Impact of Corporate Board Structure and International Financial Reporting Standards on Voluntary Risk Disclosure and Firm Value: The Case of Saudi Arabian Listed Companies

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This thesis is submitted in fulfilment of the requirements for

the degree of Doctor of Philosophy

Victoria University, Australia

Institute for Sustainable Industries and Liveable Cities (ISILC)

June 2023

Abstract

The global financial crisis of 2008 and 2009, combined with the digitalisation and globalisation of business, has caused multinationals and other types of corporations to become more vulnerable to a variety of risks and dangers that can undermine or damage their performance and viability. Thus, risk disclosure has received a substantial amount of attention from academics and researchers. This study focuses on voluntary risk disclosure (VRD), which concerns the disclosure of information about risks, which is mandated by government legislation and regulations, for example, processing and technology, integrity and strategic risks. This study aims to investigate the impact of the corporate governance mechanism, ownership structure and international financial reporting standards (IFRS) on the VRD practices of listed companies in Saudi Arabia. Moreover, it investigates the impact of VRD practices on a firm's value. More specifically, the study analyses the impact of five board composition types (board size, board independence, audit committee meetings, board expertise and gender diversity) and three types of ownership structures (foreign ownership, state ownership and family ownership) on the VRD practices of Saudi listed companies. A research model is developed using agency theory, signalling theory and voluntary disclosure theory. The research model hypothesises that each of the aforementioned factors does affect the VRD practices that are employed by Saudi listed companies.

A disclosure index is devised using seven selected items to measure VRD: compliance, reputational, operational, strategic, technological, commodity and sustainability risks. The study's sample consists of all non-financial companies that are listed on the Saudi stock exchange, otherwise known as Tadawul. Secondary data are

gathered from the annual reports of 108 listed companies for 2013 to 2020. Using regression analyses, the results reveal that qualification, gender diversity, state ownership and IFRS have a significant relationship with VRD. Furthermore, the findings indicate that this form of disclosure shapes firm value, which is measured using market-to-book value and return on assets.

The current research provides important insights into the extent of the VRD practices of listed companies in Saudi Arabia. This study is significant given that limited research has been published on VRD in that country. This research is essential to Saudi Arabia's stock market and international investors. Indeed, a better understanding of the disclosures of Saudi corporations may aid investors in making sound investment decisions. Examining the correlation between risk disclosure and firm value helps to identify the possible impact of investor expectations on the level of corporate VRD. The results of this study provide practitioners and owners or managers with an understanding of the attractiveness of foreign investors and the implications that this has for their investment allocations in connection with VRDs. This study contributes by providing new evidence to the related literature, including on VRDs, corporate governance and IFRS.

Student Declaration

I, Abdulaziz Murayr, declare that the PhD thesis entitled 'The Impact of Corporate Board Structure and IFRS on Voluntary Risk Disclosure and Firm Value: The Case of Saudi Arabian Listed Companies' 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.

Signature: Date: 15/06/2023

Acknowledgements

To begin with, I would like to express my deepest gratitude to almighty Allah for enabling me to complete this thesis successfully and giving me the vision to conduct this research. It is with deep appreciation that I extend my sincere thanks and appreciation to my principal supervisor, Prof Sardar M. N. Islam (Naz), who has provided me with patience, knowledge, and efficient supervision during my candidature and academic advice at every stage of the process. With his vast knowledge and experience, I was able to broaden my knowledge and make significant progress with my project.

I would like to express my gratitude to my associate supervisor, Dr Chitra DeSilva, for providing me with invaluable suggestions and continuous assistance throughout my studies. She provided valuable input to this research project and spent substantial time supervising it. I would also like to thank my colleagues and academics at Victoria University Business School, who contributed their comments and suggestions.

I would like to express my gratitude to my parents, who have continuously motivated and supported me throughout my doctoral studies. Their constant prayers will always remain in my heart. I am very grateful to my parents for instilling in me a sense of enthusiasm and diligence.

From the bottom of my heart, I would like to thank my wife, Abeer. Her support and encouragement were invaluable during my long and tiring journey. Words cannot adequately describe her role in and contribution to my Ph.D. I would also like to express my gratitude to my handsome son, Omar, and my beautiful daughters, Lujain and Jana. I would like to express my gratitude to my brothers and sisters for their assistance.

It is my sincere pleasure to express my deep appreciation to my best friends, Dr Khalid Alharbi, Dr Abdullah Salamai, Dr Haider Alqadhib, Dr Zakaria Mani, and Abdullah Alkhurayyif, for their full support. It is my sincere apologies to those who have supported and helped me complete my PhD, but I have forgotten to acknowledge here.

I would inform that according to the Australian Standards for Editing Practice (Standards D and E), this thesis has been proofread by Elite Editing.

Publications Related to Thesis

Murayr, A. A. (2021). *The impact of corporate board structure, IFRS on voluntary risk disclosure and firm value: The case of Saudi Arabian listed companies* [Paper presented]. The Victoria University Higher Degree by Research Student Conference, Melbourne, Australia.

Murayr, A. A. (2021). *The impact of voluntary risk disclosure on firm value: The case of Saudi Arabian listed companies* [Paper presented]. Environmental Social & Governance for Sustainability Conference, Melbourne, Australia.

Publications Not Related to Thesis

Ali Murayr, A., Alharbi, K. H., & Aloufi, H. M. (2021). Voluntary risk disclosure assessment in the corporate board structure under uncertainty: A case study of Saudi Arabian companies. *Neutrosophic Sets and Systems*, *42*(1), 10.

Salami, A.A., Ajabnoor, N., Khalid, W.E, Ali, M., Murayr, A.A. (2023) Lesion-aware visual transformer network for Paddy diseases detection in precision agriculture. *European Journal of Agronomy*. (Paper submitted and accepted).

Contents

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List of Abbreviations

ACMEET	Audit committee meeting variable
AUDC	Audit committee meeting
BSIZE	Board size
BQUAL	Board directors' qualifications
CEO	Chief executive officer
CFO	Chief financial officer
CG	Corporate governance
CMA	Capital Market Authority
CPA	Certified public accountants
CSR	Corporate social responsibility
CVD	Corporate voluntary disclosure
FAMO	Family ownership
FDI	Foreign direct investment
FORO	Foreign ownership
FRQ	Financial reporting quality
FSIZE	Firm size
FV	Firm value
GAAP	Generally accepted accounting principles
GAAS	Generally accepted auditing standards
GDP	Gross domestic product
GENDER	Gender diversity
GFC	Global financial crisis

IASB	International Accounting Standards Board
ICSR	Islamic corporate social responsibility
IFAC	International Federation of Accountants
IFRS	International financial reporting standards
INDEP	Independent board directors
KSA	Kingdom of Saudi Arabia
LEV	Leverage
MCAP	Market capitalisation
MTBV	Market-to-book value
OPEC	Organization of Petroleum Exporting Countries
PSM	Propensity score matching
ROA	Return on assets
SAGIA	Saudi Arabian General Investment Authority
SAMA	Saudi Arabian Monetary Authority
SMCI	Saudi Ministry of Commerce and Industry
SME	Small and medium enterprise
SOCPA	Saudi Organization for Chartered and Professional Accountants
SRCG	Saudi regulations on corporate governance
STAO	State ownership
VRD	Voluntary risk disclosure
VRMD	Voluntary risk management disclosure
2SLS	Two-stage least squares

Chapter 1: Introduction

1.1 Introduction

There is a growing tendency for companies to disclose information about risks. Corporate risk-reporting disclosure behaviour is shaped by various factors, including corporate-specific attributes, such as board composition, ownership structure and the generally accepted accounting standards (GAAS). This reporting behaviour might subsequently lead to better business performance. A number of academics has conducted research to determine whether corporate attributes affect the extent of mandatory and voluntary disclosures. In light of this, numerous empirical studies have examined voluntary risk disclosure (VRD) practices in developing and developed countries, as well as their association with corporate characteristics. However, the financial sector has been the focus of these studies. The voluntary disclosure practices of non-financial companies have received little attention from academic researchers, although they play a crucial role in the economic growth of a country.

Moreover, there is very little empirical evidence that has combined the impact of companies' board-specific characteristics (i.e. size, directors' independence, audit committee meetings, qualifications and gender diversity), ownership structure and IFRS on the extent of VRDs. Furthermore, the literature review in this study reveals that there is limited analysis on the ways that VRD could affect firm value. Inadequate or misleading information in annual reports can have many negative consequences for a country's economy. This can result in a reduction of investment in the country's economy. Thus, this study investigates to what extent non-financial listed companies in Saudi Arabia, an emerging market economy, are implementing VRD.

The remainder of this chapter is organised as follows. Section 1.2 provides the background of the study and research problem. Section 1.3 discusses the justification for conducting this project. Section 1.4 presents the significance of the research while Section 1.5 presents the aims. Section 1.6 outlines the research questions, followed by Section 1.7, which discusses the contribution of the research. Section 1.8 presents a brief outline of the research methodology. Finally, Section 1.9 shows how this thesis is organised.

1.2 Background of Study and Research Problem

As per GAAS, corporations are required to disclose minimum levels of information about their business activities (Khandelwal et al., 2019). This is known as mandatory disclosure, which involves reporting financial statistics such as profits, outlays, losses and other relevant information about the company's operations (Bhasin et al., 2012). The financial reports that are published annually by companies are considered communication tools that convey financial and non-financial information to various stakeholders for their economic and financial decisions (Beattie et al., 2004).

However, since the global financial crisis (GFC) erupted in 2008, and because of the digitalisation and globalisation of business, large corporations have become more vulnerable to a variety of potential risks that could compromise their performance and viability (Brown et al., 2011). These changes can limit the usefulness of financial reports, leading to more demand for more relevant information (Gonidakis et al., 2020) to promote transparency and full disclosure, improve the quality of what is being reported and reduce information asymmetries (Elshandidy & Neri, 2015; Solomon et al., 2000). Shareholders, investors, regulators and other stakeholders have placed increasing pressure on corporations

to disclose more information to help them to better manage any associated risks and to reduce decision uncertainty (Cordazzo et al., 2017), which is known as voluntary disclosure (Gonidakis et al., 2020; Solomon et al., 2000). Eng and Mak (2003) state that 'voluntary disclosure is measured by the amount and detail of non-mandatory information that is contained in the management discussion and analysis in the annual report' (p. 327).

One of the essential elements of voluntary disclosure practices is disclosing information about potential risks and the activities that are implemented by corporations to manage them (Cordazzo et al., 2017). There are two types of risk disclosure: first, mandatory risk disclosure, which concerns the disclosure of financial and market risk information (Elshandidy et al., 2015), and second, VRD, which concerns the disclosure of information about other risks, including processing and technology, integrity and strategic risks (Cordazzo et al., 2017). Many studies have been conducted on the difference between mandatory and voluntary disclosure (Cordazzo et al., 2017; Elshandidy et al., 2015; He et al., 2019; Hickman et al., 2020). It has been reported that voluntary disclosure complements mandatory disclosure and that 'high-quality mandatory disclosures increase the credibility and usefulness of voluntary disclosure and increase managers' incentive to issue guidance' (Noh et al., 2019, p. 4). Identifying and analysing risks provides an opportunity for corporations to implement risk management measures to resolve all identified risks (Elshandidy & Shrives, 2016). However, risk identification and management involve protecting the business and generating value for the owners, shareholders, employees, customers, regulators and society (Gonidakis et al., 2020). Empirical research shows that VRD is very important for fulfilling stakeholders' demands for risk-related information so it can help them to 'assess the company's risk profile and the firm market value' (Salem et al., 2019, p. 567). In this way, rational decisions are made.

A review of the current literature on corporate voluntary disclosure strongly suggests that corporate governance (CG) mechanisms significantly determine a company's levels of voluntary disclosure (Elshandidy & Neri, 2015; Ntim et al., 2013). CG ensures that a corporation's system, operations and sustainability are monitored and controlled, ensuring that annual reports can deliver more useful information, including information about potential risks (Soleimani et al., 2014). On this issue, N. Shehata (2013) and Haat et al. (2008) argued that implementing good CG mechanisms leads to corporate honesty or transparency via corporate voluntary disclosures (CVDs). However, evidence has shown that a lack of adequate and effective CG mechanisms is the root cause of major business scandals, corporate collapses and financial crises (Hebb, 2006; Peters & Bagshaw, 2014). Elshandidy and Neri (2015) asserted that CG affects companies' decisions to disclose risk-related information in their annual reports.

More specifically and because they are among the most important aspects of CG characteristics, empirical evidence has shown that ownership structure and board composition (i.e. board size, board independence, audit committee meetings, board expertise and gender diversity) have a significant impact on voluntary disclosures (Mnif & Znazen, 2020). Barakat and Hussainey (2013) found that board independence, ownership type and active audit committee members are the key drivers of risk disclosure. Al-Hadi et al. (2016) found that the existence of ruling family board members seriously affects the levels of risk information, especially during financial distress and when the levels of risk are high. Al-Maghzom et al. (2016a) found that external ownership, audit committee meetings, gender and board size influence the levels of risk disclosure. According to Allini et al. (2016), board members' age and expertise and the presence of women are the main determinants of risk disclosure. Thus, this study focuses on this relationship and considers

the ways that CG might guide VRD practices. It has been reported that the level of corporate disclosure is affected by GAAS, including international financial and reporting standards (IFRS; Bischof, 2009; Gonidakis et al., 2020). The adoption of IFRS should lead to a greater frequency and better quality of financial disclosures (Mnif & Znazen, 2020). Iatridis (2011) reported that organisations that embrace IFRS frequently disclose their financial information, unlike those that do not. Bischof (2009) studied the impact of IFRS on bank disclosures in Europe and found that it has increased the quality of their annual reports. Further, it has been noted that accepting IFRS increases the frequency of voluntary disclosure guidance because it improves earnings quality and attracts more investors who place higher demands for voluntary disclosures (X. Li & Yang, 2016). Accordingly, this study also focuses on this relationship and considers the ways that IFRS might affect VRD practices.

Prior studies have suggested that voluntary disclosure increases the value of firms by enhancing their image or 'public relations' credibility because they tend to be more honest and appear to be thinking more about the market in which they operate (Rodríguez & LeMaster, 2007). Ultimately, a company's goal is to maximise shareholder value and the value of its industry or firm. Thus, business managers strive to demonstrate their good performance and to ensure that their companies attract investors. There has been considerable interest in investigating the value relevance of VRDs (García-Sánchez et al., 2021; Marta, 2021; M. Wang & Hussainey, 2013; Z. Wang et al., 2013). According to Bravo (2017), greater levels and a broader range of risk disclosure lead to increased firm value. This suggests that firms may take advantage of voluntary information disclosure to demonstrate their ability to maximise shareholder value. García-Sánchez et al. (2021) included this observation. Considering that this thesis relies on market-to-book value

(MTBV) and return on assets (ROA) as measures of firm value, there is still some debate about the relationship between VRD practices and MTBV and ROA.

Thus, this study investigates the impact of VRD on a firm's value mainly for two reasons. First, understanding the relationship between VRD and firm value helps to determine the best CG practices that corporations can adopt. Second, it will subsequently help managers to determine approaches to improve their businesses' value (Uyar & Kiliç, 2012). In line with this, Chung et al. (2015) indicated that CG mechanisms enhance the full disclosure of information, which leads to many benefits, including generating a higher market value and market share (Plumlee et al., 2015).

During the past few years, many studies have been conducted to better understand the ways that CG mechanisms influence VRD practices in various contexts across the world (Elshandidy et al., 2018; Nahar et al., 2020; Onoja & Agada, 2015). Most of those studies were conducted in developed country contexts (Elshandidy et al., 2013), for example, Australia (Lim et al., 2007), the UK (Elshandidy & Neri, 2015), Canada (Linsley et al., 2006), the US (Reguera-Alvarado & Bravo-Urquiza, 2020) and Italy (Allini et al., 2016). However, few studies have reported on the impact of CG on VRD in developing countries, such as Saudi Arabia (Salem et al., 2019). In a developing country, economic and business practices are characterised by family connections, respect for hierarchy and authority, social relationships and significant political allegiances (H. M. Ali, 2019). In this way, some studies have emphasised that the culture, institutional setting and accounting regulatory frameworks in developing countries differ from those in Western economies (Khan et al., 2013; Nahar et al., 2020) and adopting and implementing Western-style governance models will be resisted (Brennan et al., 2008).

Although some empirical studies have investigated the relationship between CG and corporate disclosure (e.g. W. M. Al-Bassam et al., 2018; Omar & Rahman, 2019), there has been very limited research on CG and VRD in Saudi Arabia. Most prior disclosure studies have concentrated on mandatory disclosure (Al-Janadi et al., 2016) or risk disclosure as a whole (Al-Janadi et al., 2013) but little attention has been given specifically to VRD. The VRD focus of this study includes mainly compliance, operational, reputational, strategic, technological, commodity and sustainability risks (Alkurdi et al., 2019). Investigating various types of risks (in which different strategies are used to manage each of them) and using one index as an average measure might lead to unclear or ambiguous results. A limited scope of VRD would provide a better understanding of the link between CG mechanisms and VRD in the Saudi context.

