Hypotheses H6a, H7a, H8a, H11a, H12a and H13a were not supported. These findings correlate with other empirical research by Butt et al. (2020), Siregar and Bukit (2018), Chijoke-Mgbame et al. (2020), how found that BS did not moderate the SR's effect on FP. This implies that BS does not strengthen the relationship between SR and FP. One reason for this could be that BS may not reflect its members' levels of expertise or experience in sustainability issues, which could limit their ability to effectively moderate the relationship between SR and FP; it could also hinder other interactions in the model, not just the interaction between BS and SR.

Two opposing views regarding BS were observed—one that supports larger boards and another that supports smaller boards. Those who support larger boards argue that smaller boards are less efficient because they have weaker control over management and higher agency costs (Shamil et al., 2014). However, this argument is countered by the suggestion that larger boards are less likely to be influenced by management. In one sense, the proponents of smaller boards (e.g., Koji et al., 2020) argued that although smaller boards are more efficient, they are also more susceptible to the influence of managers. Additionally, larger boards provide the opportunity to include directors with diverse areas of expertise. Further, a large BS incurs greater coordination expenses because of the time-consuming process of reaching a consensus among all board members. That is, the

beneficial effect of BS depends on the directors' range of experiences and expertise that allows them to participate successfully in decision-making (Ali, 2017; Setia-Atmaja et al., 2009). However, the benefits of large boards may be lost if the board comprises several directors who are ineligible or who lack the necessary expertise in managing the company's activities. According to current CG practices in KSA, boards should include a minimum of three and a maximum of 11 members (CMA, 2017). Husnaini and Basuki (2020) contended that BS in CG performs an insignificant role in SR and FP. The current research findings also suggest that board members of KSA listed enterprises do not communicate effectively enough to develop strategic objectives for improving firm performance through SR practices.

These findings also contradict the theoretical assumptions of agency theory, which posits the BS significantly affects the observation of management team behaviours and attitudes such as SR (Allegrini & Greco, 2013). The findings also contradict the notion that a larger BS prompts a broader range of experience in the managerial and financial aspects of CG (Laksmana, 2008)—and that such businesses are more likely to provide additional CSR information to ensure the high quality of annual reports (Liao et al., 2021). Additionally, large boards can play an essential role in monitoring and in strategic decision-making, which indicates that boards are less likely to be controlled by management (Rossi et al., 2021). In KSA, Al-Janadi et al. (2013) discovered that BS positively affected general voluntary disclosure, while Alotaibi and Hussainey (2016) revealed a strong positive association between CSRD and board size. Additionally, Alhejji and Khawaja (2021) discovered that BS favourably and substantially influenced the FP of KSA listed businesses in 2015. However, these studies included a one or two-year observation duration, and they did not account for individual-level effects. Additionally, at a 10% level of significance, these studies discovered weak relationships. Therefore, the present research's findings suggest that BS does not play a moderating role in the relationship between SR and FP in KSA listed companies.

6.5.2 Effect of independent directors in moderating the effect of sustainability reporting on financial performance

This research's findings demonstrated that when interacting with SR (SR*ID), IDs exhibited a significant and positive moderating effect on firm ROE in the period before and including COVID-19. Therefore, Hypotheses H7b and H12b were supported.

Conversely, the effect of IDs on TQ was only significant in the period that included the COVID-19 pandemic (i.e., Hypothesis H13b is supported). It can be argued that IDs will strengthen the relationship between SR and a firm's FP indicators—primarily the firm's ROE in the period before and including COVID-19—and TQ only in the period including COVID-19. However, IDs have no significant moderating effect on the connection between SR and ROA. Therefore, Hypotheses H6b and H11b were not supported.

The current research's results are consistent with those of previous research focusing on the context of KSA (e.g., Ammer et al., 2020) and on the context of the US and Pakistan (e.g., Butt et al. 2020; Lu, 2021). These studies also identified that ID significantly affected ROE and TQ. This result is also compatible with agency theory, given that IDs both raise the amount of socially responsible investments and enhance the level of transparency. According to Johnson and Greening's (1999) findings, ID displayed a high level of awareness regarding environmental initiatives and actions. This result supports the assertion that Rossi et al. (2021) made that ID play an essential moderating role in the relationship between SR practices and FP in European countries, which ultimately resolves agency conflicts.

However, another assertion that can be made according to these findings is that the moderating influence of IDs on the association between SR and ROA in the period before and including COVID-19 and on TQ pre-Covid-19 is insignificant. The explanation for this is that IDs have a closer relationship with FP measures that reflect long-term performance and growth potential (e.g., ROE, Tobin's Q) than with short-term FP measures like ROA. This is because IDs are more likely to focus on a company's strategic direction and long-term goals, which are reflected in FP proxies such as ROE and TQ rather than short-term financial gains. Additionally, IDs may more effectively provide oversight and monitoring management decisions that affect the company's long-term performance. One reason why is because companies in the KSA may not have fully recognised or implemented the role of IDs because more emphasis is placed on IDs in the CG codes of 2017. Therefore, the market investors prefer firms with IDs and the ultimate effect is exerted on TQ value in the long term. Therefore, an insignificant effect of ID is observed between SR and TQ in the pre-COVID-19 period, though a significant effect is observed in the period including COVID-19. Another reason why the role of IDs in

overseeing SR practices may not have been well established or fully implemented in firms is because of less emphasis being placed on IDs before the CG was modified in 2017.

In brief, one explanation for the negative and insignificant results of KSA listed corporations could be the increasing number of independent board members to rigorously comply with the rules. Another explanation is that IDs lack necessary expertise, which did not achieve improved corporate FP (Al Kuwaiti, 2019). Another factor to consider is that political connections and unofficial community ties in the KSA business world could still influence the choice of directors. This has raised concerns regarding the independence of boards in KSA listed companies (Al–Twaijry 1 et al., 2002; Albassam, 2014; Alshehri & Solomon, 2012). According to these findings, it can be concluded that including more independent board members can somehow strengthen the relationship between SR disclosure and FP.

6.5.3 Effect of audit committee size in moderating the effect of sustainability reporting on financial performance

The research's results indicate that ACS had an insignificant moderating influence on SR's effect on all three FP metrics (ROA, ROE, TQ; see Table 6.3). Therefore, Hypotheses H6c, H7c, H8c, H11c, H12c and H13c were not supported. These results suggest that investors do not consider ACS a vehicle for good governance that influences their evaluation of SR. This also demonstrates that the number of audit committee members in KSA is not yet at its optimum in terms of properly overseeing and monitoring companies. This implies that ACS does not enhance SR's effect on the FP indicators. The outcome aligns with a previous study by Widagdo et al. (2022), who identified that ACS played an insignificant role in SR. However, the finding contrasts that of Hardika et al. (2018), who found that ACS played a vital role in the relationship between SR and FP. The present research's findings support the thought that a larger audit committee does not necessarily imply the ability to efficiently conduct its duties (Buallay & Al-Ajmi, 2019). According to Sultana et al. (2019), Ferreira (2008) and Said et al. (2009), the quality of each audit committee member is more important than the number of members. Investors who have a similar perspectives may overlook ACS when analysing SR.

Although the KSA CG Code recognises the importance of the AC in improving the quality of SR procedures, it does not specifically highlight their involvement in

disclosure. This finding does not correlate with agency theory, which centres on audit quality because larger audit firms increase disclosure quality while simultaneously reducing agency costs by including more trustworthy and credible material in reports (Al-Ahdal et al., 2020; Al-Janadi et al., 2013; Suprianto et al., 2017). Similarly, Ani et al. (2020) and Al Matari and Mgammal (2019) all concluded that no substantial association existed between ACS and disclosure. Alsaeed (2006) found that the size of audit firms was not a significant factor in the investigation of voluntary corporate disclosure in KSA. Similarly, Wallace and Naser (1995), Hossain et al. (1995) and Macarulla and Talalweh (2012) discovered no significant association between ACS and disclosure. This indicates that the high number of audit committee members prompts various perspectives, which makes establishing a consensus and decision-making difficult. Consequently, no association exists between ACS, SR and FP.

6.5.4 Effect of independent members of audit committee in moderating the effect of sustainability reporting on financial performance

This research findings demonstrated that the IMAC had no moderating influence on the relationship between SR and FP. Therefore, the Hypotheses H6d, H7d, H8d, H11d, H12d and H13d were not supported. The experience of members who participate in the independent audit committee may not be enough to monitor board operations. This finding is similar to previous studies, such as Al-Matari et al. (2012), Abdullah and Shukor (2017) and Al-Ahdal et al. (2020), who found no association between audit committee independence and firm performance research also found that IMAC lack expertise because they are not involved in the daily operations of organisations (Klein, 1998).

However, these findings contravene the assumptions of agency theory, which denotes that independent auditors who are empowered to make informed decisions can uncover errors and provide unbiased judgements (Al Matari & Mgammal, 2019). Further, these findings contradict previous studies that demonstrated how increasing the share of independent audit committee members significantly and positively affected voluntary disclosure and firm performance (Gantyowati & Nugraheni, 2014; Madi et al. 2014; Pangaribuan et al., 2019). It is the audit committee's responsibility to supervise the process of financial reporting, which includes aiming to increase levels of transparency. Conversely, the present research highlighted that the presence of an independent AC member does not

have a significant moderating effect on the relationship between SR and FP. According to Suteja et al. (2017), if the primary purpose is to comply with regulatory requirements, then the formation of an independent audit committee does not properly conduct its oversight duty and does not use its independence to analyse the board of directors' policies. Consequently, the audit committee's independence is unconnected to the company's FP. The lack of significance regarding this variable may not indicate anything other than more research being required.