This study focuses on Saudi Arabia for the following reasons. First, its capital market is still in the nascent stage in which there are efforts to improve its performance, unlike mature capital markets elsewhere in the world (Moshashai et al., 2018). Second, the Saudi government is investing heavily to diversify the economy by promoting other industries, such as tourism and entertainment, despite it being a leading global oil exporter (Nurunnabi, 2017b). This has attracted many investors, including local and international companies (Al-Maghzom et al., 2016b). The Saudi government needs to ensure that corporations disclose sufficient information about their performance, risk and uncertainty (Habbash, 2016). In this way, risk disclosure becomes more important for the stability and profitability of local corporations (Al-Janadi et al., 2013). Third, the Saudi Organization for Chartered and Professional Accountants (SOCPA) decided to adopt IFRS and requested that public listed companies apply them from the financial period beginning 1 January 2017 (Nurunnabi, 2017a).

1.3 Justification for Research

The configuration of corporations has a direct effect on their governance structures, which, in turn, likely influences the composition of their corporate boards (Bosse & Phillips, 2016). Direct interference in the composition of a board can affect VRD (Eng & Mak, 2003). This motivated a desire to ascertain whether Saudi corporations have embraced professionalism in their board composition. Reform measures that were recently introduced by the Capital Market Authority (CMA) of Saudi Arabia aimed to ensure compliance with international best practices (W. M. Albassam & Ntim, 2017). Risk disclosure practices are required to safeguard the interests of all stakeholders in Saudi listed corporations (Al-Maghzom et al., 2016a). However, because of the influence of ownership regimes or patterns of corporate decision-making in Saudi Arabia, reform measures can be difficult to implement (Ibrahim et al., 2019). Given the importance of risk disclosure and the benefits that these may offer a corporation, it is important to determine the various levels of risk disclosure compliance.

Another justification for the study is the need to uncover the disclosure levels of non-financial corporations. Although it has been asserted that financial corporations are required to comply with more than what non-financial entities are expected to, it is important to establish the extent of their disclosure (Eng & Mak, 2003). This is because of the key role that this sector plays in progressing the country's economy. The oil and gas companies that constitute the non-financial sector employ millions of workers and generate significant revenues and profits (Al-Janadi et al., 2016). Therefore, it is important that the non-financial sector is protected against malpractices that may impair their operations.

1.4 Significance of Research

The current study provides insights into the extent of the VRD practices of listed companies in Saudi Arabia because, to date, there is a limited amount of research on this for the country. Currently, more demands are being created by Saudi Arabia's regulatory bodies for better CG (W. M. Albassam & Ntim, 2017). Alturki (2014) proposed that more studies on the Saudi perspective should be conducted to examine the board's structure and its association with corporate VRD because this might lead to a special agency problem between minority shareholders and owner-managers (H. M. Ali, 2019). Investors in emerging market economies, for example, in Saudi Arabia, unlike those from advanced nations, may need more corporate disclosure so that they can create a clearer assessment of the entity's performance. In addition, good corporate disclosure and governance are important for attracting international investors on a continuous basis and reducing firms' capital costs (Ho & Wong, 2001). Finally, this study is essential for Saudi Arabia's stock market and international investors because knowledge of the disclosures of Saudi corporations may aid investors to make sound decisions.

1.5 Aim of Study

The purpose of this study is to examine the influence of CG and IFRS on VRD practices in listed companies in the Kingdom of Saudi Arabia (KSA). Further, the study examines the impact of VRD on firms' value. More specifically, the purposes of the study are as follows in terms of Saudi listed companies:

- To assess the degree of VRD practices in annual reports.
- To assess the impact of board composition (i.e. size, independence, audit committee meetings, expertise and gender diversity) on VRD practices.

- To assess the impact of ownership structure on VRD practices.
- To measure the impact of IFRS on VRD practices.
- To examine the link between VRD practices and firms' value.

1.6 Research Questions

This study attempts to answer the following questions for such companies:

- What is the extent of VRD practices in annual reports?
- Does board composition (i.e. size, independence, audit committee meetings, expertise and gender diversity) have a positive relationship with VRD practices?
- Does ownership structure have a positive relationship with VRD practices?
- Does IFRS adoption have a positive relationship with VRD practices?
- Do VRD practices have a positive relationship with each firm's value?

1.7 Contribution of Study

This research study attempts to make several contributions to knowledge and practice and these are explained in the subsections that follow.

1.7.1 Contribution to Knowledge

This study seeks to expand the existing literature and to make a number of new contributions to the fields of CG and VRD. First, it enriches the existing knowledge on the ways that CG mechanisms (i.e. board characteristics and ownership) and IFRS may shape VRD practices, specifically, in Saudi Arabia. This uses prior empirical studies that have demonstrated how IFRS and CG mechanisms, including board composition, influence reporting practices (Bischof, 2009; Elshandidy et al., 2015; Lim et al., 2007; Onoja & Agada, 2015). A review of the existing literature on corporate voluntary risk disclosure practices indicates that the majority of recent research focuses on risk disclosure in

developed economies. Prior studies are limited to assessing VRD in developing countries (Salem et al., 2019) and other studies have emphasised that further analysis on the impact of CG and IFRS on risk disclosure practices in Saudi Arabia is required (Ibrahim et al., 2019). Thus, this study highlights the importance of the role that board characteristics, ownership and IFRS, as an internal CG mechanism, play in ensuring transparency and providing credible risk disclosure to various stakeholders given the competitive and uncertain nature of changing economies. Better governed corporations could be achieved by committing to higher levels of risk disclosure thus improving investor confidence (Ntim et al., 2013). Further, this study applies three theories: agency, signalling and voluntary disclosure. It was decided to use these theories as a guide for the research as well as for the collection and analysis of data. A complementary relationship exists between the three theories. The interrelationship contributes to the harmonisation of the theoretical framework and optimises the understanding of the outcome. Throughout this thesis, the VRD has been collected manually by carefully reading the annual reports of each company. Moreover, the variables related to corporate governance and ownership have been collected manually.

Second, unlike other prior studies that have investigated corporate voluntary disclosure, this study provides better insights about one specific disclosure type, VRD, and the way that it has been shaped by CG process in Saudi Arabia. Most prior studies on CG in Saudi Arabia have focused on voluntary disclosure as a whole, which might provide vague insights (Al-Janadi et al., 2016). Third and finally, this study could improve the understanding of the implications of VRD on a firm's value in Saudi Arabia. Al-Maghzom et al. (2016a) suggested that further research should be conducted to determine the impact of risk disclosure on firms' value in Saudi Arabia. In line with this, Habbash (2016) stated

that there is little empirical evidence of the link between VRD practices and firm value. To the best of this author's knowledge, there is not much research on the link between VRD and firm value in the Saudi context.

1.7.2 Practical Contribution

It is expected that examining the link between CG mechanism, IFRS and VRD practices will help the executive managers of Saudi listed companies and policymakers in Saudi Arabia to better establish or reform CG practices. This might then assist them to improve their VRD practices thus improving their transparency and accountability, which, in turn, can help to create value for stakeholders (Bravo, 2017). The findings are expected to inform Saudi listed companies about the importance of CG mechanisms in improving their risk management strategies and implementing the best measures to remove any risks (Elshandidy & Shrives, 2016). Furthermore, given the Saudi Arabian government's plan (Vision 2030) to diversify the economy, this study would be of great importance for foreign investors so that they gain a better understanding about VRD practices within the Saudi context.

Understanding the ways that CG influences a corporation's decision on whether to report risk information is becoming very useful for investors who are seeking to reduce information uncertainty (Elshandidy & Neri, 2015). The findings of this study might also be of interest to the SOCPA and the Saudi stock exchange authorities, especially now that IFRS are mandated. The results provide detailed insights about specific VRD issues, where previously there was no research on the relationship between corporate board composition and VRD. This thesis uses various advanced analyses to address the endogeneity problem, including reverse causality analysis, instrumental variable analysis (2SLS), and propensity score matching (PSM). Through these advanced analyses, we could confirm the thesis

findings while dealing with the issue of endogeneity. A limited understanding of corporate risk disclosure exists in the Arab world, particularly in the Gulf Cooperation Council (Al-Maghzom, 2016). Saudi Arabia and other Gulf Cooperation Council countries that have similar environments to Saudi Arabia are expected to benefit from the findings of this study. Given the importance of VRD, Saudi companies' decision-makers can use these findings as guidelines to ensure a high level of compliance to voluntary disclosure. This is critical because this thesis findings can greatly improve the efficiency of the Saudi stock market, providing more information for monitoring the behaviour of managers and promoting stability within the industry. In addition, it could help regulatory bodies to evaluate the performance of companies and to determine their capacity to deal with emerging financial and non-financial problems.

1.8 Overview of Research Methodology

The choice of a method should be guided by both the research question(s) and the amount of knowledge in the specific field (Elliott, 2007). Thus, a quantitative research methodology was adopted to test the developed model. This research method is widely used to focus on financial and non-financial reporting practices by companies. The scope of the study was limited to an evaluation of voluntary risk disclosure in annual reports published by Saudi stock exchange companies, also known as Tadawul. Data were collected from the database of Tadawul and DataStream for 108 companies for the years 2013 to 2020. To assess the voluntary disclosure level, a disclosure index was devised as a measure of the level of VRD in annual reports. The disclosure literature recognizes the importance of self-constructed disclosure indices for assessing the extent of information disclosed in annual reports (Alkurdi et al., 2019). The selection of the information items reported in annual

reports plays an important role in the construction of the voluntary disclosure index. In accordance with prior studies, the index included the following risk items: compliance risks, reputational risks, operational risks, strategic risks, technological risks, commodity risks and sustainability risks (Alkurdi et al., 2019).

There have been two main approaches to developing a scoring scheme for determining the degree of risk disclosure in previous studies. There are two types of scoring approaches: weighted scoring and unweighted scoring. The scoring approach that was adopted is the unweighted one, which assumes that all the information items are considered equally important to all users of companies' annual reports. This method has been adopted primarily in order to avoid the subjectivity inherent in any weighted scoring system. Accordingly, an item scored 1 if it was disclosed and 0 if it was not. To measure the extent of overall VRD for each company, a scoring sheet was designed that included all the voluntary disclosure index items. The total risk disclosure index was computed for each company as a ratio of the total score of the company's maximum possible VRD score. The hypotheses were tested using a regression analysis, which is widely used by accounting researchers to test the relationship between the extent of information disclosure in annual reports and corporate-specific characteristics (Alkurdi et al., 2019; O. S. Habtoor & Ahmad, 2017; Lim et al., 2007). The quantitative data were analysed and interpreted using univariate statistical methods, such as averages, minimums, maximums, standard deviations, and correlation analysis (Spearman's correlation coefficient). In addition, a simple regression analysis was applied to examine the impact of each variable in the research model on the VRD practices of companies.

1.9 Organisation of Study

This study is organised into seven chapters, which are outlined in the paragraphs that follow:

Chapter 1: Introduction to the Research Study: This chapter introduces the topic and its background. In addition, it discusses the problem and motivation for conducting this research study as well as the aim and questions. Further, it provides a brief summary of the research methodology employed and the significance of the study. It also explains how the current study is organized.

Chapter 2: Saudi Arabia's Economy and Regulations: This chapter offers an overview of Saudi Arabia, which includes its regulatory bodies and agencies, stock market, economic system and CG. A number of government laws and regulations that shape corporate financial and non-financial reporting and disclosure practices in Saudi Arabia are explained.

Chapter 3: Literature Review and Research Model: This chapter briefly discusses three of the most widely used theories to explain voluntary disclosure practices: the agency theory, the signalling theory, and the voluntary disclosure theory. These three major theories are postulated as the most effective explanations for companies' incentives to disclose additional information voluntarily. A review of previous empirical studies on voluntary disclosure is provided that measures the extent of VRD in corporate annual reports and examines its associations with other corporate traits. Moreover, the chapter discusses the development of a research model and hypotheses.

Chapter 4: Research Methodology: This chapter discusses the methodology and methods that were employed to assess the research model. It presents the philosophy,

approach and strategy that were used to address the aim and questions. Further, it discusses the study sample, data collection strategy, building of the VRD index and how VRDs were scored.

Chapter 5: Empirical Results: This chapter provides a descriptive analysis of the research sample and variables. Moreover, it measures the extent to which Saudi listed companies voluntarily disclosed their risks in their annual reports between 2013 and 2020. In addition, it presents the empirical findings of the regression analyses to assess the hypotheses.

Chapter 6: Findings and Discussion: This chapter discusses the findings that are presented in Chapter 5. The hypotheses and research questions are discussed and linked to the existing literature that is discussed in Chapter 2.

Chapter 7: Summary and Conclusion: This chapter summarizes the research, including its objectives, questions, methodology, major findings, contributions, implications, and limitations. Finally, there are some suggestions for further research on this topic that are provided.

Chapter 2: Saudi Arabia's Economy and Regulations

This chapter aims to provide a deeper insight into the research context, namely, the economic conditions, governance and cultural attributes that shape and influence the business structure and environment in Saudi Arabia. Accordingly, the chapter provides some critical background information about the topic and an overview of the economy of the KSA, its regulatory bodies and agencies, stock market, attributes and economics of risk disclosure and CG as well as some critical Saudi-specific cultural attributes that are perceived to have a significant impact on the interactions among people and players within the Saudi business ecosystem.

2.1 Unique Religious Culture

Saudi Arabia is frequently described as a harmonised community that has a reasonably homogenous culture shaped by the Islamic religion. It has legislation and trade implications as the prevailing Islamic principles that significantly influence decision-making in business and other aspects of life (Idris, 2007). Therefore, understanding and respecting Saudi culture is crucial to establishing and sustaining prosperous companies in the KSA (Cassell & Blake, 2012). The KSA is an Islamic country in which most residents follow the Islamic religion. The first pillar of the Saudi Vision 2030 emphasises the KSA's position as the heart of the Arab and Islamic worlds, the land of the Holy Mosques, one of the holiest places on earth, and the direction of the Kaaba (Qibla)(Saudi Vision 2030, 2022).

As an exhaustive code of life, Islam provides regulations and criteria for economic practices and transactions and Shariah, the Islamic law, in other words, the commands of the Islamic religion, includes all the moral and legitimate teachings of Islam. Accordingly,

it is the only source for legislation in Saudi Arabia and must be considered in every business-related practice (H. Ahmed, 2011). Using moral and religious considerations, Islamic law differentiates between two main streams for business practices: 'halal' or what is considered legitimate and allowed and 'haram' or what is deemed forbidden. From an Islamic perceptive, honesty and integrity are examples of halal behaviours in business activities that do not contradict Islamic law whereas avoiding 'haram' practices, such as usury and bribery, is considered worship and brings God's blessing (Basah & Yusuf, 2013; R. Muhamad et al., 2008). Moreover, many social responsibility principles are embedded in primary Islamic ethics, such as solidarity, freedom and equality. Adnan Khurshid et al. (2014) argued that Islamic ethics in the holy book of the Quran and Shariah encompass most social responsibility principles and Shariah introduces explicit guidelines and regulations for Muslims to follow when they embark on any business transaction.

According to Cannon (1994), the correlation between religious beliefs and commercial ventures is quite apparent in several Islamic communities. Undoubtedly, Islamic law generates strict standards that shape the relationship between the Saudi government, which is responsible for making laws and regulations that conform to Islamic law, and corporations, specifically those that are operating as subsidiaries for foreign organisations. Islam has ethical rules that investors in the KSA must follow. Thus, foreign investors must adjust their policies to consider the provisions and restrictions of Shariah, which is highly regarded and obeyed by the vast majority of Saudi consumers so that they can improve their chances to compete in the Saudi market. For example, luxury and internationally well-known chocolate brands, whose chocolate products contain alcoholic ingredients, established a new production line for producing non-alcoholic chocolates to be

commercialised in the Saudi market. This product modification aimed to comply with the rule that forbids ingesting alcoholic products in Islam (Alomar, 2014).

However, the implications of cultural attributes on business are evident in Saudi Arabia, which is classified as a collectivistic society (Cassell & Blake, 2012). In such communities, from birth, natives are firmly blended into coherent groups, which are commonly large families or tribes, who invariably protect their members with reciprocal and unconditional loyalty (Hofstede, 1991, 2001). Thus, loyalty is a paramount cultural factor in Saudi Arabia that could influence decision-making in business operations. For example, because of collectivism, relationships typically govern business deals in the KSA; employees are loyal to their families or friends more than their employer organisations, impacting business in many ways; and in some occupational practices (e.g. recruitment and promotions), managers may favour relatives and friends over qualified candidates or employees (Cassell & Blake, 2012; Idris, 2007).

Another cultural impact on business stems from Saudi Arabia's high power distance (Cassell & Blake, 2012), which is the degree to which members that have less authority in an organisation submit to unequal power allocation (Hofstede, 1991). The high power distance has led to a growing pursuit of executive positions and a rejection of labour and technical jobs, which are usually perceived as menial and embarrassing tasks among Saudis, creating a lack of local technical and labour staff and increasing the reliance on foreign labour. Furthermore, high power distance influences decision-making, which in many cases necessitates reaching the highest level of the organisational hierarchy to obtain an answer because of the paternalistic relationship between managers and subordinates and the autocratic decision-making approach (Bhuian, 1998; Cassell & Blake, 2012).

2.2 Kingdom of Saudi Arabia's Economy: Overview and Development

Since its inception, the Saudi economy has been primarily reliant on the oil industry. The country is the world's biggest petroleum exporter and an important member of the Organisation of the Petroleum Exporting Countries (OPEC). The oil industry accounts for approximately 45% of the overall gross domestic product (GDP) and 90% of total export revenues (Mahalik et al., 2017). During the past two decades, the government has worked to diversify the economy by promoting non-oil industries to reduce the dependence on oil and petroleum products. Diversification activities have been initiated in renewables for power, telecommunications, natural gas exploration and petrochemicals. Furthermore, the government has recognised the finance sector's role in mobilising savings and directing cash to economic activities for expanding the economy. A part of this process has been to promote a well-functioning financial sector and a wide range of competitive insurance services. Given the changes in Saudi government policy, the past four decades have involved big changes in the economy and, especially, significant growth in the non-oil sector: its share of total GDP fluctuated from 30% to 37% in the 1970s. However, during the early 1980s, the Saudi economy shifted dramatically in favour of the non-oil sector. Non-oil production accounted for 77% of GDP in 1985. After that, its proportion fluctuated between 60% and 72% during the next few years (B. A. Albassam, 2015; G. M. Muhamad et al., 2021; Soummane et al., 2022).

According to Samargandi et al. (2014), this significant expansion in the non-oil sector is a result of the focus on diversification in the fourth development plan, which started in 1985 and ended in 1990, and it has been followed in every plan since then. As stated by Al-Hassan et al. (2010), these non-oil sector increases are merely the result of

changes in world oil demand, which mirror swings in global oil prices. Although banks and the non-bank financial sector operate in Saudi Arabia, the banking sector predominates. Similarly, the Saudi government focused on industrial development, aiming to accomplish economic and social progress by diversifying the production base and reducing the decades-long dependence on oil for national income. The Saudi Industrial Development Fund was established as a part of efforts to support industrial innovation, which included establishing the cities of Jubail and Yanbu, as well as others in various parts of the country, and providing the necessary infrastructure. Manufacturing activities were enhanced because of these measures. According to Sallam (2021), in the past four decades, industries expanded greatly throughout Saudi Arabia. This resulted from a rise in investment capital from roughly SAR4.3 billion (Saudi riyal) in 1974 to more than SAR1.1 trillion in 2018 (Salam, 2021).

The enhancement increased the number of workers from 10,000 in 1974 to more than one million in 2018. Saudi industrial production increased steadily at the same time. In the manufacturing sector, in which prices were kept constant, the GDP rose from USD45 billion in 1974 to around USD833.5 billion in 2021. Throughout this time, the industrial sector's growth rate increased and real manufacturing production grew by an average of 5.8% annually, one of the strongest and most enduring growth rates. As a result, the manufacturing sector's contribution to GDP rose from 3% in 1974 to 13.06% in 2021 (Sallam, 2021; World Bank, 2022). Saudi industrial exports have experienced a rapid and large expansion during the past several years, which has included expanding the production base and diversifying the sources of income. Saudi industrial exports increased in value from SAR22.558 million in 1995 to SAR1.1 trillion in 2017 at an average annual growth rate of 9.3%. The Kingdom's industrial exports as a percentage of non-oil GDP climbed

from 6.6% in 1995 to 8.7% in 2017, confirming the significance of exports for industrial development.

Diversifying and expanding the industrial sector strengthens and sustains the Saudi economy. According to the Saudi Industrial Development Fund, the manufacturing sector faces several challenges, including rising competition in the domestic and international markets, technology transfer and localisation of new products and services, a conducive industrial environment and framework for sustainable and viable development, creating a skilled workforce and new industrial management, and impediments to foreign investment (A. Ali, 2020). In the meantime, the government in 2016 promulgated its economic blueprint—Vision 2030—which emphasises the importance of greater globalisation. The Vision 2030 plan is an ambitious collection of programs aimed at promoting national development in Saudi Arabia. The plan aims to improve the country's quality of life by enacting change in a variety of areas, from environmental standards to health care, and by boosting economic growth through the globalisation approach (Alrowais, 2022). Globalisation not only grows the Saudi economy by stimulating financial development but also accomplishes long-term economic viability by improving the quality of its institutions (Shahbaz et al., 2017).

Globalisation is a worldwide phenomenon that greatly changes socioeconomic and political conditions (for better or for worse) while integrating commercial operations and foreign direct investment (FDI) (Domazet et al., 2018). During the globalisation process, international businesses establish facilities in host nations, sometimes at the cost of environmental safeguards (Shahbaz et al., 2016). Furthermore, globalisation requires structural changes in industries to suit international demand, changes that necessitate more resources, which may harm the environment. Furthermore, globalisation encourages trade

liberalisation, which enables the free flow of products across nations and increases goods output and energy consumption (Shahbaz et al., 2015). One aspect of this study is that it considers the expansion of the manufacturing base and the diversification of income sources to assist in realising Vision 2030.

2.3 Regulatory Bodies

A regulatory body is a non-departmental public organisation that is primarily concerned with regulation-making. Further, it could be responsible for investigating disputes, surveillance, arbitration and enforcing rules. Although regulatory bodies are government entities, they typically have a high degree of administrative capabilities that enables independence in shaping self-performance and are supported by laws. Therefore, their rules are usually taken for granted and followed by corporations (Levi-Faur, 2011). Moreover, in addition to making regulations, regulatory bodies are responsible for defining compliance requirements to ensure that business operations and practices comply with rules (Sadiq & Governatori, 2014). These regulations have been defined as state-made laws from a state-focused lens (Laffont, 1994) whereas from an economic perspective, regulations might be an essential market constitutive construct and are usually understood as the means for protecting asset ownership and copyright and as a source of competitive advantage (Jänicke, 2008; Levi-Faur, 2011)

2.3.1 Commerce and Industry Ministry

In 1953 the Saudi government established the Ministry of Commerce and Industry (SMCI). In its capacity as a regulatory body, SMCI is principally responsible for regulating the activities of businesses. There are several monitoring devices under the supervision of the Ministry of Commerce and Industry, such as the Saudi Stock Exchange, the Saudi

Capital Market Authority and the Saudi Organization for Certified Public Accountants. Later, in 1965 the Companies Act was introduced by the government. According to Nurunnabi (2018), the SMCI published disclosure guidelines and regulations in 1990 to respond to the need to promote openness and accounting disclosure. The SMCI continued to carry out its activities until 2003, when the CMA replaced it, though the SMCI carried out most functions before that time (Alfordy & Othman, 2022; CMA, 2018; Parveen, 2021).

2.3.2 Stock Exchange

In 1985, the Saudi stock market (also known as Tadawul) was officially established after operating unofficially many years earlier. An independent self-regulatory authority, the Saudi Capital Authority appoints a nine-member board with the approval of the Prime Minister. A total of 14 public companies were listed on the exchange in 1975. Arabian Automobile Firm was the first company registered in the Kingdom of Saudi Arabia in the 1930s (Ebaid, 2022; Tadawul, 2018). Moreover, the formalization of market operations led to the creation of the Saudi Arabian Monetary Authority (SAMA) in 1985, which was responsible for overseeing and controlling the stock market. Up until the formation of the CMA in 2004, this government agency was responsible for the regulation and control of market activities. The Saudi Stock Exchange is the only MENA-based stock exchange among the G20 countries. Furthermore, it is the largest and most liquid market in the Middle East and North Africa (Ebaid, 2022). Tadawul is owned and controlled by the board of directors appointed by the SMCI Council. SMCI Council members are selected from local brokerages, public companies and legislatures (Aljaadi et al., 2021; Al-Habshan, 2017).

2.3.3 Capital Market Authority

In the 1950s, the Capital Market Authority was an unofficial body that performed successfully until basic regulations were introduced by the Saudi government in the 1980s (CMA, 2007). Officially, it became independent in 2004. A key component of its regulatory program is the creation of an investment environment that is conducive to investment, the protection of investors and traders against nefarious activities on the stock market, and the improvement and enforcement of disclosure requirements. CMA operations are directly controlled by the prime minister, who directs it to manage and regulate the stock market to implement better CG reforms. The CMA is governed by a board of five members appointed by the Prime Minister. It primarily focuses its efforts on the Saudi stock market and promotes transparency and openness of listed companies so that investors can be confident that they may trust the companies they invest in (Alfordy & Othman, 2022; Shehata, 2015).

2.3.4 Saudi Arabian Monetary Authority

The SAMA, formerly known as the Saudi Arabian Monetary Agency, is the country's central bank. The SAMA's duties include dealing with state banking issues, the printing of the Saudi riyal and the stabilisation of its value externally and internally, controlling foreign exchange reserves in the Kingdom, managing currency policy to maintain price and exchange rate stability, promoting and ensuring the financial system's solidity, controlling the country's commercial and trading banks and supervising the insurance sector (Saudi Arabian Monetary Authority [SAMA], 2017).

2.3.5 General Investment Authority

In 2000, the Saudi government established the Saudi Arabian General Investment Authority (SAGIA) to facilitate foreign investment. This was intended to achieve the

objectives of the economy. A business hub was established by the SAGIA in Riyadh to help potential investors to find commercial real estate and funding opportunities. The SAGIA creates a bridge for all relevant government departments as a one-window operation. The objectives of the SAGIA are to establish new standards for investment, develop new economic prospects in Saudi Arabia, support the government in carrying out its initiatives and strengthen links with investors by upholding high standards (Saudi Arabian General Investment Authority [SAGIA], 2017).

2.3.6 Certified Public Accountants

The auditing and accounting profession is still in its early stages in the Kingdom. In 1965, new legislation that mandated independent auditors to audit the financial records of publicly listed corporations established the profession legally to protect the money of stockholders (Saudi Organization for Chartered and Professional Accountants [SOCPA], 2018). The first Chartered Accountants Act was approved in 1974 and it played an important role in controlling accounting practices, which were overseen by the SMCI. However, because of a lack of an autonomous organisation that controlled its operations in the early 1990s, there was no substantial improvement in accounting practices. In 1992, the SOCPA became a semi-independent body and its goal was to advance Saudi Arabia's accounting and auditing sector (Al-Dhubaibi, 2022).

The Chartered Accountants Act of 1974 was reviewed and updated in 1992 (Ebaid, 2020; Oraby, 2017). After that, the SOCPA received accreditation from the International Federation of Accountants in 2006 (Al-Dhubaibi, 2022; AlMotairy & Stainbank, 2014). Furthermore, the SOCPA became a member of 16 professional organisations that work under the International Federation of Accountants (IFAC) to promote the accounting and auditing professions (AlMotairy & Stainbank, 2014). Recently, according to Al-Dhubaibi

(2022), the role of the SOCPA has helped investors to invest more in firms because of the greater openness of accounting and credibility of financial reporting (Hodge et al., 2004). The SOCPA performs four statutory functions: organises and issues licenses to firms and ensures and inspects the quality of audit firms.

2.3.6.1 Accounting and Auditing Standards

The accounting and auditing professions are not as developed in the KSA as they are in industrialised nations that have a long history of working in this area. According to the SOCPA website, this profession first caught the attention of the KSA authorities in 1930 (SOCPA, 2019). In 1931, a Commercial Business Regulation Act was passed that mandated the keeping of accounting records. In 1965, the Company Regulations Act required companies to have audited financial statements. This law also defined certified public accountants' (CPAs) responsibilities and the regulations that would govern CPA's assignment (Naser & Nuseibeh, 2003). This resolution was followed by the 1974 issuance of CPA regulations. By creating a committee of qualified public accountants to oversee the profession, this rule helped to organise the accounting and auditing professions. Many parties attempted to help to develop the profession in the years that followed, for example, King Saud University established the Saudi Accounting Association to help to promote accountancy. The SOCPA was founded in 1991 and it has aided in refining the accounting and auditing professions. The SOCPA has hosted several international conferences and conducted several studies on the profession. Further, accounting and auditing standards are reviewed and developed by the SOCPA. Despite several successes during these years, Saudi Arabia still has some serious issues to address. All listed companies in the Kingdom are required to follow the SOCPA's accounting and auditing standards (SOCPA, 2019). The SOCPA is supervised by the Ministry of Commerce. The SOCPA established a quality

review committee to ensure the effectiveness of its standards. This committee established a program known as the practice-monitoring program, ensuring that CPAs follow the certified public accounting requirements (Al-Dhubaibi, 2022).

The KSA's accounting, auditing and financial reporting obligations are documented in the Companies Act of 1965, as amended in 2015 (Saudi Arabian Ministry of Commerce and Industry [SMCI], 2017). The SOCPA's accounting standards are expected to be followed by non-financial businesses and other legal entities as prepared by CPAs. The production of annual reports and financial statements according to GAAS is required of all the KSA's listed companies (Oraby, 2017). Between 1998 and 2016, the SOCPA released the KSA's accounting standards, which included 16 new standards and altered the presentation and disclosure requirements. In areas not covered by the KSA or generally accepted accounting principles (GAAP), the SOCPA made a ruling in 2002 that required listed firms to apply IFRS (SOCPA, 2019).

According to Nurunnabi (2018), the implementation of IFRS was necessary to give foreign and local investors comparable, reliable and transparent financial statements as a result of the introduction of foreign ownership of financial enterprises in the country. The SOCPA Project for Transition to International Accounting and Auditing Standards, also referred to as the SOCPA Project for Transition to International Accounting and Auditing Standards, received authorisation from the SOCPA in 2013. For fiscal periods beginning on 1 January 2017, all publicly traded companies were expected to use IFRS rather than the GAAP international accounting system (Nurunnabi, 2018). Furthermore, small and medium enterprises (SMEs) had to start using IFRS in 2018, which entailed significant extra disclosures. All listed companies and SMEs must complete their yearly audits and company auditors are required to follow a five-year audit firm rotation rule. The SOCPA is tasked

with defining auditing standards under CPA. The SMCI oversees these processes because they fall under its jurisdiction (SOCPA, 2019). In 2012, the SOCPA openly declared its intention to support the International Standards on Auditing and in 2013, its plans were made known (Ebaid, 2021). The SOCPA announced in January 2017 that it would replace its auditing standards with IFRS.

2.3.6.2 Financial Reporting

Given its favourable effects on financial reporting quality (FRQ), and consequently on the effectiveness of capital markets, the implementation of IFRS has attracted increasing attention in recent years. The increased use of IFRS worldwide is evidence of its significance and effect on earnings quality. In this situation, IFRS serve to harmonise accounting standards, increase the comparability of financial data and, ultimately, improve investment choices (Iatridis, 2010; Zéghal et al., 2012). In fact, IFRS offer a reliable sign of a high-quality report. Prior studies have shown that the adoption of IFRS improves the transparency and comparability of financial reporting (Barth et al., 2008; Daske & Gebhardt, 2006; da Silva & Nardi, 2017; Zéghal et al., 2011). In addition, IFRS encourage conservatism in procedures and demands complete disclosure of information, reflecting the reality of transactions and assisting in the improvement of investment decisions (Christensen et al., 2015).

To strengthen FRQ and to increase the effectiveness of the capital market in Saudi Arabia, the SOCPA board approved a plan to implement IFRS. In truth, the SOCPA cites a few reasons for its decision to embrace IFRS. To improve the comparability of financial reports and to reduce information risk, one requirement is for harmonised accounting methods, which also serve to encourage domestic and foreign investment. All financial institutions, including banks and insurance firms, were required by the SAMA to report

using IFRS and present complete financial statements to investors and shareholders in 2008 (Alzeban, 2016). Furthermore, the early adoption of IFRS was a result of the growth of foreign ownership in the KSA's banks (Nurunnabi, 2018). In addition, in 2017 and 2018, the SOCPA mandated that all SMEs and non-financial firms comply with IFRS. Furthermore, the SOCPA published a number of papers that addressed issues that IFRS do not address, such as the zakat (religious tax). The 45 IFRS standards and interpretations that were issued on 31 December 2015 have all been adopted by the SOCPA.

2.4 Stock Market: Laws and Regulations

As governance regulators, governments facilitate companies to perform better in governance and transparency practices by enacting laws and developing regulations that are necessary to ensure disciplined and lawful business practices and to protect the interests of businesses, shareholders and other stakeholders. Saudi Arabia is an emerging market-based economy. Unlike developed nations such as the UK and the US, Saudi Arabia has an economy that may be less developed in terms of robust financial reporting, auditing and financial information disclosure. Saudi authorities and institutes strive to enhance and promote rules and legislation that may help to strengthen corporate honesty and monitoring, which may aid in timely financial information delivery. The section that follows explains the development of various laws and regulations that are relevant to the current study.