6.5.5 Effect of audit committee quality in moderating the effect of sustainability reporting on financial performance

The present research's findings demonstrated that the moderating effect of ACQ is significant when SR interacts with ACQ (SR*ACQ) to predict ROA. This effect on ROA was significant in the period before and including COVID-19. Therefore, Hypotheses H6f and H11f were supported.

This result is consistent with empirical studies that demonstrate how Big 4 audit clients had better financial results (Dakhli, 2021; Zahid et al., 2022). These clients claimed that they can improve a company's internal control system and CG thorough audits, thereby enhancing the company's FP. Moreover, stakeholders have a high level of confidence in companies that are audited by the Big 4, which encourages them to raise their investment in those companies. Although the relationship between SR and ROA was significantly positive in the analysis for RQ2, the current results indicate that the relationship between SR and ROA will be strengthened if ACQ is improved (see Table 6.1). This indicates that high ACQ offers market stakeholders and management confidence in terms of obtaining a stronger financial ROI in the period before and including COVID-19. This also suggests that a socially responsible firm that is audited by a Big 4 firm is more likely to achieve superior FP. This finding supports the agency theory (Jensen & Meckling, 1976), which acknowledges that auditing is a key monitoring technique to reduce the information asymmetry issue, limiting opportunistic behaviours and improving SR practices and firm performance (Agyei-Mensah, 2018a; Appuhami & Tashakor, 2017; Chung, 2004; Habbash & Alghamdi, 2017; Zahid et al., 2022). Ado et al. (2020) claimed that Big 4 auditors are considered more trustworthy because they dedicate sufficient resources to improving audit quality and supporting the adoption and effectiveness of good practices, such as SR (Bacha et al., 2020). Working with the Big 4 auditors demonstrates the

commitment of socially responsible organisations to moral standards, openness and dependability (Xiao et al., 2004). Otherwise, the SR's effect on FP proxied by ROA is stronger for companies that are audited by the Big 4 firms (Dakhli, 2022; Rahman et al., 2019).

No significant moderating effect was observed for ACQ when it interacted with SR to predict ROE and TQ in the period before and including COVID-19. Accordingly, Hypotheses H7f, H8g, H12f and H13f were not supported. This result aligns with research from Shubita (2021) and Dewi and Monalisa (2016), who examined a similar phenomenon and found no such relationship. This could be because ACQ is specifically related to FP and financial control processes. This indicates that ACQ directly affects the FP metrics that rely on accurate financial reporting, such as ROA. Conversely, ROE and TQ are more related to market and strategic performance factors, which are not as directly influenced by ACQ. Therefore, ACQ may not affect these metrics as significantly as it affects ROA. Another explanation for the ACQ's lack of significant effect on the relationship between SR and ROE and TQ is that audit committees primarily focus on financial reporting rather than SR. SR is typically handled by a separate committee, such as a sustainability committee. Therefore, ACQ may not be able to enhance SR's effect on ROE and TQ. It is also worth noting that ROE and TQ are financial measures related to market and shareholder performance, while shareholders and market players are more concerned about SR. Consequently, the role of ACQ in strengthening the relationship between SR and ROE and TQ may be insignificant.

This finding contravenes the agency theory, which emphasises audit quality because larger audit firms increase disclosure quality and lower agency costs by adding more trustworthy and coherent material in the reports (Al-Janadi et al., 2013; Eng & Mak, 2003; Haniffa & Cooke, 2002). Overall, one explanation for KSA's insignificant results is that KSA listed firms have just recently embraced CG requirements. Therefore, it might be too early to determine how CG standards influence firm performance in KSA. CG codes are nevertheless considered in the present research because they are essential for firms to function effectively and transparently. Further, other KSA research studies such as Buallay et al. (2017) have investigated this issue because it is critical to understand how CG principles can be implemented effectively to improve the performance of KSA listed companies. Buallay et al.'s findings indicate that CG adoption does not significantly

affect the operational, financial and market performance of companies listed on the Saudi Stock Exchange. This is because CG rules might be substituted with KSA's commercial laws, which protect investors (Buallay et al., 2017). Finally, investors' decision-making processes that focus on the future lack sufficient information from the market to measure TQ and the accounting measure ROE.

6.5.6 Effect of board gender diversity in moderating the effect of sustainability reporting on financial performance

This research's results regarding BGD indicated that this factor does not play a significant role in moderating SR's effect on FP indices. The lone exception occurred in the pre-COVID-19 period when the interaction effect (SR*BGD) was significant when predicting TQ (Hypothesis H8e is thus supported). Therefore, the emergence of COVID-19 has changed the relationship between BGD, SR and FP. The change to insignificance in the period including COVID-19 could indicate that this pandemic affected FP by obscuring the true effect of the variables, which can be evidenced by their significant effect in the period before COVID-19. Additionally, the significance of TQ in the pre-COVID-19 period, specifically caused by BGD, could be attributed to investors' priorities and concerns. However, the presence of BGD from diverse backgrounds may not be enough to capture investors' attention, given that they primarily focus on the company's market performance (measured by TQ) rather than its internal FP (measured by ROA, ROE). Further, the harsh macro-economic conditions in the period including the COVID-19 pandemic may have overshadowed the perceived importance of women on corporate boards.

This research's results align with previous research conducted in the UK by Albitar et al. (2020) and in France by Brinette et al. (2023). These scholars demonstrated that gender diversity plays a moderating role in the relationship between environmental, social and governance disclosure and TQ. However, Kahloul et al. (2022) found that gender diversity had no significant moderating effect on CSR reporting and TQ. Regarding FP indicators, all the remaining interaction effects were determined to be insignificant. Accordingly, Hypotheses H6e, H7e, H11e, H12e and H13e were not supported. BGD thus appears to have not affected the relationship between SR and FP.

These insignificant findings correlate with research from Chebbi and Ammer (2022), Ararat and Yurtoglu (2021), Shakil et al. (2022) and Marinova et al. (2016), who noted no difference in performance between companies with and without female directors on their corporate boards. This contradicts the agency theory, which contends that appointing women onto a company's board of directors can increase the independence and effectiveness of the company's supervisory system for managing its managers (Minakh et al., 2021; Terjesen et al., 2016). According to Ionascu et al. (2018), if one gender dominates another, then the firm's performance can suffer because of the shortcomings of both genders affecting the organisation. Nevertheless, women continue to confront cultural and other hurdles regarding their involvement in and equitable opportunity for leadership at all levels of decision-making in economic and public life (Issa & Fang, 2019). The present research's findings reflect KSA's societal and religious norms.

6.5.7 Effect of government ownership in moderating the effect of total sustainability reporting on financial performance

This research's results revealed that GOV significantly and positively moderated the relationship between SR and ROA in the period before and including COVID-19, as well as moderated for SR and ROE. Therefore, Hypotheses H6g, H7g, H11g and H12g were supported. These results indicated that SR's effect on ROA and ROE would be amplified when moderated by government-owned firms.

Further, the present research implies that KSA listed companies with significant state ownership typically include more SR information in their annual reports. According to agency theory, more SR disclosure may reduce the agency issues that occur between business management and the government as a significant owner (Akben-Selcuk, 2019; Core, 2001).

These significant moderating effects of GOV further indicated that a greater proportion of GOV improves investors' confidence. Therefore, the function of strong GOV may safeguard the most recent SR in the business operations of KSA firms, which can prompt greater financial returns for the business's many stakeholders. Moreover, these results support the notion that the government considers social factors, and that it is more likely to be socially responsible in the organisations in which it holds shares; this is believed to positively influence SR practices (Habbash, 2016). This finding for RQ4 evidences the

significant influence of GOV in amplifying the SR's effect on ROA and ROE. This also confirms the empirical findings of Akben-Selcuk (2019), Ang et al. (2022) and Haddad et al. (2015). Therefore, SR can moderate its effect on ROA and ROE in the period before and including COVID-19.

The interaction effect of SR*GOV on TQ was insignificant. Therefore, Hypotheses H8g and H13g were not supported, which suggests that GOV as a moderating effect will not increase a firm's growth prospective. This further implies that when GOV is used as a moderating factor, SR engagement increases FP and operational performance, as well as reduces market value. This occurs because of the minimal percentage of GOV in the business, which minimally affects management decisions that aim to enhance firm performance (Hamzah et al., 2022). Some scholars argued that a higher degree of GOV can inhibit a company's growth, given that the principal objective of governments is to sometimes purchase shares of publicly traded companies to improve their market position and influence (Darko et al., 2016). Additionally, the government will use its ownership of publicly traded firms to benefit politicians, and it might implement new bureaucratic regulations that can hinder the growth of firms (Tran et al., 2014). The insignificant role of GOV as a moderator on SR and TQ highlights the importance of increasing the proportion of privatisation in KSA listed enterprises by decreasing the proportion of GOV. In this case, the objective is to enhance company performance and enable businesses to concentrate on development opportunities rather than on politicians.

6.5.8 Effect of foreign ownership in moderating the effect of sustainability reporting on financial performance

This research evaluated FOR to ascertain whether it positively moderates SR's influence on FP. The results revealed that FOR did not significantly moderate the relationship between SR and the three FP measures (ROA, ROE, TQ) in the period before and including COVID-19. Therefore, Hypotheses H6h, H7h, H8h, H11h, H12h and H13h were not supported.