2.4.1 Capital Market Laws and Risk Disclosure

The broader economic reforms by the Saudi government led to more focus on CG (Al-Janadi et al., 2016). Since the 'disclosure and transparency' criterion was set in 1985, Saudi authorities have paid increasing attention to disclosure issues. Promoting and strengthening CG regulations in the Kingdom has been one of the CMA's main objectives

since 2003. Government revision of the CG regulations was made possible by the Tadawul Listing Regulations, which was passed in 2004. These regulations were acknowledged and applied by the CG Index, which assesses compliance with the corporate standards set by the government. The 15 items in Section 6 of the Listing Rules, titled 'Continuing Obligations', cover various topics, including the integrity of the firms' yearly reports and minimising the negative consequences of asymmetrical information (Tadawul, 2017).

The Saudi Corporate Governance Code (SCGC), Capital Market Law and Listing Rules, among other capital market laws, strongly emphasise the value of disclosure and transparency. For example, the SCGC includes a distinct section that covers board reports, business policy and disclosure and transparency. The Listing Rules regulation incorporates seven articles that deal with disclosure, including but not limited to timing, forms, means of disclosure and examining the disclosure. However, it was not until 2017, when the new SCGC was declared, that authorities realised how important it was to disclose risk-related information. The improving of CG structures and procedures worldwide focused on enhancing risk reporting (Madrigal et al., 2015). As a result, the SCGC11 amended issue was the first rule to emphasise the value of creating a risk management committee.

Further, the CMA's Capital Market Law mandates that all information that is required by investors and their advisers to make investment decisions is included in the prospectus. The authority's standards also require a clear overview of the issuer's financial status and any relevant financial data, such as the audited financial balance sheet, profit and loss account and cash flow statement.

2.5 Attributes and Economics of Risk Disclosure

The term 'risk disclosure' refers to the information, typically in annual reports, that expresses corporations' identified and potential events and their anticipated economic consequences (Miihkinen, 2012). This is consistent with the definition of risk as the likelihood and impact (positive or negative) of an event occurring. Thus, risk disclosure involves releasing information that addresses existing conditions or explicitly or implicitly implies the possible occurrence of a specific situation (Collier, 2009; Taru Seta & Setyaningrum, 2017). Dobler et al. (2011) argued that regulations commonly demand risk disclosure that is selective and detailed in financial reports but broader and less detailed in management reports. Thus, voluntary narrative risk disclosure could be more convenient for management reports. However, regulations generally do not specify the form in which firms must disclose risk (Taru Seta & Setyaningrum, 2017). In this vein, Solomon et al. (2000) discussed that qualitative risk disclosure could be useful for overcoming risk disclosure problems, such as the difficulty of risk quantification (Schrand & Elliott, 1998), which could be an excuse for many companies to minimise quantitative risk data in their annual reports (Dobler, 2005). The subsection that follows is an attempt to define and compare the various forms of risk disclosure and risk statements.

2.5.1 Risk Sentences: Qualitative Versus Quantitative

According to Ibrahim et al. (2019), companies should provide more quantitative risk-related data to assist stakeholders in evaluating the risk that enterprises are taking. The disclosure of quantitative risk data, according to Fijałkowska and Hadro (2022), may help readers of annual reports make more educated choices. Quantitative risk-related information disclosure can increase the investment potential and trustworthiness of the data

that are noted in annual reports (Elsayed & Elshandidy, 2021; Schrand & Elliott, 1998). Under the US SEC 1997 regulation, businesses are encouraged to report quantitative information on market risk (Linsmeier & Pearson, 1997). However, most dangers are difficult to measure and quantify (Linsley & Shrives, 2006; Mohobbot & Konishi, 2005; Weber & Müßig, 2022). According to Rajgopal (1999), measurement mistakes caused the SEC 1997 regulation in the US to cause incorrect information to be issued. Mohobbot (2005) contended that managers of businesses are less motivated to estimate and quantify information because doing so could expose them to harsh criticism and perhaps legal action if their estimates prove to be inaccurate. According to earlier empirical investigations, the majority of risk disclosure is of a qualitative type. For example, Linsley and Shrives (2006), Rajab and Schachler (2009), Beretta and Bozzolan (2004) and Muzahhem (2011) discovered that 94.7%, 87.7%, 84.5% and 70%, respectively, of risk disclosure is qualitative.

2.5.2 Risk Sentences Timeframe: Historical Versus Future

Information about risks may be disclosed historically or prospectively. Contrasting with the sharing of historical information, Aljifri and Hussainey (2007) and Linsley and Shrives (2005), discussed forward-looking information could help investors make more accurate estimates of future cash flows, thus allowing them to make more rational investment decisions. However, it might be claimed that information that looks ahead has worse reliability because it entails a high amount of uncertainty in addition to the subjectivity problem that is related to looking ahead (Cabedo & Tirado, 2004). In addition, it is thought that the nature of forward-looking information makes it more valuable for competitors to exploit, which could affect a firm's competitive edge (Aljifri & Hussainey, 2007; Institute of Chartered Accountants in England and Wales, 1999). Consequently,

those who create financial reports may be less motivated to disclose information that looks ahead (Konishi & Ali, 2007). A study by Linsley and Shrives (2006) reveals that UK companies typically disclose 20.29 and 27.47 pieces of historical and prospective information related to risk. According to this study, UK businesses share more prospective information. However, Konishi and Ali (2007) and Beretta and Bozzolan (2004) found that Japanese and Italian firms disclose substantially more historical information despite the limited availability of forward-looking information.

2.5.3 Risk Sentences of Economics: Neutral, Good or Bad

According to Schrand and Elliott (1998), given that businesses have less motivation to provide information about bad risks, the criteria for risk disclosure should concentrate on those. According to Linsley and Shrives (2006), managers would rather convey a positive image of their risk management performance to the market to minimise or hide reputation costs. The Association of Chartered Certified Accountants published a report in 2014 that stated that analysts feel that the majority of disclosed risk is biased towards positive disclosure (Moolman et al., 2016). According to Kothari et al. (2009), managers of businesses are more likely to share good news than bad, although they are less likely to share the latter. However, Mohobbot (2005) contended that directors have a greater incentive to disclose negative risk information for several reasons, including the potential reputational harm that would result if such information were not disclosed, the ability to attribute the causes of negative risk information to outside factors and the opportunity to alert stakeholders to future challenges.

According to empirical research by Konishi and Ali (2007), Kothari et al. (2009), Rajab and Schachler (2009), Muzahhem (2011) and Linsley and Shrives (2006), good risk information news is more likely to be disclosed than bad news. Lajili and Zéghal (2005)

found that Canadian businesses reveal more negative risk information. According to Schrand and Elliott (1998), given that businesses have less motivation to provide information about bad risks, the criteria for risk disclosure should concentrate on those. According to Linsley and Shrives (2006), managers would rather convey a positive image of their risk management performance to the market to minimise reputation costs. The Association of Chartered Certified Accountants published a report in 2014 that stated that analysts feel that the majority of disclosed risk is biased towards positive disclosures. Mohobbot (2005) contended that directors have more incentive to disclose negative risk information for several reasons, including the potential reputational harm that would result if such information was not disclosed, such as the ability to attribute the causes of negative risk information to outside factors and the opportunity to alert stakeholders to future challenges.

2.6 Corporate Governance

The KSA is regarded as a developing market where CG concerns are critical due to the lack of economic infrastructure, including well-established financial infrastructure, which can assist in resolving CG concerns (Yermack, 2017). It is imperative that all operational concerns, including those related to financial conditions, performance, management, and ownership, be disclosed within the framework of CG in a timely and appropriate manner. The KSA neglected CG procedures for several years, and this situation persisted until 2005 when the CMA became aware of flaws and difficulties with corporate reporting. Furthermore, the financial crises in 2006 and 2009 revealed significant flaws in financial reporting, including incorrect disclosures and accountability issues (Hussainey & Al-Nodel, 2008).

This led the Saudi government to concentrate on improving business governance structures through CG. In the Saudi Arabian corporate sector, CG has become a critical issue, and there has been a continued debate regarding ways to improve it. There are several concepts and norms included in the current CG procedures, including shareholder rights, disclosures, and transparency components, as well as the appointment of board members who manage the listed corporation. According to these regulations, best practices must be followed to protect the interests of shareholders and investors (W. Albassam, 2014; Buallay et al., 2017). The three primary institutions overseeing the operation of the current CG legal framework fall into three categories: the KSA's company laws, which are based on UK practices, the SOCPA, and the CMA. A set of CG statutes was established in 2006 by the board of directors of the CMA. Since 2010, the KSA has been required to regulate and expand its capital market while strengthening credibility and openness in all financial reporting operations (Al-Matari et al., 2012).

There are five sections in the KSA CG Code. The regulations include an introductory section that defines terms related to the regulations, such as independent member, non-executive member, and shareholder. The second component pertains to the rights of shareholders and general assemblies. Third is disclosure and transparency of the firm's policies, such as the board of directors' reports. The fourth section discusses the roles and responsibilities of the board of directors. In the fifth part, the CMA recommends the use of publications as a means of ensuring compliance (CMA, 2017c). The CG rules describe the board of directors and its committees as the first line of defence against management malpractice.

2.7 Chapter Summary

This chapter described the context of the study, namely, the economic conditions, governance and cultural characteristics that influence Saudi Arabia's business structure and environment. This chapter discussed the economy of the KSA, regulatory bodies and agencies, stock exchanges, risk disclosure attributes and CG economics. Moreover, some essential Saudi-specific cultural attributes can affect people's interactions and the dynamics within the Saudi business environment.

Chapter 3: Literature Review and Theoretical Framework

3.1 Introduction

Organisations worldwide have become aware of the importance of voluntarily disclosing non-financial risk information (Kang & Gray, 2019). Non-financial risks are one of the significant factors that contribute to the volatility and uncertainties of business institutions (Abdullah et al., 2015; Jorgensen & Kirschenheiter, 2003). Stakeholders rely heavily on such disclosed risk information to make their decisions about the performance and sustainability of businesses (Elshandidy et al., 2018). Thus, shareholders and other stakeholders are very concerned about non-financial risk disclosure behaviours and the honesty of companies' disclosure of risk-related information (Onoja & Agada, 2015). It has been revealed that this behaviour is largely influenced by factors that include board composition, ownership structure and GAAS and IFRS. After many reported corporate scandals and financial and economic crises, including the recent COVID-19 pandemic, regulators, shareholders and researchers have emphasised the importance of better risk disclosure practices (Kang & Gray, 2019). Organisations will reduce the asymmetric information problem, reduce agency costs and legitimise their activities (Uyar et al., 2013).

As was mentioned in Chapter 1, the main motivation for this research was the initial observation that in Saudi Arabia, in which risk management and CG are still a relative novelty, companies report risk in a very limited way, if at all (Al-Maghzom et al., 2016a). Saudi companies face the need to provide more information on the risks that accompany their operations. Zaini et al. (2018) conducted a literature review and found that research on voluntary disclosure practices by companies in emerging countries is still fairly limited. Given that, this chapter discusses the meaning of VRD and then provides an overview of

what is happening in Saudi Arabia, including the state of CG there. Then, it discusses some relevant theories that have been used to explain organisational VRD behaviour. Following this, the hypotheses are developed.

3.2 Voluntary Risk Disclosure

An international comparison of corporate risk reporting highlights important differences across significant risk reporting contexts. In this sense, three distinct approaches have been identified. First, where risk disclosure is mandatory and auditors must provide a positive assurance on its content. Second, where VRD is encouraged and third and finally, where a combination of voluntary and mandatory risk disclosure approaches exists (Adelopo et al., 2021). Although there are strict regulatory requirements for mandatory information disclosure by listed companies, additional voluntary disclosures can increase transparency to reduce the information asymmetry between insiders and outsiders (Kang & Gray, 2019). According to Cheung et al. (2010), this voluntary aspect is especially important because it allows for management discretion in deciding which information to disclose to stakeholders. For example, a firm can use voluntary disclosure to convince its stakeholders that it is taking measures to ensure its activities are successful and acceptable to stakeholders (Kang & Gray, 2019).

Risk disclosure is the practice of providing information about risks, actions to manage them and relevant measures (Bamber et al., 2010; Jorgensen & Kirschenheiter, 2003; Kang & Gray, 2019). According to Linsley et al. (2006), risk disclosure concerns informing the reader about:

> Any opportunity or prospect or of any hazard, danger, harm, threat or exposure, which has already impacted upon the company or may affect the company in the

future or of the management of any such opportunity prospect, hazard, harm, threat or exposure. (p. 389)

There are numerous factors that contribute to the increasing volatility and uncertainty of the business environment, including non-financial risks (Abdullah et al., 2015). Many unexpected events that happen are not always directly linked to financial issues (Onoja & Agada, 2015). There are a number of other events that can affect the survival of a company, including natural disasters, health pandemics (such as COVID-19), regulatory changes, political instability and changes in global consumer demand companies (Abdullah et al., 2015). However, information about non-financial risks receives less attention and therefore is not disclosed as frequently as information about financial risks (X. Li & Yang, 2016; Onoja & Agada, 2015). Hence, Onoja and Agada (2015) argued that the credibility crisis along with various risks, such as the threat of a health pandemic, and the GFC of 2008 and 2009 have prompted calls for an enhanced level of disclosure to facilitate informed investment choices. Therefore, corporate annual reports no longer focus solely on financial information but also include qualitative data about various topics, such as a company's risks. Currently, such disclosures are left to the discretion of companies in many countries and under varying guidelines issued by authorities and accounting bodies (Abdullah et al., 2015).

It is possible that a lack of information about non-financial risks could lead to investors being misled while making investment decisions. Cabedo and Tirado (2004) argued that when evaluating investment opportunities, investors consider the return on investment and the level of risk. Investors who fail to identify the actual key risks that are associated with companies will not be able to assess the actual risk level of those companies. Investors may consequently make incorrect investment decisions, resulting in a

large loss or disaster for themselves. Therefore, risk disclosure plays a significant role in curtailing information asymmetry and agency problems (Elshandidy et al., 2018; Healy & Palepu, 2001). Specifically, by releasing voluntary and mandatory information to the capital market, companies can reduce capital costs, increase investor confidence and consequently improve the marketability of their shares (Bravo, 2017; Elshandidy et al., 2013).

According to legal requirements, risk disclosure can be categorised as mandatory disclosure or voluntary disclosure. Regulators require a minimum level of disclosure, referred to as mandatory disclosure. Voluntary disclosure is voluntarily made by an organisation without being required by regulations. This implies that the company provides additional information besides the mandatory information in its disclosure report. This is because 'research shows that mandated financial risk reporting has not been effective in removing the information gap between firms and investors' (Cordazzo et al., 2017, p. 683). Moreover, companies have the discretion to make a voluntary disclosure in their annual reports. As a result, there is a diversity of voluntary disclosure and wide variations in what companies do.

Applying this to risk disclosure, mandatory risk disclosure includes risk information that is disclosed by companies as specified by GAAP and IFRS (Elshandidy et al., 2013; He et al., 2019). However, VRD is any other risk information that is reported by companies in their annual reports (Elshandidy & Neri, 2015). Onoja and Agada (2015) defined VRD as facultative acknowledgement of firms' strategies, characteristics, operations and other external factors that may influence expected outcomes. The voluntary disclosure of risk has a number of benefits, including reducing the information asymmetry between the company's management and its external shareholders, increasing the trust and confidence

that stakeholders have in the company's management and reducing the perceived risks of the firm, because an open disclosure strategy is believed to enhance its ability to assess its future performance. In turn, this may result in a decline in the company's cost of capital and a lower risk of failure (Onoja & Agada, 2015). Thus, research attention has been drawn to understanding the factors that may drive companies' risk disclosure practices around the world.

Accounting standards including IFRS-7 require a firm to disclose qualitative and quantitative information about the financial instruments' risks. Qualitative disclosure addresses risks that are inherent in the financial management process (objectives, policies, processes) and describes the risk exposure for each type of instrument and any changes relative to the preceding period whereas quantitative information pertains to the credit risk, liquidity risk, market risk and their concentrations (Cordazzo et al., 2017). VRD might consist of a variety of potential risks. However, some researchers (Alkurdi et al., 2019; Linsley et al., 2006; Oliveira et al., 2011c) have emphasised the importance of corporations voluntarily disclosing information about compliance, operational, reputational, strategic, technological, commodity and sustainability risks. It is worth noting here that for this research, these types of risks were used to measure the VRD variable in the research model.

It is imperative at this stage to explain these types of risks. For compliance risks, corporations are controlled by several internal and external frameworks, including legal, tax, regulatory and accounting standards. Internal policies or guidelines are expected to be adhered to while international conventions and laws should also be complied with. The decision to comply with these legal frameworks is the responsibility of corporate boards (Probohudono et al., 2013). Adherence leads to avoidance of compliance risks in the form of penalties and/or imprisonment. Corporations are expected to address the possibility of

business losses because of compliance issues. A study by Alkurdi et al. (2019) reported that banks in Jordan comply with mandatory legal frameworks but are reluctant to do so with voluntary legal frameworks. This means that Jordanian banks are at risk of being non-compliant. It would be interesting to determine the situation in terms of this risk in Saudi Arabia's financial and non-financial corporations.

Another important reason for risk disclosure is to ascertain whether the corporation's operations are aligned as expected. The human resources and systems that are employed to aid efficient processes amount to the operational state of the corporation or company (Cordazzo et al., 2017). At times, operations experience disconnections, leading to operational risks (Al-Maghzom, 2016). The corporation can suffer losses, seriously affecting investors. It is the role of corporations' boards to review the operational risks that are likely to endanger the business (Neifar & Jarboui, 2018). This implies that the characterisation of a corporation's board determines the ability to voluntarily assess, and where necessary reform, the operations of the corporation. By doing so, the corporation avoids operational risks (Elshandidy et al., 2013).

The other significant cause for risk disclosure is to safeguard corporations from reputational damage. A corporation's reputation is a result of the attractiveness of its image that has been cultivated over time. Risk disclosure transparency enhances a corporation's reputation and image, as well as the company's perception among shareholders and regulatory authorities (Rani & Gundavajhala, 2016). A good reputation translates to an increased competitive edge for the corporation, which consequently leads to greater revenue, which then trickles through to stakeholders (Chung et al., 2015). However, instances can arise that threaten to tarnish a business reputation. These include unethical conduct of employees, inadequate occupational and health guidelines, security issues as

well as poor quality products or services (Bravo, 2017; Chung et al., 2015). Corporations' boards have an important role in safeguarding the reputation of a business.

Equally, it is important that corporations' boards focus on strategic risks (Jorgensen & Kirschenheiter, 2003). Corporations have strategic plans in the form of expansion plans, brands, innovations and mergers (Cordazzo et al., 2017). Strategies are ambitious and intended to position it in a competitive environment (Lim et al., 2007). Nevertheless, strategies may fail to yield the desired outcomes and hence incur losses to the amounts invested. This implies that there exists an important role for corporate boards in assessing the strategies being proposed and implemented and reporting on the potential risks that are associated therein (Linsley & Shrives, 2005). This protects the interests of stakeholders in the stock market. Technology plays an important role in improving the efficiency and effectiveness of operations. Advances in technology have resulted in increased output and desirable usage of available resources and hence more revenues or profits (Linsley et al., 2006). This has led to corporations investing in the latest technologies. Nonetheless, technology failures arise, which leads to a decline in output (Elghaffar et al., 2019). In addition, the use of internet-based technologies may result in information breaches or hacking. This means that corporate boards should be actively involved in assessing technological advances in the business and reporting the potential risks that are associated with the technology (Cordazzo et al., 2017).

Moreover, risk disclosure is important as far as commodity risk is concerned. Commodities, be they physical goods, intangible goods or services, are faced with future uncertainties in terms of fluctuations in value (Alkurdi et al., 2019). The present value of commodities may be promising but because of geopolitical dynamics, environmental changes and health crises such as the coronavirus, the value can fluctuate, leading to losses

(Rajgopal, 1999). Further, inflation may greatly affect future commodity value. It is incumbent on company boards to assess and report the possible commodity risks. Another significance of risk disclosure is protecting corporations against sustainability risks. At times, corporations employ novel systems that are geared towards ensuring continued growth of the business (Al-Maghzom, 2016). These systems are often capital intensive.

Nevertheless, the sustainability of systems can wither because of financial constraints or changes in preferences. In such instances, the sustainability of the system is placed in jeopardy and the initial capital that was invested in the corporation may suffer losses (Alkurdi et al., 2019). Therefore, it is important that corporate boards report such sustainability risks to stakeholders. The management and assessment of each of these risks are important in ensuring effective CG (Kang & Gray, 2019). It is the responsibility of corporations' boards to identify any potential risks and to develop measures and plans to mitigate those risks (O. S. Habtoor & Ahmad, 2017). Consequently, the characterisation of corporate boards could determine the manner in which each of these risks is dealt with and voluntarily disclosed to relevant stakeholders (Bravo, 2017).

3.2.1 Voluntary Risk Disclosure in Developed Countries

Multiple developed economies (e.g. the US, the UK, Australia, Italy, Germany, Canada) mandate financial risk disclosure. However, their existing regulatory framework, characterised by unsystematic partial measures that occur gradually over time, concentrates primarily on the market risk that is associated with using financial derivatives, financial instruments linked to a specific financial indicator or commodity and through which specific financial risks can be traded (Zakaria, 2017). Consequently, the broader proportion of risk disclosure reports are not compelled by statutes and are submitted voluntarily (Moumen et al., 2015). Several studies have examined risk disclosure behaviour among

corporations in various mature business ecosystems, typically in the context of developed countries. For example, Beretta and Bozzolan (2004) presented a framework for analysing firm risk disclosure of Italian Stock Exchange-listed firms. They confirmed that corporation size and industry type do not affect their designed disclosure volume index.

Other studies have been conducted in similar developed economies, such as on Belgian companies listed on Euronext (Vandemaele et al., 2009) and in Switzerland (Raffournier, 1997). Moreover, in a cross-boundary investigation, Dobler et al. (2011) conducted an expanded analysis of the relationship between corporation risk level and the degree of risk disclosure in a multiple country study, which included 160 manufacturing organisations from the US, the UK, Canada and Germany. The study found that risk disclosure focuses mainly on financial risks. Further, the study confirmed that domestic disclosure regulations justify the variation in analysis outcomes between the investigated economies, in which the volume of risk disclosure in annual financial and management reports was associated with the existing local disclosure regulations in each country. These studies investigated and tested risk disclosure drivers in firms' annual reports differently. However, most of the results show a degree of contradiction and inconsistency. Consequently, failure to define a set of acceptable risk disclosure drivers that can be used globally is still a significant research dilemma (Onoja & Agada, 2015).

3.2.2 Voluntary Risk Disclosure: Developing Versus Developed Countries

As was discussed when investigating the risk disclosure practices in developed countries, a vast body of research has been conducted in developed countries, linking the quantity and quality of VRDs to corporation-specific attributes. In comparison, a small number of studies have investigated risk disclosure practices in the context of developing countries. For example, Al-Shammari (2014) analysed the relationship between CG

instruments and risk disclosure in the financial reports of Kuwaiti-listed non-financial firms for the fiscal year 2012. The findings revealed a low quantity of risk disclosure because of what was described as a 'double role problem' in CG. Ezat (2014) explored the drivers of disclosing risk-related information in Egyptian-listed firms' annual financial reports. The study revealed that as a developing country, Egypt has a lower level of risk disclosure than other developed countries. Strategic and operational risks were the most frequently disclosed risk information, respectively, and there was a significant and positive correlation between risk disclosure and board characteristics, such as board size and inclusion of non-executive members. Further, there was a positive relationship with other variables, for example, corporation size and pressure from market competition. Moreover, Habbash et al. (2016) analysed the extent and the possible effect of CG, ownership format and other organisational attributes on the level of risk disclosure in Saudi Arabia, a developing country that needs more risk disclosure research. The study analysed 361 observations from Saudi listed non-financial companies for the period from 2007 to 2011. The findings point to a moderate level of risk disclosure among the investigated companies. Similarly, other studies have investigated risk disclosure using corporation-related characteristics in many developing countries, such as Jordan (Naser et al., 2002) and Indonesia (Kurniawanto et al., 2017). In general, the results from studies that address risk disclosure in developing economies indicate that corporations' annual reports typically include a minimal volume of voluntarily disclosed risk-related information because corporations usually avoid providing sufficient information on encountered risks. Comparing risk disclosure in developed and developing countries, Lakshan et al. (2021) argued that the findings from studies addressing the two contexts are mixed. For example, studies on risk disclosure in most developed countries (e.g. Raffournier, 1997; Zarzeski, 1996) demonstrated a significant and positive

correlation between firm size as an independent variable and disclosure level as a dependent variable. However, few studies confirmed the same relationship between these variables in a developing countries' context.

3.2.3 Motivations and Drivers of Voluntary Risk Disclosure

VRD refers to a corporation's facultative decision to deliver supplementary risk-related information about economic, non-financial, ecological or other considerations that have influenced or could influence its decision-making process and its outcomes in its annual report. In other words, it is a non-obligatory business practice for publishing additional financial and non-financial data (Scaltrito, 2016). However, many external and internal factors could influence management's orientation towards VRD and its willingness to disclose or retain information. In this vein, Zamil et al. (2023) argued that shareholder pressure is a powerful driver of VRD. Typically, it stimulates and pushes management to improve the business's financial performance. Therefore, shareholders pursue more details and information asymmetry reduction. However, businesses encounter unprecedented information-related challenges in which information availability becomes a crucial stimulus of investment decisions and could lead to dramatic changes in the orientation of investors, who tend to make informed investment decisions using the abundant information they collect or receive. Thus, information in mandatory financial disclosure is insufficient from an investment perspective and companies are encouraged to disclose more information to fulfil shareholders' needs for decision-support data (Elfeky, 2017; O. A. Hassan et al., 2009). Furthermore, the divergence between shareholders and corporation management typically creates information asymmetry, an information gap that requires more than the mandatory financial information in annual reports, which emphasises the complementary role of VRD in addressing this gap (Wallace, 1988).

Moreover, Elfeky (2017) argued that financial scandals are significant risks that could devastate companies. Many companies that collapsed because of such scandals complied with mandatory disclosure benchmarks and neglected VRD. Therefore, executives and managers resort to voluntarily disclosing more information, often motivated by their desire to avoid suspicion and to demonstrate financial integrity. In addition to shareholders' influence and the executives' tendency, the literature on CG and risk disclosure has identified several drivers that could significantly increase VRD practices among organisations, such as corporation size and industry sensitivity (Mkumbuzi, 2015; Solikhah, 2016), increasing business profitability and enhancing corporation leverage (Albers & Günther, 2010; Boshnak, 2022; Habbash et al., 2016; Masum et al., 2021), signalling the firm's potential and increasing its liquidity (Masum et al., 2021; Rahman et al., 2007; Rouf & Akhtaruddin, 2018), corporation reputation (Dyduch & Krasodomska, 2017), CG (Raimo et al., 2022; Saggar & Singh, 2019; Uba & Irina, 2021), the corporate board structure (Mbithi et al., 2023; Saggar & Singh, 2019), auditing (Almunawwaroh & Setiawan, 2023; Elfeky, 2017) and the ownership structure (T. H. Ismail & El-Shaib, 2012; Kholis, 2020).

3.2.4 Cost and Benefits of Voluntary Risk Disclosure

3.2.4.1 Costs of Voluntary Risk Disclosure

The term 'proprietary cost' refers to a situation in which the cost of disclosing risk-related proprietary information outweighs the potential benefit (Verrecchia, 1983). According to the proprietary cost theory, also known as discretionary disclosure theory, in the absence of disclosure-associated costs, firms are encouraged to voluntarily disclose relevant information to the market in order to reduce information asymmetry and capital costs. However, given that it considers the benefits and costs of information disclosure, the

theory also states that the associated costs could restrict voluntary disclosure. In other words, proprietary costs occur when an external party, typically a competitor, exploits disclosed information to adversely influence the reporting firm's competitive advantages. In return, the firm could decide to retain information to avoid competitors' hostile reactions (Onoja & Agada, 2015).

Typically, costs that are associated with risk disclosure activities include two primer types. Direct costs include information collection, preparation, publication or printing and auditing expenses (Depoers, 2000). Quantifying direct costs is challenging, mainly if they incorporate opportunity costs, such as administration time (Leuz & Wysocki, 2006). Proprietary indirect costs derive from the unwholesome exploitation of voluntarily disclosed information against the reporting company by rivals or other external parties (Verrecchia, 1983; Wagenhofer, 1990). This proprietary cost could negatively influence the firm value and breed unfavourable situations in which disclosing specific sensitive information could be used to harm the firm's market position, leading to legal disputes and generating unnecessary litigation costs (Onoja & Agada, 2015).

According to those mentioned earlier, proprietary costs would be a compelling reason for information retention from a managerial perspective. However, Verrecchia (1983) established that when proprietary costs exist, the absence of risk disclosure feeds uncertainty and increases assumptions about the real reasons for the information withholding. The market may assume that information retention signals the firm's intention to conceal substandard news or, in the best-case scenario, presume that releasing the information would not yield the desired economic gains and thus is not worth the associated disclosure costs. Irvine and Pontiff (2009) argued that higher levels of risk information disclosure likely produce a highly competitive business climate. In such

conditions, firms could suffer proprietary costs, potentially associated with a decline in after-disclosure cash flow, because competitors would use risk information against the reporting company to downgrade its market position. Typically, firms in this case resort to practising a cost–benefit trade-off to create an equilibrium between the amount of released information and the expected gains (Moumen et al., 2015).

3.2.4.2 Benefits of Voluntary Risk Disclosure

Increasingly, information on risk and business ability to pay off invested capital has become vital for making well-informed and precise evaluations of a corporation's market value and, accordingly, making appropriate investment decisions (Jensen & Fuller, 2002). Risk is frequently defined as the consequences of uncertainty; thus, it could imply hazards or opportunities (Aven & Renn, 2009; Cooper et al., 2005; Stafievskaya et al., 2015). VRD is expected to mitigate uncertainty by providing information that addresses business performance and the associated potential risks or opportunities, tightening the information gap between the business steering boards and stakeholders (Moumen et al., 2015) and enhancing risk management, which positively correlates with improving firm's performance (Gordon et al., 2009) in that more information about potential risks usually enables better planning for risk response (Cooper et al., 2005).

Moreover, directors could capitalise on their transparency in reporting implied risks in the organisational objectives to reduce agency costs and to signal their superiority to competitors who may be seen as less effective in risk identification and reporting (Elshandidy et al., 2013). Kravet and Muslu (2013) argued that unlike other business reporting activities, non-financial VRD enables forward-looking, exploratory information that informs stakeholders about a range rather than a level of future performance. Non-financial risk disclosure is believed to increase market efficiency (Dietrich et al., 2001) and

affect (positively/negatively) stakeholders' ability to confidently define possible risks and predict future business performance (Kravet & Muslu, 2013).

3.2.5 Mandatory Risk Disclosure

Risk disclosure is vital for making corporation annual reporting more helpful for investors (Miihkinen, 2012; Mokhtar & Mellett, 2013). Thus, regulators and practice code creators have strived to devise a complex group of standards to improve firms' involvement in risk disclosure practices, mandating more information on diverse types of risks (Dobler et al., 2011; Frolov, 2007). Yet, despite the ongoing increase in the minimum requirements, firms typically do not provide a sufficient quantity of risk-related information and business bodies, experts and practitioners are still cautious about the existing shortage of information on firms' risk-taking (Maffei et al., 2014; Nelson et al., 2008). Furthermore, extensive research on risk disclosure suggests that risk disclosure is not helpful for shareholders and other stakeholders if it is not precise and detailed, has not adopted a forward-looking approach, is not sufficient for evaluating the entire risk profile (Magnan & Markarian, 2011; Paape & Speklé, 2012) and is not relevant and appropriate for supporting the decision-making process (Beretta & Bozzolan, 2004). It is worth mentioning that most of the prior investigations on risk disclosure have focused primarily on non-financial organisations, particularly in terms of VRD, while mandatory risk disclosure that is delivered by financial institutions is still somewhat under-investigated (Oliveira et al., 2011a).

Maffei et al. (2014) explained two risk disclosure instruments that are commonly used in mandatory risk disclosure: IFRS7 and Circular. Making specific reference to mandatory risk disclosure in the financial statements notes, IFRS 7 requires information on the qualities and size of the risks that emerge from financial instruments. It advises

narrative information on credit risk, collateral and other credit modifications and improvements, liquidity and market risks, sensitivity analysis and other market risks. However, no typical disclosure format is mandated or even recommended. Unlike IFRS 7, the Circular demands a mandatory and precise format for the financial statements notes. It specifies the way that the notes section must be organised to provide information on specific risks, including price, liquidity, exchange and operational risks. However, mandatory disclosure could be problematic because it has strong and weak sides. In this vein, Miihkinen (2012) argued that mandatory disclosure has strengths and weaknesses. The professional users of the disclosed information, such as financial analysts, agencies and investors, highlighted the strength of mandatory disclosure as the inclusion of supportive information that allows for the conducting of informed comparisons between financial institutions' performances, which is necessary for preparing their evaluations. However, the weakness of mandatory disclosure is represented in the failure to address emerging problems as they evolve because of its fixed format and the difficulty of moulding disclosure requirements given that there is no consensus among market players on the type and quantity of the information that is needed. However, regardless of the vast detail that is required by mandatory disclosure, the existing requirement for narrative information leaves room for preferences about the ways that the information should be delivered.

3.3 Theoretical Framework

In spite of the apparent increased recognition of VRD as described in the previous chapter, there is no comprehensive framework that could be used to understand the dynamics of VRD. In this research, an attempt is made to connect academic contributions from commonly used theories to improve understanding and answer the questions. Several

theories have been employed in risk disclosure research studies to examine the VRD behaviours of companies (Healy & Palepu, 2001; Linsley & Shrives, 2005). The current research employs agency theory to study the phenomenon under investigation. However, signalling theory and voluntary disclosure theory were also used here.