Al-Gamrh et al. (2020) observed similar results in relation to enterprises in the UAE. The authors claimed that because emerging markets were not consolidated and suffered from information asymmetry, international investors had a limited capacity to oversee the markets. This is qualitatively similar to the KSA scenario, in which foreign investors are

prohibited from owning more than 49% of a firm. This subsequently deprives these investors of the ability to control the firm and cause change.

This finding correlates with the findings of Phung and Le (2013) and Al-Gamrh et al. (2020), who discovered that FOR had no significant influence on SR and FP in KSA. Some plausible justifications have been provided regarding why FO has an insignificant effect on SR and FP. First, cultural, linguistic and geographic factors might make controlling management behaviour difficult for foreign investors (Choi et al., 2013; Huafang & Jianguo, 2007). Second, by capping FOR at 49%, foreign investors may have less influence on a company's reporting practices (Vu et al., 2011). Finally, the lack of concentration and information asymmetry in developing markets such as in KSA makes observing companies more difficult for foreign investors. To lessen the level of information asymmetry that international (external) investors encounter, businesses should emphasise improved SR practices and disclosures (Al Amosh & Khatib, 2021; Khlif et al., 2017). More foreign investment will consequently be attracted. Additionally, foreign investors with voting and ownership rights can exert effective oversight over management and motivate corporate managers to increase their SR performance (Adams et al., 2005).

Table 6.3 Summary of results related to research question four

Variable	ROA		ROA		ROE		ROE		TQ		TQ	
	Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19	
Interaction												
TSR*BS	NI	H6a *not supported*	PI	H11a *not supported*	NI	H7a *not supported*	PI	H12a *not supported*	NI	H8a *not supported*	NI	H13a *not supported*
TSR*ID	PI	H6b *not supported*	PI	H11b *not supported*	PS	H7b *supported*	PS	H12b *supported*	PI	H8b *not supported*	PS	H13b *supported*
TSR*ACS	NI	H6c *not supported*	NI	H11c *not supported*	NI	H7c *not supported*	NI	H12c *not supported*	PI	H8c *not supported*	PI	H13c *not supported*
TSR*IMAC	NI	H6d *not supported*	NI	H11d *not supported*	PI	H7d *not supported*	PI	H12d *not supported*	NI	H8d *not supported*	NI	H13d *not supported*
TSR*BGD	NI	H6e *not supported*	NI	H11e *not supported*	PI	H7e *not supported*	PI	H12e *not supported*	PS	H8e *supported*	PI	H13e *not supported*
TSR*ACQ	PS	H6f *supported*	PS	H11f *supported*	NI	H7f *not supported*	NI	H12f *not supported*	PI	H8f *not supported*	PI	H13f *not supported*
TSR*GOV	PS	H6g *supported*	PS	H11g *supported*	PS	H7g *supported*	PS	H12g *supported*	NI	H8g *not supported*	NI	H13g *not supported*
TSR*FOR	NI	H6h *not supported*	NI	H11h *not supported*	NI	H7h *not supported*	NI	H12h *not supported*	NI	H8h *not supported*	NI	H13h *not supported*
IFRS	NI	H6i *not supported*	NI	H11i *not supported*	NI	H7i *not supported*	NI	H12i *not supported*	NI	H8i *not supported*	NI	H13i *not supported*
Control variables												
FS	NI		NI		NI		NI		PI		NI	
FA	PS		PS		PS		PS		PI		PS	

Notes: In reporting the hypothesis-testing results, the descriptions of 'supported' or 'not supported' refer to the alternative hypothesis, which implies rejecting or not rejecting the null hypothesis, respectively; PS = positive and statistically significant; NS = negative and statistically significant; PI = positive and not statistically significant; NI = negative and not statistically significant; confidence level is 10%.

6.6 The role of corporate governance mechanisms in moderating the effect of sustainability reporting on non-financial performance

This subsection discusses the results pertaining to the fifth RQ in the present research:

> RQ5: Do CG mechanisms moderate the impact of SR on NFP in KSA listed firms?

To address this research's RQ5, the regression models aimed to determine whether CG positively moderated the relationship between SR and NFP (as measured by MS, IBP). The previous chapter's findings demonstrated that among the CG mechanisms, the interaction of SR*BS and SR*BGD had a significant moderating effect on the relationship between SR and NFP indicators. In contrast, other CG mechanisms such as ID, ACS, IAC and GOV had a mixed effect in moderating the relationship between SR and NFP. Additionally, an insignificant role was observed regarding ACQ and FOR in moderating SR's effect on NFP (see Table 6.4).

6.6.1 The role of board size in moderating the effect of sustainability reporting on non-financial performance

Regarding BS, the results demonstrated that in the period before COVID-19, BS played a significant role in positively moderating SR's effect on MS (i.e., SR*BS), which supports Hypothesis H9a. However, Hypothesis H14a was not supported because BS's moderating effect was not significant in the period including COVID-19. Regarding NFP (as measured by IBP), the moderating effect of BS was significant and positive for the period before and including COVID-19. Therefore, Hypotheses H10a and H15a were confirmed. Regarding the MS variable, the shift to insignificant in the period including COVID-19 could have been caused by the pandemic obscuring the true effect of the variables, which can be evidenced by their significant effect in the period before COVID-19. These findings corroborate the findings of Obaji et al. (2015) and Elbannan and Elbannan (2014), who reported a positive and significant relationship between SR and NFP, in which BS also played a moderating effect. In these studies, NFP was measured using customer satisfaction and metrics from both the customer perspective and IBP.

Further, to protect MS, the boards of directors should be more forthcoming in terms of information about matters of public interest (e.g., SR). This also aligns with agency theory, which posits that boards have a supervisory role and that they can pressure management. Because larger boards are expected to inform stakeholders and encourage openness more effectively (Jizi et al., 2014), having a larger board should thus increase the likelihood that companies will balance their shareholder and public interests.

6.6.2 The role of independent directors in moderating the effect of sustainability reporting on non-financial performance

It was hypothesised that ID would positively moderate SR's effect on NFP (as measured by MS, IBP). Specifically, the results revealed that ID had a significant and positive moderating effect on SR and MS, but only in the period including the COVID-19 pandemic. Therefore, Hypothesis H14b was supported, but Hypothesis H9b was not because it related to the period before COVID-19. This is critical to note because it indicates ID's role in helping corporations respond to the difficulties of a pandemic, and it underscores the significance of ID's presence in times of crisis. In the period before COVID-19, the presence of ID did not influence firm performance, which suggests that ID's effect on SR and MS is less noticeable in non-crisis situations. These findings correlate with those of Minakh et al. (2021), who determined that IDs significantly moderated the effect of investors' reactions on NFP. Further, Elbannan and Elbannan (2014) supported these findings by highlighting ID's positive and significant influence on Egyptian NFP (as measured by MS). Integrating agency and institutional theories for CG is likely to moderate the relationship between SR and NFP.

Regarding IBP, the interaction effect (i.e., SR*ID) was not statistically significant in the period before or including COVID-19. Therefore, Hypotheses H10b and H15b were not supported. These results somewhat corroborate research from Biryomumeisho et al. (2016) and Minakh et al. (2021), which proxied NFP with customer perspective, IBP and the learning and growth perspective. These studies suggested that the presence of IDs on boards may not significantly improve a company's FP and NFP. Some scholars argued that increase ID representation may negatively affect a company's internal and external stakeholders. This could be caused by the belief that top management is better equipped to understand company-specific issues and challenges, given that they are in regular contact with employees and they can provide them specialised training, orientation and

incentives to improve their performance and output. In contrast, IDs may not possess the same qualities, and they can thus not significantly affect overall company performance.

6.6.3 The role of audit committee size in moderating the effect of sustainability reporting on non-financial performance

It was hypothesised that the ACS variable would positively moderate SR's effect on NFP. This research's findings demonstrated that ACS significantly moderated SR's effect on MS in the period before COVID-19. Although this finding supported Hypothesis H9c, it did not support Hypotheses H10c, H14c and H15c. These MS pre-COVID-19 findings suggest that when SR is supported by a larger AC, it can prompt a higher MS. Elbannan and Elbannan (2014) found comparable outcomes, in which they argued that an increase in CG activities enhances customer-related performance, learning and growth and employee productivity (Saha et al., 2018).

These insignificant findings for the period that included COVID-19 support the notion that a larger AC does not necessarily impair a firm's ability to perform its duties efficiently (Buallay & Al-Ajmi, 2019). The insignificant result for IBP implies that ACs should review their roles and ensure that their practices aim to improve the IBP. In this regard, ACS can adhere to government regulations to avoid ineffectiveness in the IBP.

6.6.4 The role of independent members of the audit committee in moderating the effect of sustainability reporting on non-financial performance

This research's findings demonstrated that the IMAC had an insignificant influence in moderating SR's effect on most NFP indicators in the period before and including COVID-19 (see Table 6.4). Therefore, Hypotheses H9d, H10d and H14d were not supported. However, a significant positive relationship was detected regarding the moderating role of IMAC on the relationship between SR and IBP in the period including COVID-19. Therefore, Hypothesis H15d was supported. Consequently, the change from insignificant in the pre-COVID-19 period could indicate that NFP has been greatly affected by COVID-19 in terms of IMAC.

The IBP, including COVID-19 findings, implies that having more independent members on the AC can improve the IBP of KSA enterprises that are publicly traded for several reasons. First, IMAC might have more diverse backgrounds and experiences, which could

entail new perspectives and insights in a company's decision-making processes, especially during the challenging time of COVID-19. Second, IMAC could provide more rigorous oversight of the decisions of management related to sustainability issues, which could subsequently cause better NFP outcomes in the form of IBP. Finally, stakeholders and investors could have increased the attention of IMAC towards the SR and their effect on NFP. IMAC's significant role is supported by other studies as well. According to Biryomumeisho et al. (2016), Obaji et al. (2015) and Alotaibi and Hussainey (2016), incorporating IDs into an AC can improve the link between the firm's SR practices and its NFP. Therefore, these results support the position taken by the SCCG—that an external and independent member of the AC is preferable.

In contrast, the observed insignificant correlation between independent AC members and SR suggests that IMAC does not improve NFP in KSA. IMAC's insignificant effect on the relationship between SR and NFP in the period before COVID-19 could be caused by the implementation of the KSA CG codes in 2017. This has emphasised the importance of IDs in committees—including the AC—which could have prompted companies to employ IDs by 2018. However, ID's positive effect on NFP may require time to materialise, and it may only be visible in the long term. Therefore, a longer time frame may be needed to observe the full effect of IDs on NFP. The Saudi Stock Exchange advised that the AC chair should be an ID who is not the board chair; however, this research has revealed limited support for this advice. Consequently, it does not improve NFP. In cases in which at least one AC member is not overburdened with extra responsibilities as an AC board member and member of competing seats in other board subcommittees, companies appear more forthright in terms of disclosing their SR efforts (Telenor, 2017; CMA, 2021).

6.6.5 The role of audit committee quality in moderating the effect of sustainability reporting on non-financial performance

This research's results revealed that the role of ACQ as a moderator was insignificant in the period before and including COVID-19 for both measures of NFP. Therefore, no support was found for Hypotheses H9f, H10f, H14f or H15f. Because of scarce studies focusing on the moderating role of ACQ on the connection between SR and NFP, this research's findings cannot be compared with previous literature. However, the findings

generally contradict research from Adedeji et al. (2019) and Biryomumeisho et al. (2016), who found a strong and positive association between CG and NFP.

The insignificant findings regarding ACQ's effect on NFP could have been prompted by various reasons. First, the primary focus of ACs is often to ensure legal compliance and monitor FP, which can limit their scope of responsibilities (Ani et al., 2020). Second, the relatively weaker influence of CG mechanisms, including the AC, in the KSA context could have played a role. Overall CG practices may not be as strong in KSA, and updates were made only in 2016 (Gerged & Agwili, 2020). This suggests that NFP disclosure, which can enhance a company's reputation, could have been overlooked by ACs because of the weak CG practices in KSA (Minakh et al., 2021). Therefore, companies in KSA should improve their CG practices, including the role of ACs, to effectively enhance the companies' NFP.

6.6.6 The role of board gender diversity in moderating the effect of sustainability reporting on non-financial performance

This research's results demonstrated that BGD does not moderate the effect between SR and MS in the pre-COVID-19 period, so Hypothesis H9e was not supported. However, BGD does moderate SR's effect on other NFP indicators in both time periods, so Hypotheses H10e, H14e and H15e were supported. This research's results revealed that the effect of the SR–BGD interaction on MS was insignificant in the pre-COVID-19 period. However, in the period involving COVID-19, this interaction exhibited a significant effect; this indicates that a change has occurred in the relationship between SR and BGD. This could have been caused by the pandemic presenting unique challenges and circumstances that affected consumer behaviour and preferences in KSA, thereby altering the relationship between SR and BGD. Conversely, the SR–BGD interaction was significant in predicting IBP in the period before and including COVID-19. This implies that BGD's effect on the connection between SR and NFP was not affected by the pandemic, and that the focus on improving internal business processes and performance was driven by KSA's competitive environment. This finding thus demonstrates that BGD somehow strengthens SR's significant moderating effect on NFP, which subsequently expresses the importance of possessing a diverse board to enhance the relationship between SR and NFP.

Consequently, although the NFP indicator findings were significant in both COVID-19 periods, the MS pre-COVID-19 was insignificant. This suggests that MS is unimportant for SR and NFP. The evidence further suggests that a more diverse board inspires trust in stakeholders, which improves governance and ultimately enhances superior performance in certain areas. This significant finding supports the argument that boards greatly benefit from a diverse membership, and that board efficacy increases when it includes women in leadership roles (Carretta et al., 2010; Ellwood & Garcia-Lacalle, 2015). This signifies that women on boards are more likely to work to improve their communities, and that their participation in SR activities (e.g., to improve the firm's bottom line) will more likely benefit KSA listed firms.

6.6.7 The role of government ownership in moderating the effect of sustainability reporting on non-financial performance

According to this research, GOV had a positive and significant moderating effect in the pre-COVID-19 period, when SR interacted with GOV for MS. Therefore, Hypothesis H9g was supported. In contrast, the remaining interactions were insignificant, resulting in Hypotheses H10g, H14g and H15g not being supported. The emergence of the COVID-19 pandemic has thus altered the relationship between GOV, SR and NFP. The change to insignificance in the period including COVID-19 may suggest that the pandemic's effect on NFP has overshadowed the true effects of the variables, which were significant before the pandemic. Consequently, MS in the pre-COVID-19 period was significant—so it was considered relevant for SR and NFP.

This result is similar to the previous work of Moscu et al. (2015) and Alshirah et al. (2022). These scholars argued that GOV does not always improve business performance, and that it can sometimes create inefficiencies; however, privatisation can also lead to improved firm performance. As a corollary, the government will use its stake in publicly traded companies to enrich politicians at the expense of economic growth and competitiveness by enacting new regulations that add layers of difficulties to conducting business (Tran et al., 2014). To improve corporate performance and allow enterprises to focus on development opportunities rather than politicians, the degree of privatisation in KSA listed firms must be increased by reducing the percentage of GOV. The Saudi Government has more power and influence over businesses than Western governments.

The findings suggest that cultural factors and agency can account for GOV's moderating effect on the relationship between SR and firm performance.

6.6.8 The role of foreign ownership in moderating the effect of sustainability reporting on non-financial performance

This research's results revealed that FOR had no significant moderating effect, and that none of the interactions (SR*FOR) were statistically significant when regressing NFP measures. Therefore, Hypothesis H9h, H10h, H14h and H15h concerning FOR in RQ5 were not supported. The outcomes of regression analysis that was performed to determine the moderating effects of FOR on the link between SR and NFP are summarised in Table 6.4.

These findings correlate to those of Biryomumeisho et al. (2016) in the case of Uganda. However, this finding contradicts the works of Guo and Zheng (2021) and Elbannan and Elbannan (2014), who claimed that FOR significantly affected SR and NFP, especially staff productivity and MS in China and Egypt, respectively. Notably, the measurement of NFP in these studies varied. Some studies used employee satisfaction, social performance and environmental performance as metrics, while others analysed NFP according to customer perspective and IBP. For UAE businesses, Al-Gamrh et al. (2020) asserted that international investors cannot effectively monitor emerging markets because of the lack of market consolidation and information asymmetry. A similar situation can be observed in KSA, where foreign investors are not allowed to hold more than 49% of a company. Consequently, they cannot control the company and make necessary changes. Therefore, it can be stated that FOR does not affect the relationship between SR and NFP in the period before and including COVID-19.

Table 6.4 Summary of results relating to research question five

Variable	MS		MS		IBP		IBP	
	Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19	
Interaction								
TSR*BS	PS	H9a *supported*	NI	H14a *not supported*	PS	H10a *supported*	PS	H15a *supported*
TSR*ID	PS	H9b *not supported*	PS	H14b *supported*	NI	H10b *not supported*	PI	H15b *not supported*
TSR*ACS	PI	H9c *supported*	NI	H14c *not supported*	NI	H10c *not supported*	PI	H15c *not supported*
TSR*IMAC	PI	H9d *not supported*	PI	H14d *not supported*	PI	H10d *not supported*	PS	H15d *supported*
TSR*BGD	PS	H9e *not supported*	PS	H14e *supported*	PS	H10e *supported*	PS	H15e *supported*
TSR*ACQ	PI	H9f *not supported*	NI	H14f *not supported*	NI	H10f *not supported*	PI	H15f *not supported*
TSR*GOV	PS	H9g *supported*	PI	H14g *not supported*	NI	H10g not *supported*	NI	H15g *not supported*
TSR*FOR	NI	H9h *not supported*	PI	H14h *not supported*	NI	H10h *not supported*	NI	H15h *not supported*
IFRS	PS	H9i *supported*	PI	H14i *not supported*	NI	H10i *not supported*	NI	H15i *not supported*
Control variables								
FS	PI		NI		PI		PI	
FA	NI		PI		PI		PI	

Note: In reporting the hypothesis-testing results, the descriptions of 'supported' or 'not supported' refer to the alternative hypothesis, which implies rejecting or not rejecting the null hypothesis, respectively; PS = positive and statistically significant; NS = negative and statistically significant; PI = positive and not statistically significant; NI = negative and not statistically significant; confidence level is 10%.

6.7 A comparison between pre and post–implementation of the International Financial Reporting Standards

Table 6.5 displays the results obtained from comparing pre-IFRS adoption (2015–2016) and post-IFRS adoption (2017–2020). The mean differences between the study variables are also listed in Table 6.5 using t-tests for differences in means.