Agency theory has been used by many financial and non-financial reporting studies. For example, Elshandidy and Neri (2015) examined CG practices in the United Kingdom and Italy and their impact on risk disclosure using the theory. Buckby et al. (2015) also investigated how listed Australian companies disclose risk information in their annual reports. Additionally, Saggar and Singh (2017) examined the relationship between CG and risk disclosure in Indian-listed companies based on the same theoretical framework. In addition, signalling theory and voluntary disclosure theory have been employed because they complement each other in better understanding the reasons that managers voluntarily report information in annual reports (Guidry & Patten, 2012; Hummel & Schlick, 2016). Bae et al. (2018) argued that information asymmetry causes potential conflicts between management and agents in the organisational context and the signal reduces the gap by sending relevant and quality information to various parties. Linsley et al. (2006) proposed agency and signalling theories as underpinning for investigating VRD. The signalling theory was applied by Sheu et al. (2010) to explain why companies provide voluntary information to users. In addition, Bae et al. used signalling theory and agency theory to investigate corporation sustainability disclosure.

Therefore, the signalling theory is essential for clarifying what level of risk disclosure should be included in annual reports to provide users with signals, and it has value relevance for users. In this regard, Bae et al. (2018) argued that positive signals increase firm value and performance whereas negative signals reduce stock price and

product demand. Likewise, Bushman and Smith (2001) suggested that signals of transparency provide a channel through which information disclosure affects firm value. Healy and Palepu (2001) argued that management talent signalling is one of the forces that affect managers' disclosure decisions. Researchers have used this theory to explain how a company makes use of diverse boards to communicate adherence to values to a variety of stakeholders (Miller & del Carmen Triana, 2009). Therefore, signalling theory is also used to explain how VRD could have an impact on firm value. With this in mind, voluntary disclosure theory further explains the relationship between a company's VRD and its value.

Hummel and Schlick (2016) explained that this relationship uses the underlying reasoning of voluntary disclosure theory, which asserts that a company that is performing better will voluntarily disclose risk information to increase its market value. This theory assumes that reporting specific information serves as the baseline model for corporation voluntary disclosure. Healy and Palepu (2001) stated that voluntary disclosure research focuses on the information role of financial reporting, which, in turn, supplements the positive accounting literature by focusing on stock market motives for accounting and disclosure decisions. This theory has frequently been used in disclosure research. For example, Hummel and Schlick (2016) used it to investigate the relationship between sustainability performance and sustainability disclosure. Accordingly, these three theories were used to develop the hypotheses and to identify the potential determinants of VRD practices in the annual reports of Saudi listed companies.

3.3.1 Agency Theory

The agency theory was developed in 1976 by M.C. Jensen and Meckling as an economic theory. Specifically, accounting researchers have extensively used the agency

theory to explain and understand voluntary disclosure phenomena across different countries with varying social, economic, political, and political factors.

The agency theory is described by Boss and Phillips (2016) as a theory that analyses the agency relationship and the issues that arise between the principal and the agent. An agency contract involves the engagement of another person (the agent) to perform a service on behalf of one or more individuals (the principals) and includes some delegation of decision-making authority to the agent. In the capacity of principals, shareholders hire and delegate management authority to managers, acting as agents on their behalf. According to Baiman (1990), agency relationships occur when one or more principals delegate their responsibilities to others. This theory is based on the premise that individual advantage must be maximized; it assumes that principals and agents are opportunistic and pursue their own interests. In accordance with agency theory, principals and agents have different interests owing to their divergent utility functions. The agency theory explains the relationship between shareholders, as principals, and managers, as agents, for the purpose of maximizing their own interests.

Agency theory implies that the principal can minimize conflict with the agent by providing appropriate incentives and incurring monitoring costs to limit opportunistic behaviour. Agency theories attempt to provide solutions to two problems associated with agency relationships. The first occurs when the principal's and agent's desires conflict, and it is difficult or expensive for the principal to verify the agent's actions. In this case, the principal cannot prove that the agent acted improperly. Secondly, there is the matter of risk sharing, which arises when the agent and principal differ in attitudes toward risk. In this case, the problem is that the principal and agent will likely take opposing action in the event of a risk.

According to Healy and Palepu (2001), three standard solutions can resolve the principal-agent problem. The first solution would be to enter an optimal contract between the principal and the agent. This aims to encourage comprehensive disclosure and align management decisions and actions with stakeholders' interests (such as compensation agreements and debt contracts). Corporate managers are generally necessitated by these contracts to disclose relevant information so that shareholders can determine whether management is managing the company's resources in the best interests of shareholders. There has been a suggestion that reducing agency costs can be achieved by disclosing more information about management activities and economic realities. These disclosure activities allow stakeholders and other investors to monitor management more effectively.

An agreement between a principal and an agent generally authorises the latter to perform some service on their behalf as well as delegates some decision-making authority. The shareholders, as the principals, hire and give their authority to managers, as the agents, to look after the company for better performance and to gain a competitive advantage (Uyar et al., 2013). In this case, principals use financial reports to measure the company's performance and to disclose financial statistics or data and other relevant information, including potential risks. The principals need more truthful information because they use it for making investment decisions. That is, the manager can provide risk disclosure and information on risk management to assure shareholders that the company has a risk management system (Darussamin et al., 2018).

However, there may be instances when the principal is unsatisfied with the agent's actions. Thus, agency theory suggests that managers' interests could conflict with those of principals, causing information asymmetry. According to Foerster et al. (2014), agents might have access to more relevant information than principals, which may negatively

affect the ability of the principal to monitor the agent's actions. Agents are expected to take advantage of this opportunity and use the information to take action against the principal's interests. Therefore, the risk information managers provide can contribute to reducing the information asymmetry, which in turn decreases the agency costs (Abraham & Cox, 2007; Solomon et al., 2000). Thus, agency theory is applied to resolve these conflicts, which is called reducing agency cost (Bosse & Phillips, 2016).

In the Saudi context, listed companies have majority and minority shareholders. When contradictory interests arise between these shareholders or between the board of directors and shareholders, this is referred to as a principal–principal problem (Donaldson & Davis, 1991). The Saudi government amendment of the Saudi Arabia Companies Act allows minority shareholders to petition for and seek an injunction about majority shareholders. This law offers a solution to the principal–principal problem (H. M. Ali, 2019). The same statute offers shareholders the opportunity to seek solutions to conflicting actions between boards of directors and investors, which resolves agent–principal conflicts. The Saudi Arabia Companies Act calls for increased accuracy for directors through financial reporting by providing honest business information about its status and situation (Al-Janadi et al., 2013). Agency theory has been widely used in business research for theorising the underlying relationship between parties with a company or the business practices of the company (Alshirah et al., 2020). Specifically, this theory has been used to evaluate the link between CG and risk disclosure practices (García-Meca & Sánchez-Ballesta, 2010; Samaha et al., 2015). Aladwey et al. (2022) used agency theory to investigate the relationship between the attributes of corporate boards in UK companies and their tendency to assure their corporation social responsibility reports.

Agency theory asserts managers can reduce conflicts between shareholders and managers by voluntarily disclosing additional information. Additionally, it emphasizes the importance of disclosure of annual reports in reducing information asymmetry between principals and agents. Raffournier (1995) states that the principal-agent relationship is essential for corporate disclosure policies because it reduces monitoring costs. Moreover, financial reports and disclosures can be used as a control mechanism to recognize managers' performance, for which managers are more likely to share information voluntarily.

3.3.2 Signalling Theory

Signalling theory seeks to explain the action of voluntary disclosure when companies are driven to offer information to external parties. It is situated within the broader realm of agency theory but focuses on pre-contract information problems (i.e. hidden information) and is more specific about the qualifying conditions of information asymmetry and signal credibility (Basoglu & Hess, 2014). This theory focuses on management intentions to share information and to receive signals from the market, stakeholders and wider society (Bae et al., 2018). Signalling theory comprises four elements: signaller, signals, receiver and feedback in line with a basic communication channel (Taj, 2016). From a business's point of view, management insiders (executives, directors or managers) work as a signaller while the signals are the flow of information (stock price news, dividends, risk management). However, the receivers are outsiders (individuals, investors, employees) who are unaware of the insider information. The feedback reflects the interactions between signallers and receivers (Connelly et al., 2011). In the signalling process, the signaller and receiver are the key actors whereas the signals convey positive or negative information to improve information asymmetry.

Information asymmetry exists because one party knows additional information to the others. Managers of an organisation have complete information about the activities of the firm whereas stakeholders and shareholders lack the completeness of the information. Signalling theory suggests that managers need to disclose more information to lower the level of information asymmetry (Connelly et al., 2011). As is demonstrated in the theory, the party that has more information can reduce asymmetry by signalling it to the other party. Elshandidy et al. (2013) argued that greater disclosure by a board indicates a better capability to manage risk. This, in turn, shows that it is better than others in managing the risks of the market thus attracting more investments and enhancing a favourable reputation (Uyar et al., 2013). In this case, the information is meaningful if it is used by investors who need to make the right decision to invest in their companies.

Signalling theory emphasizes the importance of information for stakeholders during the decision-making process. A company's managers provide essential information as they provide notes, opinions, and explanations about the company's past, present, and future. Therefore, information contained in annual reports must be accurate, relevant, complete, and up-to-date to help investors formulate an appropriate portfolio based on their risk tolerance. Therefore, more transparency is required in the reporting of financial statements by companies. In accordance with signalling theory, managers can use financial statements to communicate their expectations and intentions to investors. In other words, the users of financial reports need to be confident when making investment decisions (Uyar et al., 2013). Thus, investors feel safer when a voluntary information disclosure is reliable. Thus, signalling theory demonstrates why companies are motivated to voluntarily disclose information to the finance market: voluntary disclosure is necessary for companies to compete successfully in the market for risk capital.

The signalling theory also explains why managers are motivated to disclose more risk information. Thus, when companies are exposed to high levels of risk, they tend to provide more risk-related information to justify these higher levels of risk (Linsley et al., 2006). Abraham and Cox (2007) also state that managers are motivated to disclose risk information to various stakeholders to demonstrate their ability to manage such risks effectively. This implies that managers demonstrate strength and ability by disclosing bad news, signalling their ability to overcome or avoid potential losses. In light of the fact that firms are willing to report their good performance to their investors, risk disclosure is viewed as a positive activity (Agyei-Mensah & Buertey, 2019). This creates an incentive for companies to inform a wide range of owners or investors about their risks (Elshandidy et al., 2013).

The composition of a firm's board can be used as a signal about its stock value and future outlook. Here, board members' reputations, the board's size and the members' stake in the company are identified as notable board characteristics that influence the valuation and pricing decisions for new stock issues (Abdullah, 2006). For example, a board that consists of a majority of external members is likely to be more independent than one comprising existing shareholders. This is because external board members are inclined to make level-headed decisions because they have no vested interest in the company, rendering them unlikely to benefit from their valuation and pricing decisions for new stock issues. Similarly, larger boards, especially for small companies, and reputable boards are viewed by investors as able to make good decisions (Connelly et al., 2011). Reputable board members are interested in safeguarding their reputations whereas larger boards are an indicator of the firm's access to large pools of decision-making resources.

Further, the ownership structure of a firm can act as an effective signal for its corporation management, financial reporting and decision quality (Certo, 2003; Delgado-García et al., 2010). Here, majority foreign or institutional shareholding is regarded as an indicator of an organisation's prudence in resource allocation, financial reporting credibility and management quality, largely because these shareholder groups are practical and have a high level of bargaining power so can influence most management decisions that enhance shareholder value (Bae et al., 2018). Given the concerns about the relevance of IFRS adoption as an indicator of a firm's true value, research has so far established that a positive relationship exists between the two. This derives from the inherent capacity of IFRS to promote accurate financial reporting, enhance internal control measures and drive management decision-making quality; hence, the tendency of their adoption reflects a true picture of an organisation's financial position, value and future prospects (Masoud, 2017). The theory has been utilized as a framework in many information disclosure studies (Basoglu & Hess, 2014; Braam et al., 2016; Hahn & Kühnen, 2013) to understand how two parties, such as the principal and the agent, deal with information asymmetries in a contractual exchange (Basoglu & Hess, 2014).

In line with signalling theory, corporations can use voluntary information disclosure as a signal to improve their reputation, attract new investors, reduce capital costs, and enhance their relationship with stakeholders. Further, this theory suggests that organizations with superior performance should signal these advantages to their markets. This theory suggests that company managers tend to make voluntary disclosure decisions in preference to non-disclosure decisions.

Therefore, signalling theory identifies VRD as a strategy managers use to distinguish themselves from competitors. Furthermore, according to Álvarez et al. (2008),

voluntary information disclosure can reduce the asymmetry of information between the agent and principle of a corporation and enhance its value.

3.3.3 Voluntary Disclosure Theory

Voluntary disclosure theory is a very popular theory that is used in empirical studies on corporation's voluntary reporting (Nishitani et al., 2021). Voluntary disclosure theory-based research has its roots in the financial disclosure literature (Guidry & Patten, 2012; Hummel & Schlick, 2016). Moreover, scholars have applied it to explain the voluntary disclosure of non-financial information (Bewley & Li, 2000; Nishitani et al., 2021), including risk disclosure (Kang & Gray, 2019), by arguing that a company that has a superior sustainability performance voluntarily discloses non-financial information to reveal the nature of its true performance and to increase its firm value (Clarkson et al., 2008). According to voluntary disclosure theory, companies that are performing better disclose more voluntary information to distinguish themselves from competitors whereas, conversely, companies that are doing poorly disclose less voluntary information to avoid criticisms (García-Sánchez et al., 2021; Healy & Palepu, 2001; Silva-Gao, 2012).

According to this theory, financial reporting and voluntary disclosure can help reduce information asymmetry between managers and investors (Guidry & Patten, 2012). Voluntary disclosures mitigate these problems and promote credible disclosures between managers and investors by providing information and incentives that enable a more efficient allocation of resources. According to this theory, a positive relationship between firm performance and voluntary disclosure exists (Dawkins & Fraas, 2011). An efficient capital market provides investors with high-quality information about their company's expected future through voluntary disclosure and communication with managers. Managers who disclose their financial and non-financial interests voluntarily reduce investor

information asymmetry (Healy & Palepu, 2001). The voluntary disclosure theory proposes that companies' disclosures provide information on practices related to managing risks and uncertainty. Guidry and Patten (2012) indicated that many studies that have used voluntary disclosure theory claimed that the voluntary disclosure practice relates to informing investors and other stakeholders about various aspects of companies' functions. This type of practice is used as a communication tool and is aimed at influencing people's perceptions of a company's image and reputation.

Within financial reporting research, voluntary disclosure theory has been used to determine the factors that drive differences in FRQ and examine the quality of this reporting relative to various aspects, including firm value, stock price and financial performance (Healy & Palepu, 2001) and board composition (Lim et al., 2007). For example, Kang and Gray (2019) used this theory to examine the voluntary disclosure behaviour of the managers of leading British multinational firms that were listed on the London stock exchange. García-Sánchez et al. (2021) used it to investigate the determinants of environmental disclosure and Silva-Gao (2012) used it to investigate the drivers of the disclosure of environmental capital expenditures by electricity companies in the US. Given the breadth of voluntary disclosure theory research in the financial reporting arena, it is perhaps not surprising that the theory has also been embraced to explore risk disclosure.

In conclusion, no single theory can explain voluntary disclosure behaviour satisfactorily because each of these theories relies on its own assumptions and offers explanations that correspond to its own theoretical perspective. There has yet to be a consensus among academic theories attempting to explain voluntary disclosure practices by companies. A theoretical triangulation or using more than one theory may permit

accounting researchers to gain a deeper understanding of the motivations behind voluntary disclosure by corporations.

In light of the complexity of company disclosure, one theory cannot fully explain this phenomenon (Cormier et al., 2005). Furthermore, Morris (1987) highlighted that 'given the consistency, signalling and agency theories, it is conceivably possible to combine them to yield predictions about accounting choices not obtainable from either theory alone' (p. 52). Morris (1987) suggests that combining the predictions of each theory may enhance the ability to predict accounting (financial reporting) policy choices.

The aforementioned theories were adopted to formulate testable hypotheses and create research expectations for the current study. The results of the empirical analysis were interpreted based on these theories. These three theories are employed as a theoretical framework in this study to provide a framework for understanding and gaining a deeper understanding of the motivations for voluntary disclosure of more risk information in Saudi-listed companies' annual reports than a single theoretical perspective could provide.

3.4 Corporate Governance in Saudi Arabia

This section provides an overview of the Saudi context, including the economy and CG.

3.4.1 Economy of Saudi Arabia

It has been reported that a country's characteristics, including its legal system, economic practices and financial development, influence the measures that are required by companies to improve their governance procedures in general and corporation disclosure levels in particular (Doidge et al., 2007; Onoja & Agada, 2015). Saudi Arabia's economy is one of the largest in the Middle East region and is largely dependent on oil and gas

exploration and mining as major sources of revenue (Niblock, 2015). This means that the country's oil and gas companies engage with many other local and global companies despite the reported adverse effects on the environment and hence potential for risk exposure (Al-Maghzom, 2016). A study by Habbash et al. (2016) showed that Saudi Arabia's economy contributes 25% to the economies of all Arab countries. Moreover, their study showed that Saudi Arabia is the twenty-fifth largest importer and exporter of various goods globally, of which the main exports are gas and oil. The size of an economy has an impact on levels of voluntary corporation disclosure in that firms are more likely to engage in it when their operations are important to people.