Table 6.5 Test of mean differences of sustainability reporting and financial performance in the context of adopting the International Financial Reporting Standards

Variable	Mean	Std Dev	Mean	Std Dev	T-test of difference
	Pre-IFRS period 2015–2016		Post-IFRS period 2017–2020		(p-value)
SR					
ECO	0.461	0.100	0.475	0.105	0.001**
ENV	0.186	0.178	0.210	0.197	<0.001**
SOC	0.317	0.105	0.339	0.120	<0.001**
TSR	0.312	0.331	0.341	0.367	<0.001**
FP and NFP					
ROA	2.030	7.374	5.146	6.697	0.001**
ROE	2.601	12.351	7.808	13.209	0.001**
TQ	1.584	0.899	1.706	0.891	0.006**
MS	9.937	13.643	9.850	14.881	0.183
IBP	0.855	0.362	0.846	0.352	0.999

Note: 2015–2016 denotes the pre-IFRS period, while 2017–2020 denotes the post-IFRS period; ECO = economic sustainability reporting; ENV = environmental sustainability reporting; SOC = social sustainability reporting; TSR = total of sustainability reporting; ROA = return on assets; ROE = return on equity; TQ = Tobin's Q; MS = market share; SD = standard deviation; the test of difference in the last column is founded on t-tests for the means; **significant at the level of 1%; *significant at the level of 5%.

Table 6.5 reveals that the p-values for the t-test were highly significant (p-value of 0.01) for TSR and its components (ECO, ENV, SOC), in which the mean values were significantly higher in the post-IFRS adoption period. This suggests that adopting the IFRS has prompted KSA listed firms to report about sustainability more frequently and effectively across all three components. These results correlate with those of

Weerathunga et al. (2020), who discussed the various means by which IFRS convergence could improve social and environmental disclosure.

Further, these findings Weerathunga et al.'s (2020) research, which compared the change in CSR reporting among IFRS adopters and non-adopters of the Indian Accounting Standards during the sample period. Following IFRS convergence, the level of CSR reporting by IFRS-adopting companies grew significantly. These findings imply that IFRS adoption is associated with increased CSR reporting. Additionally, van der Laan Smith et al. (2014) asserted that businesses in nations with a strong shareholder culture are more likely to improve their CSRD after implementing IFRS. This reinforces the notion that adopting the IFRS can improve the frequency and standard of SR.

FP indicators (ROA, ROE, TQ) exhibited highly significant mean differences ($p < 0.01$), which suggests that adopting IFRS substantially improved the FP of KSA listed firms. These findings are supported by previous research such as Hou et al. (2014) and Owolabi and Iyoha (2012), who found that IFRS adoption requirements influence accounting-based performance and market-based performance metrics, and that IFRS adoption substantially improves a firm's FP. Given these results, KSA businesses and policymakers appear to have met the necessary conditions for IFRS adoption to materially affect company finances. With the onset of IFRS—a new set of more stringent and all-encompassing accounting standards—investors may have felt more confident using reliable FP data that they once implemented to build their portfolios (Houqe et al., 2012). Additionally, it is highly unlikely that every KSA company uses IFRS correctly. To help these businesses enhance their accounting practices and FP, the present research suggests that regulatory bodies should inform businesses about the advantages of preparing financial statements in alignment with IFRS.

However, the mean differences for NFP indicators (MS, IBP) were not statistically significant. These findings indicate that adopting IFRS does not necessarily prompt improved NFP. This contrasts Miah (2021), who specifically determined that firm performance is enhanced by adopting IFRS. Therefore, investigating the relationship between IFRS and firm performance in the present research provided a comprehensive understanding of how IFRS influences corporate financial outcomes. The results obtained offer strong evidence for a change in FP in the post-IFRS period, which supports and promotes the implementation of IFRS in KSA. The mean value of the two clusters were

statistically significant. Consistent with previous studies, such as Hamed et al. (2022), the present research concluded that adopting IFRS (i.e., new regulations) enhances SR and FP. Further, IFRS implementation can raise SR and firm performance metrics. However, the results demonstrated that IFRS adoption had no discernible effect on either NFP metric.

Previous research has revealed that applying IFRS in KSA is not a simple undertaking, given the workforce's lack of IFRS understanding (Ebaid, 2021). Regulators should consequently urge companies to develop policies for staff training and education so that they can align with IFRS. This is critical for the success of IFRS adoption in KSA, as well as for financial markets to make informed judgements (Nurunnabi, 2018). Regulatory organisations should thus provide more information to businesses regarding the benefits of IFRS so that they can convey the full benefits of applying these standards.

6.8 Summary

This chapter discussed the various results presented in Chapter 5. Initially, this chapter assessed sustainability practices according to two indices: the standard GRI and the modified GRI, which this research developed to incorporate Islamic items. The results revealed that the modified GRI had a higher sustainability score than the GRI.

Moreover, this chapter detailed the relationships between SR and firm performance using FE panel regression and GMM for robust testing. The results revealed that SR and its components significantly and positively affect the FP and NFP indicators. Further, the research has addressed the findings in relation to its fourth research objective, which aims to investigate the moderating effect of CG factors (BS, ID, AC, IMAC, BGD, QAC, GOV, FOR) on the relationship that between SR and FP (ROA, ROE, TQ). The results demonstrated that among the CG factors, only ID, ACQ and GOV had a significant moderating effect on the relationship between SR and FP. Therefore, it can be deduced that the relationship between SR and FP will be strengthened by higher values of ID, ACQ and GOV.

This chapter also addressed the findings regarding its fifth research objective, which aimed to investigate the moderating effect of CG factors (BS, ID, AC, IMAC, BGD, QAC, GOV, FOR) in the relationship between SR and NFP (MS, IBP). The results

indicated that among the CG factors, only BS, BGD, ID, ACS, IAC and GOV had a significant moderating effect on the relationship between SR and NFP. However, the effect was most significant for BS and BGD. Therefore, it can be argued that the relationship between SR and NFP will be strengthened by higher values of BS and BGD.

In conclusion, the results strongly evidenced that performance improved after the adoption of IFRS, which supports and promotes the implementation of IFRS in KSA. The next chapter will conclude this research by presenting its theoretical contributions and practical implications. Finally, the last chapter will present a critical reflection for future research.

Chapter 7: Summary, conclusion and implications

7.1 Introduction

This chapter aims to summarise the principal findings of this thesis. It will also illuminate the theoretical and practical implications that are associated with the research. Section 7.2 summarises the thesis in terms of how it addresses the research topic introduced in Chapter 1. Section 7.3 summarises the empirical research findings that were identified in Chapter 5, while Section 7.4 presents this thesis's contributions to existing knowledge. The theoretical and practical implications of the current research are discussed in Section 7.5, while Section 7.6 discusses the research's limitations. Section 7.7 offers directions for future research, while Section 7.8 provides concluding remarks.

7.2 Research summary

The KSA context for SR differs from that of the Western world because of KSA's social, economic, religious and political context. The absence of standardised sustainability measurement indices and frameworks have allowed poor and inconsistent sustainability practices to be performed in KSA listed firms, which can negatively affect their FP and FP (Razak et al., 2019). Similarly, the absence of efficient and effective CG practices in the weak implementation of SR might further deteriorate firm performance.

Further, KSA listed companies are owned and controlled by a small number of political and business families, which has created the need for a sustainability index that accounts for the unique aspects of the KSA context. For example, Islamic principles in KSA influence the daily life, commerce, law, economics and political aspects of the whole Saudi society (Alsaif, 2015; Habbash et al., 2016). Therefore, it was necessary to modify the standard GRI to incorporate specific aspects of the KSA context, such as religious and cultural considerations and local economic systems (e.g., charitable organisations that support initiatives like the memorisation of the Holy Quran). Further, Gangi et al. (2020) posited that companies with stronger CG mechanisms are more likely to engage in SR. These findings align with the stakeholder theory, which suggests that managers should use effective governance mechanisms in conjunction with SR initiatives to address stakeholder concerns. Therefore, SR compliance has become a critical part of CG.

In Chapter 1, the research problem was presented as follows:

> To empirically examine how SR affects the FP and NFP of KSA listed firms though the moderating effect of CG.

Five RQs were derived from the research problem:

> RQ1: How does the SR index developed for KSA listed firms differ from the standard GRI in its ability to capture the contextual factors that are specific to the firms' operations?
>
> RQ2: How does SR affect the FP of listed firms in KSA?
>
> RQ3: How does SR affect the NFP of listed firms in KSA?
>
> RQ4: Do CG mechanisms moderate SR's impact on FP in KSA listed firms?
>
> RQ5: Do CG mechanisms moderate SR's impact on NFP in KSA listed firms?

The specific research objectives that were pursued to answer the RQs included the following:

1. To develop a measurement for the SR framework that covers GRI and Islamic items for the listed firms in KSA
2. To examine how SR affects FP for listed firms in KSA
3. To investigate how SR affects NFP for the listed firms in KSA
4. To investigate the moderating impact of CG mechanisms on SR and FP for the listed firms in KSA
5. To investigate the moderating impact of CG mechanisms on SR and NFP for the listed firms in KSA.

A quantitative approach was adopted to address the research problem and investigate the relationships between the three variables (SR, FP, CG). The present research included two sample periods: the pre-COVID-19 period from 2015 to 2019, which comprised 596 firm–year observations from 121 non-financial companies; and the period that included COVID-19 from 2015 to 2020, which comprised 690 firm–year observations from 121 non-financial companies. The data were collected from the annual reports of listed companies, the Tadawul website (www.tadawul.com.sa) and other documentation and

reports from the KSA Ministry of Commerce and Investment. In addition to the main RQs, the present research also evaluated the role of IFRS in the performance of KSA firms. To incorporate the effect of IFRS adoption, this research examined the pre-IFRS period (2015–2016) and post-IFRS period (2017–2020). The ensuing research models and regression equations were developed using the conceptual framework. Subsequently, the regression equations were estimated using FE panel regression for RQ2–RQ5 and appropriate robustness tests using GMM. The research conclusions are summarised in Section 7.3.