3.4.2 Corporate Governance and General Disclosure in Saudi Arabia

CG practices in Saudi Arabia have undergone tremendous changes over the years. There are several laws that regulate companies' operations in Saudi Arabia. One of these laws is the Saudi Companies Act 1965, which used the British Companies Act as its basis to regulate commercial entities, including partnerships, joint stock companies, liability companies, limited liability companies and foreign companies (H. M. Ali, 2019; Al-Janadi et al., 2013). The Ministry of Commerce has updated the statute to ensure its relevance and efficacy. According to H. M. Ali (2019), the CMA introduced changes to the CG regulations in 2017 to promote transparency, accountability and stewardship of the capital that was invested in corporations that operated in the country.

In terms of disclosure practices, the Saudi Regulations on Corporate Governance (SRCG) 2017 framework requires companies to present and reveal actual and current information to various stakeholders as per the requirements of the Capital Market Law and the legislation that governs companies (H. M. Ali, 2019). The current CG framework requires that boards of directors develop rules to guide information disclosure. According

to Article 90 of the SRCG 2017, boards must adhere to information disclosure rules by providing audit committee reports in annual reports. Boards must also make this information available on the company's website (H. M. Ali, 2019). The CG framework of 2017 in Saudi Arabia provides information on how company boards should be structured. H. M. Ali (2019) indicated that the CG framework provides information on the types of committees that should be formed by boards of directors to enhance their role of acting as a watchdog of the organisation.

Habbash et al. (2016) revealed that despite Saudi Arabia having a large economy, its levels of corporation disclosure are poorer than other Arab countries. This reveals that although its economy is growing, its levels of voluntary disclosure in the corporate sector have remained relatively low. The likelihood of these companies voluntarily disclosing information on the ways that their operations negatively affect the economy is low. Niblock (2015) revealed that royal family own the production factories in Saudi Arabia and most corporations are state-owned. Corporate ownership influences the VRD in an organisation. According to O. S. Habtoor and Ahmad (2017), the ownership structure of a firm affects its corporation risk disclosure. The study showed that firms in Saudi Arabia that are owned by the government and members of the royal family have a high likelihood of disclosing more information about risk-related operations (O. S. Habtoor & Ahmad, 2017). However, O.S. Habtoor et al. (2019) noted that institutional and family ownership of firms results in a low level of disclosure of risk and they only disclose information about their operations that is low risk. For example, firms that are owned by institutions and families are less likely to reveal a lot of information about how their operations adversely affect the economy, specifically, in terms of protecting the natural environment.

3.4.3 International Financial Reporting Standards

The International Accounting Standards Board (IASB) issues IFRS. These standards are designed to facilitate the comparison of financial information to facilitate an organization's competitiveness, simplify analysis, and facilitate the development of good customer relations. The implementation of IFRS enables companies listed on international stock exchanges to report their annual reports using international standards without reconciling their accounts with those of IFRS. According to IFRS 7, entities are required to include disclosures in their financial statements that enable users to determine how financial instruments affect their financial position and performance. As a part of this assessment, the entity is assessed on whether and to what extent it is exposed to financial instrument risks during the period and at the end of the reporting period as well as how it manages those risks.

This implementation will allow auditors, accountants, readers, and other stakeholders to easily understand and use financial reports. Furthermore, it enhances the confidence of investors when they spend their money in Saudi Arabia. The standardization of accounting and its implementation in other countries have increased financial reports' credibility, accuracy, and relevance.

3.5 Determinants of Voluntary Risk Disclosure Practices and Hypotheses Development

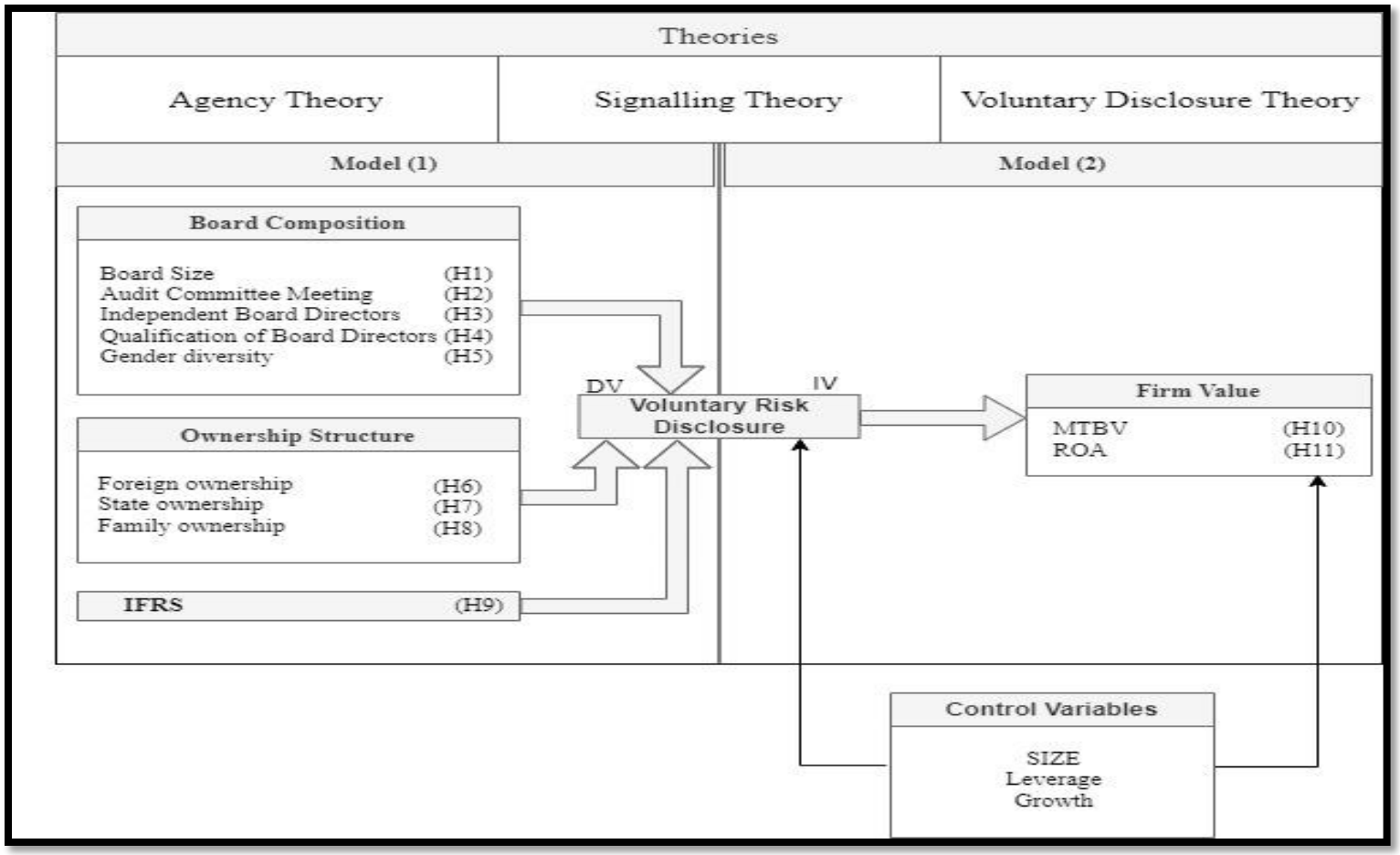
This section outlines the process of developing and formulating hypotheses to address the research questions. It has been observed in previous empirical studies that a variety of corporate characteristics may affect the extent to which risk is disclosed in annual reports. Although many research studies have been conducted in terms of VRD, Onoja and

Agada (2015) reported that 'there are no globally accepted determinants of risk disclosure because of different reasons including regulatory frameworks, institutional settings and constraints and other peculiarities of countries of study' (p. 6). In line with this, Dobler et al. (2011) conducted a multi-country research study that referenced corporation risk disclosure and observed several variations in the level of risk disclosure in Canada, Germany, the UK and the US. Furthermore, Rossignoli et al. (2021) reported that institutional settings play an important role in voluntary disclosure practices. Kang and Gray (2019) provided evidence that the levels of voluntary disclosure differ from country to country according to the levels and types of country-specific risks. Indeed, Onoja and Agada (2015) suggested that further studies are required, especially in developing economies.

Management's decisions to reveal the essential elements of corporations' performance indicate that they may consider the characteristics of corporations. Previous studies have demonstrated the association between disclosure and firm characteristics; however, the results were mixed and led to various conclusions. As is illustrated in Figure 3.1, this study assumes that VRD is influenced by three main factors, namely, board composition (board size, audit committee meetings, independent board directors, directors' qualifications and gender diversity), ownership structure (foreign ownership, state ownership and family ownership) and IFRS. According to Smith (2004), research hypotheses should be developed based on existing theory and literature. Therefore, the hypotheses that are described in the following subsections were developed based on agency theory and signalling theory and their association with the extent of VRD.

Figure 3.1

Conceptual Framework



3.5.1 Effect of Board Composition on Voluntary Risk Disclosure

It has been reported using empirical studies that corporate board structure plays a crucial role in determining the level of information that is disclosed by companies in their annual reports (M. Wang & Hussainey, 2013). The literature review revealed that 'teams and knowledge-based work groups demonstrates a causal link between team practices or attributes, effectiveness, and outcomes' (Payne et al., 2009, p. 707). More specifically, the literature review revealed that the decisions made by boards to voluntarily disclose or to not disclose certain information are likely to be influenced by several board attributes (Allini et al., 2016; Chung et al., 2015; Jaggi et al., 2018). These attributes include board size, members' experience, members' qualifications, members' age, gender diversity, the number of independent members and the frequency of meetings held by members and those of the audit committee. However, because of the unavailability of secondary data for some attributes, such as board experience and age for some companies, this study focuses only on five attributes, specifically, board size, independent board directors, audit committee meetings, directors' qualifications and gender diversity. These five attributes are among the key variables that could influence the effectiveness of the board as a whole (M. Wang & Hussainey, 2013).

3.5.1.1 Board Size

Board size is the total number of executive and non-executive directors on the board at the date of the annual meeting in each fiscal year (M. Wang & Hussainey, 2013). The size of a board is considered influential in promoting corporation transparency (Bravo, 2018). Benefits could arise because of an increased availability of expertise and resources that is enabled by a larger number of directors (Samaha et al., 2015). A large board size may enhance the board's ability to control management actions thus increasing full

disclosure of non-financial information. Large boards enable companies to diversify their boards in terms of non-financial expertise and to enhance the capacity of their management to exercise oversight. In addition, agency theory considers board size to be important for board functions. It is important for boards' monitoring functions and crucial for their advisory and oversight of management. According to agency theory, large organisations with more complicated businesses tend to disclose more information about their performance to minimise asymmetry between managers and users.

The Saudi regulations emphasise the importance of adequately resourced boards in terms of the number of directors and their skills. In Saudi Arabia, Articles 16 to 41 of the SRCG 2017 explain the rules and principles that manage boards of directors and their responsibilities. Specifically, these articles determine the processes of electing a chairperson and forming the board as well as the appointment of directors. To be appointed as a board member, Article 18 (1–5) of the SRCG 2017 details the necessary requirements, including leadership skills, financial knowledge and being physically able to perform assigned functions (H. M. Ali, 2019). Several studies have indicated that boards that have a greater diversity of experience and opinion may enhance the board's supervision capacity, which can lead to more voluntary disclosures (Alfraih & Almutawa, 2017). A study by Elshandidy and Neri (2015) examined the impact of CG on risk disclosure and market liquidity practices in the UK and Italy using agency theory. Their findings indicate that the size of a board of directors is positively associated with voluntary disclosure. Work by Khlif and Hussainey (2016) noted that the size of a board is positively related to risk disclosure. A study on CG and its effect on risk disclosure in Jordan demonstrated that a large board has a positive impact on VRD (Alkurdi et al., 2019). Moreover, Adelopo et al. (2021) investigated the relationship between board composition and VRD during

uncertainty. Agency theory was used in their study and they found that the size of a board of directors is positively associated with the voluntary disclosure of firms. Furthermore, using agency theory, Aladwey et al. (2021) detected a positive relationship between board size and corporation social responsibility reports in UK companies.

However, other studies have reported that large boards are more likely to be ineffective because they require the scheduling of more meetings during which consensus, including on whether to increase the level of voluntary disclosure, must be reached (Hussainey et al., 2019). Therefore, the effectiveness of a board's capacity to monitor risk may be less effective, consequently affecting reduced voluntary risk information (Allini et al., 2016; M. Wang & Hussainey, 2013). Cerbioni and Parbonetti (2007) found a negative relationship between the size of a board and voluntary disclosure. Moreover, Dhouibi and Mamoghli (2013) discovered that a larger board negatively and significantly undermines voluntary disclosure. However, other empirical findings have established an insignificant association between the two variables (García-Meca & Sánchez-Ballesta, 2010). For example, Cheng and Courtenay (2006) examined the relationship between board monitoring and voluntary disclosure levels using agency theory. They found an insignificant relationship between VRD and board size for companies listed on the Singapore Stock Exchange. In line with this discussion on the relevant theory and literature, it is expected that the board size of Saudi listed companies is positively related to the level of risk disclosure practices. Given this, the first hypothesis is:

H1: *There is a positive relationship between board size and voluntary risk disclosure practices in Saudi Arabian listed companies.*

3.5.1.2 Audit Committee Meetings

Audit committee meetings offer an opportunity to deliberate on issues within business operations, specifically, reviewing annual reports (Al-Shammari & Al-Sultan, 2010). Audit committees that meet more frequently have the opportunity to monitor company affairs; hence, effective CG is undertaken and vice versa (Allini et al., 2016; Mokhtar & Mellett, 2013). In Saudi Arabia, Articles 83 to 88 in SRCG 2017 law, provide details about companies' committees, including the audit committee, and how they are formed, their responsibilities, related policies, meetings and many more aspects (H. M. Ali, 2019).

Agency theory advocates frequent board meetings to characterise an active board of directors. Boards of directors that meet frequently are likely to engage in more risk reporting (Bhasin et al., 2012). Research by O. S. Habtoor and Ahmad (2017) showed that frequent meetings ensures that a board has adequate time and space to review financial reports and to identify potential sources of risk. Research by Ibrahim et al. (2019) similarly suggested that frequent meetings produce more effective financial reports through greater scrutiny, enhancing the level of disclosed risk. Among the advantages of a board of directors' activity, Carmona et al. (2016) noted that it offers opportunities to review a company's business strategy and investment options. This increases confidence in risk disclosure because risk mitigation is well formulated given the greater level of deliberation that arises from more meetings, which enables the space and time to do so (Samaha et al., 2015). However, some studies have indicated that the number of meetings has no relationship with disclosed risk information (Allegrini & Greco, 2013). Adelopo et al. (2021) found no significant relationship between audit committee meetings and VRD practices. In line with this discussion, it is expected that the number of meetings conducted

by audit committees in Saudi listed companies is positively related to the level of risk disclosure practices. Thus, the second hypothesis is:

H2: *There is a positive relationship between audit committee meetings and voluntary risk disclosure practices in Saudi Arabian listed companies.*

3.5.1.3 Independent Board Directors

Board characteristics can be defined by the presence of independent directors who have no vested interests in the business (Alkurdi et al., 2019). Board independence can be defined as the composition of a board in terms of the involvement of insiders versus outsiders. Due to their impartiality, independent directors usually make independent decisions. Independent directors may have greater incentives to increase the levels of voluntary disclosure and thus signal their lack of complicity with the managers and their own ability to improve the firm's value. The literature review indicated that independent directors have the opportunity to influence rational decisions in the company (Abdullah et al., 2017; García-Meca & Sánchez-Ballesta, 2010). Prior studies have reported that independent non-executive directors enhance corporation disclosure by ensuring that information is accurate and relevant to the company's interests. In Saudi Arabia, the appointment of independent directors is conducted according to Articles 16 to 41 of the SRCG 2017.

Agency theory argues that independent directors are likely to mitigate agency conflicts between managers and shareholders because these directors have no ties to the managers or representative shareholders and should be able to offer truly objective opinions that benefit the company. Agency theory suggests that independent directors play a management role in corporations and hence information concealment is minimised. Independent directors have reputations of integrity to safeguard; thus, they are expected to

present factual disclosure reports. In addition, agency theory states that the presence of increasingly high levels of external directors on a board helps to control and limit the opportunism of managers given their competence, independence and objectivity that is necessary for the function of control. Thus, the presence of more outside directors makes a board more effective so the company must disclose more. Overall, agency theory suggests that the presence of independent directors yields quality financial reports that are factual and hence credible.

Prior studies have examined the influence of board structure on voluntary disclosure levels. It has been reported that the percentage of independent directors on a board is likely to influence the amount of corporation information that managers can manage and disclose. Dimitropoulos and Asteriou (2010) argued that boards that have a large number of independent directors are likely to provide higher quality reporting than boards that are dominated by executive directors. Similarly, Kapoor and Goel (2016) reported that independent directors are associated with more transparent financial reporting and better adherence to governance standards; thus, their monitoring role contributes to mitigating agency problems.