7.3 Conclusions

RQ1 was answered by evaluating two indices: the standard GRI framework and the present research's modified GRI framework, which incorporated both conventional and Islamic characteristics. This evaluation used a paired sample t-test. In contrast, RQ2 and RQ3 were addressed by examining how SR affected the FP and NFP of sample firms. RQ4 and RQ5 were addressed by examining the moderating effect of CG on SR's effect on FP and NFP. The results of these examinations are briefly discussed in the following subsections.

7.3.1 Research question one: Measurement of a sustainability reporting index

To measure the SR levels among KSA listed companies, two indices were developed and compared: the GRI framework and the modified GRI framework. The modified GRI included conventional product characteristics and Islamic characteristics to ensure a more comprehensive assessment of SR.

The modified GRI comprises 63 items, with 47 from the traditional GRI and an additional 16 that were included to reflect the perspective of Islamic sustainability relevant to KSA. The modified GRI was designed to measure sustainability practices in KSA's non-financial sector. A panel of academic experts confirmed the proposed framework's validity, with the experts comprising industry experts from non-financial sectors in KSA and academic experts who had previously developed indices for measuring sustainability. A paired sample t-test was then performed to compare the means of the GRI and modified GRI. The results demonstrated that the modified GRI exhibited a higher sustainability score than the GRI, with a statistically significant difference occurring between the

average SR calculated using the modified GRI and the average SR calculated using the GRI at the 5% significance level. This result suggests that the modified GRI more effectively measured the SR in KSA than the GRI. Accordingly, SR was measured using the modified GRI.

7.3.2 Research question two: Sustainability reporting and financial performance

RQ2 evaluated how SR affected FP (as measured by ROA, ROE, TQ) in the period before and including COVID-19. The effect of SR and its components on FP indicators were mostly positive for both periods. Table 7.1 summarises the results associated with RQ2.

Table 7.1 Summary of hypotheses testing results—Research question two

RQ2: How does SR affect the FP of KSA listed firms?												
	ROA		ROA		ROE		ROE		TQ		TQ	
	Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19	
ECO	PS	H1a supported	PS	H1e supported	PS	H2a supported	PS	H2e not supported	PS	H3a supported	PS	H3e supported
ENV	PS	H1b supported	PS	H1f supported	PS	H2b supported	PS	H2f supported	PS	H3b supported	PS	H3f supported
SOC	PI	H1c not supported	PS	H1g supported	PI	H2c not supported	PI	H2g not supported	PS	H3c supported	PS	H3g supported
TSR	PS	H1d supported	PS	H1h supported	PS	H2d supported	PS	H2h supported	PS	H3d supported	NI	H3h not supported

Note: In reporting the hypothesis-testing results, the descriptions of 'supported' or 'not supported' refers to the alternative hypothesis, which implies rejecting or not rejecting the null hypothesis, respectively; PS = positive and statistically significant; NS = negative and statistically significant; PI = positive and not statistically significant; NI = negative and not statistically significant.

Regarding FP (as measured by ROA), the FE panel regression model analysis revealed that TSR significant and positively affected KSA listed firms for both periods. Additionally, the ECO and ENV components of TSR significantly and positively affected ROA for both periods. In contrast, SOC yielded varied results in the period before and including COVID-19. The hypothesis was supported when the COVID-19 period was included, but not supported for the period before the pandemic; this indicates that no relationship existed between SOC and ROA in the pre-COVID-19 period.

Regarding FP (as measured by ROE), the FE panel regression model findings revealed that TSR significantly and positively affected the ROE of KSA listed firms in the period before and including COVID-19. Further, the effect of SR components (ECO, ENV, SOC) on ROE was investigated in the period before and including COVID-19. The results revealed a significant nexus of ECO–ROE and ENV–ROE in the pre-COVID-19 period. However, the relationship between SOC and ROE was insignificant. The insignificant findings for SOC indicate that revealing social information is not beneficial in terms of boosting ROE. Further, the element of environmental sustainability significantly and positively influenced ROE in the period before and including COVID-19.

Regarding FP (as measured by TQ), the FE panel regression model results suggested that TSR positively affected TQ in the pre-COVID-19 period. Further, ECO, ENV and SOC as SR components significantly and positively affected TQ during the period before and including COVID-19. The economic and social dimensions also positively and significantly influenced TQ. The results support the legitimacy and stakeholder theories, which assert that a company's economic contribution and reporting positively correlate with its FP. The results also suggest that KSA firms will experience higher levels of financial productivity in terms of ROA if SR-committed models are more dominant.

7.3.3 Research question three: Sustainability reporting and non-financial performance

RQ3 assessed how SR affected NFP, specifically in term of MS and IBP. The estimation results indicated that SR and its components significantly and positively affected most NFP indicators for the period before and including COVID-19. Table 7.2 summarises the results associated with RQ3.

Table 7.2 Summary of hypotheses testing results—Research question three

RQ3: How does SR affect the NFP of KSA listed firms?								
	MS		MS		IBP		IBP	
	Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19	
ECO	PS	H4a supported	PS	H4e supported	NI	H5a not supported	NI	H5e not supported
ENV	PS	H4b supported	PS	H4f supported	PS	H5b supported	PS	H5f supported
SOC	PS	H4c supported	PS	H4g supported	PS	H5c supported	PS	H5g supported
TSR	PS	H4d supported	PS	H4h supported	PS	H5d supported	PS	H5h supported

Note: In reporting the hypothesis-testing results, the descriptions of 'supported' or 'not supported' refer to the alternative hypothesis, which implies rejecting or not rejecting the null hypothesis, respectively; PS = positive and statistically significant; NS = negative and statistically significant; PI = positive and not statistically significant; NI = negative and not statistically significant.

Regarding NFP (as measured by MS), the results demonstrated a significant and positive effect of TSR and its components on MS in the period before and including COVID-19. To establish legitimacy in KSA society, as well as attract the investment capital required for the firms' continuous operation and development, KSA listed firms must appropriately manage their relationships with numerous stakeholders (Ammer et al., 2020; Habbash, 2015; Pfeffer & Salancik, 2003). By participating in SR practices, businesses can improve their image in the eyes of the public, which subsequently boosts their competitive advantages (Mahadeo et al., 2011; Reverte, 2009).

Regarding NFP (as measured by IBP), the findings revealed that TSR significantly affected a firm's IBP. Similar results were obtained for two SR components in the period before and including COVID-19. The effects of ENV and SOC on IBP were significant and positive. However, ECO did not significantly influence IBP in either of the COVID-19 periods. This could be explained by increases in financial expenditures that are associated with economic sustainability efforts, which have negatively affected operational and production procedures that aim to generate value in the long and short terms.

Overall, the results for TSR, ENV and SOC support stakeholder theory and the notion that a business must benefit its stakeholders—which includes shareholders, creditors, customers, suppliers, the government, general public, analysts and others—rather than operating solely for its own interests (Freeman, 1984; Nguyen et al., 2019).

7.3.4 Research question four: Corporate governance moderating the relationship between sustainability reporting and financial performance

RQ4 assessed the moderating effect of CG on the relationship between SR and FP. The estimation results revealed most CG mechanisms had an insignificant moderating relationship for both COVID-19 periods. However, among the CG mechanisms, GOV played a significant role in moderating SR's effects on ROA, ROE and TQ in the period before and including COVID-19. Similarly, ACQ moderated the relationship between SR and ROA. The summarised RQ4 results are presented in Table 7.3.

Table 7.3 Summary of hypotheses testing results—Research question four

RQ4: Do CG mechanisms moderate SR's impact on FP in KSA listed firms?												
	ROA		ROA		ROE		ROE		TQ		TQ	
	Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19	
Interaction												
TSR*BS	NI	H6a not supported	PI	H11a not supported	NI	H7a not supported	PI	H12a not supported	NI	H8a not supported	NI	H13a not supported
TSR*ID	PI	H6b not supported	PI	H11b not supported	PS	H7b supported	PS	H12b supported	PI	H8b not supported	PS	H13b supported
TSR*ACS	NI	H6c not supported	NI	H11c not supported	NI	H7c not supported	NI	H12c not supported	PI	H8c not supported	PI	H13c not supported
TSR*IMAC	NI	H6d not supported	NI	H11d not supported	PI	H7d not supported	PI	H12d not supported	NI	H8d not supported	NI	H13d not supported
TSR*BGD	NI	H6e not supported	NI	H11e not supported	PI	H7e not supported	PI	H12e not supported	PS	H8e supported	PI	H13e not supported
TSR*ACQ	PS	H6f supported	PS	H11f supported	NI	H7f not supported	NI	H12f not supported	PI	H8f not supported	PI	H13f not supported
TSR*GOV	PS	H6g supported	PS	H11g supported	PS	H7g supported	PS	H12g supported	NI	H8g not supported	NI	H13g not supported
TSR*FOR	NI	H6h not supported	NI	H11h not supported	NI	H7h not supported	NI	H12h not supported	NI	H8h not supported	NI	H13h not supported
Control variables												
FS	NI		NI		NI		NI		PI		NI	
FA	PS		PS		PS		PS		PI		PS	

Notes: In reporting the hypothesis-testing results, the descriptions of 'supported' or 'not supported' refer to the alternative hypothesis, which implies rejecting or not rejecting the null hypothesis, respectively. PS = positive and statistically significant; NS = negative and statistically significant; PI = positive and not statistically significant; NI = negative and not statistically significant.

To test the developed hypotheses, the present research employed FE regression models to examine how SR affected FP, as well as to determine the interaction's effect regarding TSR with each CG mechanism (e.g., TSR*BS). The analysis was first performed for the pre-COVID-19 period and then for the period that includes COVID-19. The findings demonstrated that among the CG mechanisms, ID had a significant moderating effect on the relationship between SR and TQ of KSA listed firms during the COVID-19 period. Further, ACQ and GOV had a significant moderating effect for both COVID-19 periods. These findings are consistent with agency theory because IDs increase the volume of socially responsible investments while also increasing transparency. Further, ACQ is a primary monitoring strategy for improving SR practice and firm performance. However, the CG mechanisms of BS, AC, IMAC, BGD and FOR had no significant moderating influences.

7.3.5 Research question five: Corporate governance moderating the relationship between sustainability reporting and non-financial performance

RQ5 assessed the moderating effect of CG on SR's effect on NFP. The FE panel regression results revealed that the BS, ACS and GOV variables play a significant role in moderating SR's effect on MS in the pre-COVID-19 period. The results also revealed that ID and BGD played a significant role in moderating SR's effect on MS in the period including COVID-19. Similarly, the moderating variables of BS and BGD were identified as significant moderators of SR on IBP for both COVID-19 periods. Table 7.4 summarises the results obtained for RQ5.

Table 7.4 Summary of hypotheses testing results—Research question five

RQ5: Do CG mechanisms moderate SR's impact on NFP in KSA listed firms?								
	MS		MS		IBP		IBP	
	Pre-COVID-19		Including COVID-19		Pre-COVID-19		Including COVID-19	
Interaction								
TSR*BS	PS	H9a supported	NI	H14a not supported	PS	H10a supported	PS	H15a supported
TSR*ID	PS	H9b not supported	PS	H14b supported	NI	H10b not supported	PI	H15b not supported
TSR*ACS	PI	H9c supported	NI	H14c not supported	NI	H10c not supported	PI	H15c not supported
TSR*IMAC	PI	H9d not supported	PI	H14d not supported	PI	H10d not supported	PS	H15d supported
TSR*BGD	PS	H9e not supported	PS	H14e supported	PS	H10e supported	PS	H15e supported
TSR*ACQ	PI	H9f not supported	NI	H14f not supported	NI	H10f not supported	PI	H15f not supported
TSR*GOV	PS	H9g supported	PI	H14g not supported	NI	H10g not supported	NI	H15g not supported
TSR*FOR	NI	H9h not supported	PI	H14h not supported	NI	H10h not supported	NI	H15h not supported
Control variables								
FS	PI		NI		PI		PI	
FA	NI		PI		PI		PI	

Note: In reporting the hypothesis-testing results, the descriptions of 'supported' or 'not supported' refer to the alternative hypothesis, which implies rejecting or not rejecting the null hypothesis, respectively; PS = positive and statistically significant; NS = negative and statistically significant; PI = positive and not statistically significant; NI = negative and not statistically significant.

This research's findings demonstrated that among the CG mechanisms, the interactions of SR*BS and SR*BGD had a significant moderating effect on the relationship between SR and IBP for both COVID-19 periods. In contrast, the other CG mechanisms of ID, ACS, IAC and GOV had a mixed effect in terms of moderating the relationship between SR and NFP. Further, an insignificant role was observed for ACQ and FOR in moderating SR's effect on NFP (see Tables 6.3 and 6.4).[6] By integrating the agency and institutional theories into the CG context, this research aimed to uncover the underlying mechanisms through which CG moderates the relationship between SR and NFP. Additionally, this research recognised that other operational and competitive factors influenced these mechanisms.

[6] Chapter 6 and Sections 6.5.1–6.5.8 offer incisive discussions regarding the results for the effects of each interaction.

7.4 Theoretical contribution

The present research contributed to the existing body of work in the following ways:

1. This research developed a modified GRI by including key Islamic indicators for KSA listed firms. This unique index incorporates economic, environmental and social sustainability dimensions that comprise Islamic items such as zakat and charity. This provides a comprehensive understanding of sustainability practices within the cultural and religious standards of KSA. Therefore, the proposed index can be used as a foundation from which to measure SR for non-financial firms in KSA. Further, the Islamic items are crucial, given that Muslim stakeholders are highly concerned about their cultural values and beliefs.
2. To the best of the researcher's knowledge, this research is the first to employ eight variables of CG mechanisms as moderators of the relationship between GRI and FP for the KSA context. The research surpasses previous work in this area, which was limited because no or only a few CG factors were employed.
3. This research also comprehensively analysed how SR affects FP and NFP, while considering CG as a moderating factor. This comprehensive perspective is supported by a multi-theoretical approach that encompasses stakeholder, legitimacy, agency and institutional theories. To the best of the researcher's knowledge, this is the first research to employ such an approach.

7.5 Research implications

This subsection details the research's critical implications for practice and policy. The research findings can benefit managers, investors and policymakers, especially in countries with similar circumstances to those of KSA, such as other Islamic, developing and Arab nations (e.g., GCC, MENA). Section 7.5.1 discusses the practical implications of the research, while Section 7.5.2 discusses the policy implications.

7.5.1 Practical implications

7.5.1.1 Implementing sustainability reporting practices for firms listed in the Kingdom of Saudi Arabia

The management teams of KSA listed companies should consider adopting SR strategies such as integrated reporting, assurance of sustainability reports and other frameworks (e.g., modified GRI) to fit their context. Additionally, their sustainability strategy should include goals and targets, an action plan and regular progress reporting. This will help ensure the successful implementation of sustainability practices. In practice, the managers of KSA listed companies can adopt measures to help investors evaluate and allocate their firms' investment resources. Further, this research can help managers identify and concentrate on specific aspects that will enhance the quality and suitability of SR in KSA and the greater Arabian Gulf region.

7.5.1.2 Enhancing financial and non-financial performance through sustainability reporting disclosure

To benefit from the connection between SR disclosure and FP and NFP, organisations should make more efforts to maintain and improve the quality of their report disclosures, which could prompt improved FP and NFP. This research could also be applicable to companies aiming to gain more legitimacy from their stakeholders. In accordance with international agreements and indices relating to the environment, society and government, the KSA market authorities must develop their own index to adhere to international agreements and standards relevant to KSA firms.

7.5.1.3 Strengthening the role of corporate governance mechanisms

The present research revealed that factors such as BS, ACS BGD, audit committee independence and FOR do not moderate the relationship between SR and FP in the KSA context. However, this research highlighted the potential moderating role of ACQ, IDs and GOV in the relationship between SR and FP. Business firms can focus on these factors to improve SR's effect on FP. The findings emphasised the importance of CG mechanisms, such as BS, audit committee composition, gender diversity and FOR, which can have implications for both business operations and society. To address these limitations, organisations should appoint competent directors according to skill and

experience; offer incentive-based compensation; and introduce management ownership. Further, increasing directors' expertise and creating corporate sustainability awareness through seminars and training sessions can enhance the board's understanding of the value of sustainability—as well as ensure stakeholder engagement.

7.5.1.4 Sustainability reporting as a means to improve profitability and market valuation

This research's findings indicated that TSR vis-a-vis ECO and ENV can offer profitability and market valuation implications for the KSA context. SR enhances the information disclosure environment, which consequently enables investors and creditors to make better decisions. Investing in companies that practice SR can thus positively affect profitability and market value. Firms should focus on ECO, ENV and SOC to enhance profitability, market value and NFP. Further, the ECO's role in market sentiments should not be overlooked. Investors should consider these factors when they make investment decisions in KSA non-financial firms.

7.5.1.5 Encouraging government ownership by investors

GOV can considerably influence the link between SR and FP and NFP. For example, GOV can prompt a higher level of scrutiny for SR, as well as a stronger emphasis on satisfying certain requirements. Therefore, the role of GOV is critical for helping KSA non-financial companies comply with SR guidelines. Therefore, the empirical evidence derived from the present research encourages KSA companies to focus on GOV to obtain more financial and non-financial benefits.

7.5.2 Policy implications

7.5.2.1 Implementing comprehensive sustainability reporting guidance and compliance

The current research has confirmed the significance of SR in enhancing the FP and NFP of KSA listed firms. Therefore, KSA policymakers, such as the CMA, should consider the research's findings, as well as consider enacting a new law that mandates the submission of standalone corporate sustainability reports to improve firm performance. To achieve this, policymakers should provide comprehensive SR guidance that is founded on the modified GRI and other Western SR principles (e.g., ISO 26000) and Islamic teachings; doing this would encourage businesses to invest more for the benefit of society

and the environment. This could also narrow the gap between KSA and other developed nations in terms of SR practices. Policymakers and regulators should note this research's findings and encourage the adoption of SR among KSA companies. Doing so would promote the long-term sustainability of these companies and the market as a whole. Additionally, policymakers and regulators should consider providing incentives and support to companies that are already leading the way in terms of SR implementation.

7.5.2.2 Encouraging businesses to adopt the 2030 Saudi Vision for sustainability reporting

This research discovered that social dimension disclosure weakly affected ROA and ROE in KSA for both COVID-19 periods. Because of the lack of understanding regarding the social dimension within these businesses, policymakers should encourage businesses to use the Saudi Vision 2030 as a model for SR. This could increase the number of businesses that report on sustainability, as well as encourage businesses to engage in more positive social and environmental activities. Implementing specific elements of the Saudi Vision2030, such as projects related to its goals, will improve SR and make the Saudi Vision 2030 more efficient.

7.5.2.3 Increasing independent directors and audit committee quality

The present research revealed that firms with a greater number of IDs and a higher ACQ exhibit superior SR quality and improved FP (ROA, ROE) and NFP (MS). This underscores the significance of appointing IDs and enhancing ACQ to enhance both SR and financial outcomes. These factors contribute to the attractiveness of these firms as investment opportunities. Therefore, KSA companies should prioritise the appointment of IDs and strive to enhance the quality of their audit committees to effectively implement SR practices.

7.5.2.4 Encouraging the adoption of the International Financial Reporting Standards to improve the effectiveness of sustainability reporting

The policy implications of this research suggest that to improve SR and firm performance, regulators should promote businesses to develop training for their staff so they can understand and comply with the IFRS; they should also encourage businesses to create a system of internal audits to verify IFRS compliance. This research's results also strongly

evidence a change in SR and firm performance in the period after IFRS implementation, which further supports those advocating for the adoption of IFRS in KSA. This is further supported by the knowledge that IFRS helped KSA listed companies increase the reliability, quality and standards of their SR disclosure. Therefore, this study suggests that a strong correlation is needed between IFRS and SR to provide KSA investors comparable and auditable information. This correlation would ensure that investors can make informed decisions that are founded on reliable and consistent data from both financial and sustainability perspectives. Aligning IFRS with SR would enhance transparency, comparability and the overall usefulness of information provided to investors—which ultimately benefits their investment decisions. These findings also offer policymakers, practitioners and academics a basis from which to discuss and analyse IFRS adoption, its influence on firm performance and its potential to enhance SR.

7.6 Research limitations

Despite this research's significance, it does include certain limitations.

First, the research's sample size only incorporated KSA listed firms, so it has not analysed non-listed firms. Similarly, because of unique disclosure requirements, this research has not incorporated financial firms into its analysis. Some of the unlisted firms can substantially contribute to the KSA economy, so they merit further research.

Second, cross-cultural or comparative studies that focus on SR practices in other developing economies—especially Arab countries, where little research has been conducted—will contribute to the current knowledge base regarding corporate disclosure and its drivers in other countries.

Third, SR and its components were classified according to a content analysis of annual reports. Although content analysis is the most commonly used method for classifying SR and its components, it is a subjective procedure that incorporates researcher bias. Further, according to Qadan and Suwaidan (2018), disclosure in annual reports should not be considered a composite assessment of business involvement in social activities because a corporation may have several channels for communicating its social commitments (e.g., bulletins, websites, daily newspapers). Consequently, future SR may consider multiple channels of communication to extract the SR practices of firms.

Fourth, this research employed MS and IBP to assess NFP because they are commonly used metrics. However, other NFP indicators exist, such as employee satisfaction and corporate reputation. Therefore, future studies could investigate other NFP metrics in greater depth.

Fifth, the current research employed a quantitative research approach. Therefore, it heavily relied on statistical data, which have their own inherent limitations (Boyd & Crawford, 2012). Consequently, future studies should consider collecting primary data to provide a more balanced analysis. Therefore, for future investigations, a mixed methods approach is advised, given that these data might be useful in explaining and understanding the results (Boyd & Crawford, 2012; Sykes et al., 2018).

Sixth, although this study adopted a longitudinal design spanning six years, it is important to acknowledge that the chosen timeframe, while extensive, may not fully encompass all possible variations and transformations in the relationships under investigation. To comprehensively capture the intricate dynamics, future research could consider an even more extended longitudinal period or explore a multi-wave longitudinal approach. Such an extension would strengthen the study's ability to track and interpret evolving patterns over a broader temporal scope.

Last, due to time and resource constraints, this study focuses solely on the Saudi Arabian context. While this provides valuable insights within this specific setting, it may limit the generalisability of findings to other regions or cultural contexts. To enhance the external validity of the study's conclusions, future research could delve into cross-country comparisons and explore how the relationships between sustainability reporting, corporate governance and firm performance manifest in diverse international settings.

7.7 Recommendations for future research

This research offers the following prospective avenues for further and future studies.

First, future research can compare the results obtained in the current study with the results obtained from other countries. For example, a comparison can be made between countries and the listed companies of GCC, MENA and ASEAN. The analysis can provide a deeper understanding of the differences and similarities in SR-related concerns regarding the region’s emerging economies.

Second, annual reports and standalone SR reports (e.g., sustainability and environmental reports) were used as SR data sources in the current study. Future research could consider how companies disclose their SR on social media platforms (e.g., Twitter, Facebook, YouTube). Although these new information sources presently have limited data availability, they have emerged as a source of business disclosures. Analysing them will provide a more complete understanding of how companies report SR information.

This study concludes by proposing that CG moderates the relationship between sustainability reporting and firm performance. Future researchers can propose additional moderating variables that have recently emerged. Future research could also examine the role of intellectual capital, circular economy and green growth practices in enhancing the company performance. Future studies can also employ a combination of research methods.

7.8 Concluding remarks

This study has strongly contributed to the literature that aims to understand how SR affects FP and NFP. Moreover, this research extended the existing body of knowledge by analysing the moderating role of CG mechanisms. It offers new insights from KSA, a developing country in which SR is still regarded as being in its infancy. The research also contributed knowledge by producing a modified GRI that applies to the KSA context, which includes 16 additional Islamic sustainability items and 47 from the traditional GRI framework. The research's findings highlight the significance of SR and its components in enhancing FP and NFP. The findings also demonstrated that TSR, ECO and ENV significantly affect FP, while TSR, ECO, ENV and SOC significantly affect NFP. Regarding the moderating role of CG, this research has revealed the IDs and ACQ are critical CG mechanisms that significantly improve FP and NFP. The practical and policy recommendations from this research can be implemented to increase SR efficacy, as well as strengthen CG mechanism to improve the FP and NFP of KSA listed firms. Finally, this study has established a solid foundation for prospective future research by allowing for a more in-depth examination of this significant field of academic study.

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Appendices

Appendix 1: Saudi Company Sectors in 2020

Sector Name	Number
Energy and utilities	7
Materials	42
Capital goods	12
Commercial & Professional Svc	3
Transportation	5
Consumer Durables& Apparel	6
Consumer services	10
Media and entertainment	2
Retailing	8
Food & Staples Retailing& Beverages	16
Health care& equipment	7
Diversified financials	4
Telecommunications services and software	5
Real estate development	28
Total	155

Note: Banking and Insurance sectors are excluded.

Appendix 2: Name of non-financial listed firms on the KSA stock exchange

No	Name of Firm	No.	Name of firm
1	Petro Rabigh	62	BATIC
2	Saudi electricity company	63	Naseej
3	SARCO	64	SIDC
4	Bahri	65	Alabdullatif
5	Aldrees	66	Fitaihi group
6	GASCO	67	SEERA
7	SABIC	68	Alhokair group
8	Saudi Arabian Mining MAADEN	69	DUR
9	Takween	70	TECO
10	MEPCO	71	Alkhaleej trng
11	BCI	72	Herfy foods
12	SSP	73	Fawaz Alhokair
13	Chemanol	74	Extra
14	Petrochem	75	Saudi Company for Hardware SACO
15	SABIC AGRI NUTRIENTS CO	76	Shaker
16	TASNEE	77	SASCO
17	NGC	78	Jarir
18	Zoujaj	79	Othaim Market
19	Alujain	80	Savola Group
20	APC	81	Farm superstores
21	FIPCO	82	Anaam holding
22	Nama chemicals	83	Wafrah
23	Maadaniyah	84	SADAFCO
24	Zamil indust	85	Almarai
25	SIIG	86	HB
26	YANSAB	87	NADEC
27	SPM	88	GACO
28	SIPCHEM	89	TADCO
29	Advanced	90	SFICO
30	Saudi kayan	91	Sharqiyah dev
31	Aslak	92	Aljouf
32	Saudi Cement Company	93	JAZADCO

No	Name of Firm	No.	Name of firm
33	Yamama Cement Company	94	SPIMACO
34	HCC	95	Saudi German Hospital
35	Najran cement	96	AYYAN
36	City cement	97	Chemical
37	Northern cement	98	Mouwasat
38	UACC	99	Dallah health
39	ACC	100	Care
40	QACCO	101	Alhammadi
41	SPCC	102	SAIC
42	YCC	103	Kingdom
43	EPCCO	104	Aseer
44	TCC	105	Albaha
45	Jouf cement	106	STC
46	Astra Industrial	107	Tihama Holding (TAPRCO)
47	SIECO	108	SRMG
48	BAWAN	109	Etihad etisalat
49	EIC	110	ZAIN KSA
50	Saudi ceramics	111	Atheeb telecom
51	SAUDI CABLE	112	Red Sea Company
52	Amiantit	113	Dar Alarkan
53	Albabtain	114	Alakaria
54	SVCP	115	Taiba
55	MESC	116	MCDC
56	Saudi Airlines Catering Company (CATERING)	117	ARDCO
57	SISCO	118	EMAAR EC
58	SPPC	119	Jabal omar
59	Budget Saudi	120	KEC
60	SGS	121	Alandalus
61	SAPTCO		