In addition, Cheng and Courtenay (2006) conducted a study using a sample of 104 firms listed on the Singapore Stock Exchange and reported that companies that have more independent board members have higher levels of voluntary disclosure. Salem et al. (2019) examined CG mechanisms' impact on risk disclosure quality in Tunisia. They found that the more independent members on a board, the better the quality of the risk disclosure. A recent study by Adelopo et al. (2021) found that the more independent a board is, the more VRD there is. However, research conducted by Eng and Mak (2003) examined the effect of ownership structure and board composition on voluntary disclosure. According to them,

there is a negative correlation between a board's independence and voluntary disclosure. A few years later, Barako et al. (2006) examined the factors that influence voluntary disclosure in Kenya. They found that board independence has a negative impact on voluntary corporation disclosure. Their findings suggest that the more independent a board is, the less voluntary corporation disclosure is. Recently, Aladwey et al. (2021) reported that directors' independence in UK companies has a significant impact on their tendency to ensure that their corporations' social responsibility reports are accurate. However, research by Allini et al. (2014) reported that independent directors have little impact as far as the disclosure of risks is concerned. Nevertheless, this study assumes that the presence of autonomous directors leads to enhanced risk disclosure practices. In line with this discussion, it is expected that the presence of independent directors on the board of Saudi listed companies is positively related to the level of risk disclosure practices. Hence, the third hypothesis posited is:

H3. *There is a positive relationship between board independence and voluntary risk disclosure practices in Saudi Arabian listed companies.*

3.5.1.4 Qualifications of Board Directors

Another aspect of boards that might have an impact on the level of VRD is the qualifications of its members (Katmon et al., 2019). Articles 16 to 41 of the SRCG 2017 state that board members should have some financial knowledge to properly evaluate the financial performance of companies. Agency theory posits that educational background may affect the effectiveness of directors in achieving expected outcomes (Prabowo et al., 2017). To perform their responsibilities appropriately, it is necessary for a board to have members who have a clear understanding of the importance of risk disclosure, which is in the interests of the company and its stakeholders (Allini et al., 2016). This understanding

may be measured through their qualifications and skills to provide sufficient information when preparing annual reports (Prabowo et al., 2017). Allini et al. (2016) argued that directors who have accounting and finance qualifications are more likely to report risk disclosures than non-accounting and non-finance directors. In this way, Katmon et al. (2019) concluded that education level and related practical experience could lead to higher quality risk disclosure. It has been argued that board directors who have accounting and finance knowledge and skills can identify potential risks, thus increasing the quality of their risk disclosures (Prabowo et al., 2017). However, some researchers (i.e. Abdullah et al., 2017) have found no relationship between directors' qualifications (accounting and finance) and the level of risk disclosure. In line with this discussion, it is expected that the qualifications of board members working in Saudi listed companies are positively related to the level of risk disclosure practices. Given this, the fourth hypothesis is:

H4: *There is a positive relationship between the qualifications of board members and voluntary risk disclosure practices in Saudi Arabian listed companies.*

3.5.1.5 Gender Diversity

Gender diversity is an important aspect of the current analyses of corporations' boards of directors. Traditionally, boards have been dominated by men. However, the increase in women's recruitment has resulted in boards that have men and women (Alkurdi et al., 2019). According to agency theory, a board that has gender diversity is more active in monitoring management's actions (Marquardt & Wiedman, 2016). Female board members demonstrate an outstanding commitment to monitoring and are more inclined to join board committees (Aladwey et al., 2021). Although agency theory holds that boards that have female members would not necessarily offer opportunities for increased transparency and hence risk disclosure, it has been reported that a relationship exists between gender

diversity and certain behavioural patterns in terms of risk disclosure practices (Yasser et al., 2017). In this way, Hill et al. (2015) argued that corporations that have female board members could obtain more advantages because their representation could lead to 'greater innovation through diversity of thought, a focus on social philanthropy of firms' activities, and development of the board through a keen focus on performance results' (p. 26).

A study by Allini et al. (2016) investigated listed companies in Italy and found that boards that have female members are more likely to publish risk disclosures than those that have male members only. In a similar vein, Saggar and Singh (2017) explored the extent of VRD in annual reports and the impact of board characteristics and ownership concentration on risk disclosure. They found that gender diverse boards are positively and significantly associated with VRD. Moreover, Salem et al. (2019) determined that the more women on a board, the higher the likelihood of VRD. An investigation by Saggar et al. (2022) explored the relationship between risk disclosure and gender diversity at the corporation level. They found a positive correlation between the two. Aladwey et al. (2021) reported that the presence of female directors in UK companies has a significant impact on their tendency to ensure that their corporations' social responsibility reports are correct. However, a study by Allini et al. (2014) examined the effect of CG characteristics on the disclosure of non-financial risks in government-owned companies.

According to their findings, there is a significant and negative relationship between gender diversity and firms' risk disclosures. Martikainen et al. (2019) argued that boards of directors that comprise solely of males are linked to increased risk disclosure. According to Bravo (2018), board diversity and gender composition matters for risk disclosure. Their study demonstrated that diversity on boards is critical for ensuring increased risk disclosure. They recommended that regulations be implemented to ensure that diverse

boards improve VRD in listed companies. However, in a recent study, Adelopo et al. (2021) concluded that gender diversity has no significant influence on VRD. Research has yielded mixed findings so it needs to be investigated further (Nalikka, 2009). In line with this discussion, it is expected that the gender diversity of boards at Saudi listed companies is positively related to the level of risk disclosure practices. Hence, the fifth hypothesis is:

H5: *There is a positive relationship between the gender diversity of boards of directors and voluntary risk disclosure practices in Saudi Arabian listed companies.*

3.5.2 Effect of Ownership Structure on Voluntary Risk Disclosure

When examining the effects of ownership structure on VRD, it is essential to consider how businesses are owned and operated (Alnabsha et al., 2018; Bansal et al., 2018; Ghazali & Weetman, 2006; O.S Habtoor et al., 2019). Agency theory predicts a divergence of interests between agents and principals because of the separation of ownership and control (M. C. Jensen & Meckling, 1976; Mokhtar & Mellett, 2013). Corporate ownership structures help to determine the number of details that are reported by corporations in their annual reports. According to O.S Habtoor et al. (2019), a company's owners tend to markedly influence how management works and to dictate disclosure policies. The existing risk disclosure literature provides inconclusive findings on the relationship between ownership and risk disclosure (Mokhtar & Mellett, 2013), while some studies have found a negative relationship (Kajüter, 2006). Others have reported no relationship between the two variables (Mokhtar & Mellett, 2013; Oliveira et al., 2011b). There are three aspects of ownership structure in the Saudi context and these are foreign ownership, state ownership and family ownership.

3.5.2.1 Foreign Ownership

The extent of VRD varies significantly, depending on the economic productivity and ranking of a country. Developing countries are associated with various operational risks, such as inefficiency, corruption, nepotism, child labour practices and various corporation management risks (Onoja & Agada, 2015). Hence, firms in these countries are only likely to engage in VRD to assuage foreign investors to eliminate information asymmetry and to satisfy the demands of the investors (Tan et al., 2017). Agency theory postulates that foreign firms have higher levels of information asymmetry standards, which increases the need for VRD in foreign firms (Onoja & Agada, 2015). Further, the extent of VRD varies depending on the remoteness of geographical locations. Foreign firms that are located in more remote areas are likely to increase their VRD scope. Subsequently, VRD has a significant and positive effect on foreign firms by increasing information symmetry, thus improving organisational value and reputation to satisfy investor information needs.

Under another view of agency theory, companies tend to provide financial and non-financial information to reduce agency costs in a diffused ownership environment. There is a possibility that companies that have more shareholders may be expected to provide more information in their annual reports. It has been noted in the existing disclosure literature that foreign ownership is strongly related to the extent of disclosure in corporation annual reports. According to previous empirical studies examining voluntary disclosure, companies with more foreign shareholders will disclose more information voluntarily. Alnabsha et al. (2018) investigated mandatory and voluntary disclosure behaviour by considering the impact of board attributes, corporation ownership structure and firm-level characteristics. They argued that foreign ownership positively influences VRD because it seeks transparency and compliance with the host nation's regulations.

However, results have shown that foreign ownership is ineffective in enhancing VRD levels. Tan et al. (2017) found that disclosed risk information is statistically and economically more pronounced among internationally oriented companies than domestically oriented ones. Furthermore, Reeb et al. (1998) detected a significant and positive relationship between the level of disclosed risk and the degree of internationalisation of a firm. This is because managers have more discretion when a firm increases its operations abroad, leading to higher levels of information asymmetry. On the same issue, an investigation was conducted by Alhazaimeh et al. (2014) to determine the correlation between CG and ownership structure in terms of the voluntary disclosures of listed companies in Jordan. They found that foreign ownership does help a firm's voluntary disclosure practices.

To alleviate information asymmetry, investors may require more firm-specific risk information when risks may be evident (Reeb et al., 1998). Barako et al. (2006) conducted a study to investigate the relationship between foreign ownership and voluntary disclosure of information by listed Kenyan companies. Their findings indicate that foreign ownership is significantly associated with the extent of voluntary disclosure. In Wang et al.'s (2008) empirical study of the factors influencing voluntary disclosure in Chinese listed companies' annual reports, it was discovered that foreign ownership is positively related to the degree of voluntary disclosure. Moreover, Bokpin and Isshaq (2009) evaluated the relationship between the foreign ownership of Ghana Stock Exchange shares and corporation voluntary disclosures. They found a statistically significant interaction between corporation disclosures and foreign share ownership among the sample firms. Recently, an investigation conducted by Makhlouf and Al-Ghosheh (2022) examined the impact of

ownership structure on risk disclosure in Jordan and concluded that foreign ownership had a positive impact on risk disclosure.

However, a study that was conducted by Laidroo (2009) noted that corporation voluntary disclosure and foreign ownership are negatively correlated. Supriyanto and Resnika (2023) investigated the effects of foreign ownership on voluntary disclosure in Indonesia and concluded that foreign ownership negatively impacted voluntary disclosure. Nevertheless, Elgammal et al. (2018) studied the relationship between foreign ownership and the level of VRD in Qatar. They found that foreign ownership is insignificantly associated with VRD. Naser et al. (2002) conducted an empirical study that found no relationship between foreign ownership and the extent of disclosure in corporations' annual reports. Said et al. (2009) found that foreign ownership is not associated with voluntary disclosures. The effect of VRD on foreign ownership is important for Saudi companies. VRD is essential to communicate essential risk information to investors, which promotes Saudi companies' reputations. It is assumed that foreign companies might voluntarily disclose more risk information. With this discussion in mind, it is expected that the presence of foreign owners at Saudi listed companies is positively related to the level of risk disclosure practices. Given this, the sixth hypothesis is:

H6: *There is a positive relationship between foreign ownership and voluntary risk disclosure practices in Saudi Arabian listed companies.*

3.5.2.2 State Ownership

State ownership refers to the ownership of businesses by a government or at least the government owning the bulk of shares or investment. VRD has important ramifications for the perception of government-owned institutions (Alkurdi et al., 2019; Darussamin et al., 2018). As a result, state institutions are more likely to reduce the scope of VRD to

retain the reputation of public sector institutions (Ghazali & Weetman, 2006). Further, public sector organisations are funded entirely by the government. This contributes to a significant level of information asymmetry between state institutions and the public. Nonetheless, Ghazali and Weetman (2006) argued that state-owned organisations are likely to engage in VRD because they tend to be accountable to the public, which implies a need to disclose vital information about corporation risks. Further, governments may require such organisations to disclose more information, hence increasing VRD (Ghazali & Weetman, 2006). O. S. Habtoor et al. (2019) offered a contrasting opinion, arguing that government-owned companies disclose more risk-related information. However, Alnabsha et al. (2018) noted a negative correlation between state ownership and VRD.

Several empirical studies have aimed to determine the impact of state ownership on corporations' voluntary disclosure. Makhija and Patton (2004) examined whether state ownership has an impact on the extent to which Czech companies voluntarily disclose financial information. According to their findings, state ownership contributes significantly to the overall level of disclosure. Ghazali (2007) examined the impact of government ownership on corporate social responsibility disclosures in Malaysian annual reports. The degree of disclosure and government ownership were found to have a significant and positive relationship. A study by Said et al. (2009) examined the relationship between CG characteristics, such as board size, independence, duality, audit committees, the ten largest shareholders, managerial ownership, foreign ownership, government ownership, and voluntary disclosure. Their findings indicate that state ownership significantly impacts voluntary disclosure levels.

The effect of VRD on state ownership is very important in Saudi Arabia. VRD enhances the transparency of state-run organisations, hence increasing their accountability

in the short and long-term. This increases the ability of these organisations to effectively address public concerns. In Saudi Arabia, the effect of state ownership on VRD in annual reports has not yet been examined. Therefore, the present study examines whether state ownership structures contribute to the overall level of VRD. It is expected that the Saudi listed companies that are owned by the state are positively related to the level of risk disclosure practices. Given this, the seventh hypothesis is:

H7: *There is a positive relationship between state ownership and voluntary risk disclosure practices in Saudi Arabian listed companies.*

3.5.2.3 Family Ownership

The effect of family ownership on VRD is relative (Ghazali & Weetman, 2006). This is because family businesses are less likely to report financial risks, which is vital to maintaining their reputation and social standing (Liu & Taylor, 2008). Although a significant level of information asymmetry ought to exist between managers and owners, family businesses are likely to withhold vital information about financial risks and earnings warnings as a way of protecting their reputation. Further, family businesses tend to integrate better business-monitoring methods, an aspect that reduces the reported operational and CG risks (Kravet & Muslu, 2011). Bansal et al. (2018) found that family ownership encourages disclosure, especially about corporation social responsibility. O.S. Habtoor et al. (2019) disagreed with this, stating that family-owned companies disclose less risk-related information. Moreover, Makhlouf and Al-Ghosheh (2022) found that family ownership negatively impacted risk disclosure. However, Lagasio and Cucari (2019) did not find any significant relationship between family ownership and VRD level. This information is vital if governance in family businesses in Saudi Arabia is to improve and provide some sort of benchmark. Investors should be keen to evaluate the financial

performance of family businesses to avoid risks. In line with this argument, it is expected that Saudi listed companies that are owned by families are positively related to the level of risk disclosure practices. Consequently, the eighth hypothesis is:

H8: *There is a positive relationship between family ownership and voluntary risk disclosure practices in Saudi Arabian listed companies.*

3.5.3 Effect of International Financial Reporting Standards on Voluntary Risk Disclosure

IFRS are a set of common rules that are used in financial reporting. They aim to ensure comparability, consistency and transparency in financial reporting internationally (Bischof, 2009). The effect of IFRS on VRD is necessary to remove the information discrepancy between managers and investors. Investors require sufficient information to make decisions, which may not be provided under IFRS mandatory requirements. The need to generate unlimited information to eliminate information asymmetry increases the need for VRD (Kravet & Muslu, 2011). However, beyond a certain threshold, too much information may repel investors from investing and hence explains the negative relationship.

IFRS 7 specifically outlines the various forms of qualitative disclosures, which tend to be mandatory for businesses. IFRS outline two essential categories of mandatory disclosures, which include information about the essence of financial instruments and the nature and scope of the risks arising from each financial instrument. The effect of IFRS on VRD varies substantially depending on the firm-level degree of uncertainty (Bischof, 2009). High levels of uncertainty may motivate firms to conform to mandatory risk disclosure as stipulated by IFRS and to reduce the level of VRD. This can be attributed to the fact that IFRS 7 encourages some flexibility in the disclosure of organisational risks.

A review of the literature showed that accounting standards, including IFRS, can encourage companies to voluntarily disclose more information. According to Onoja (2014), a significant non-monotonic interaction exists between mandatory risk disclosure stipulated under IFRS and VRD. This implies the existence of a positive relationship between mandatory and voluntary risk disclosure within a certain threshold, beyond which the extent of VRD declines with an increase in mandatory risk disclosure asserted in IFRS. In other words, above the asserted threshold, managers are likely to stop voluntarily disclosing organisational risks, hence establishing a negative relationship between the variables. Almeida and Rodrigues (2017) discovered a positive shift in VRD after adoption of IFRS. However, this was observed only when it concerned environmental and social risk disclosure. Hellman et al. (2018) identified that IFRS principles increase VRD practices. However, they noted that these principles may result in situations in which compliance requirements become vague and extremely difficult to enforce. The negative interaction between mandatory and voluntary risk disclosure is aggravated by increased levels of organisational uncertainty or risks (Servaes & Tufano, 2006).

The effects of IFRS on VRD are important in Saudi Arabia. The positive relationship between mandatory and voluntary risk disclosure during low levels of uncertainty enhances effective risk reporting, eliminating information asymmetry for decision-making. However, the negative relationship above the threshold benefits Saudi businesses because it attracts domestic and international investors. However, an inability to report the full scope of organisational risks may mislead investors. Thus, it is expected that the adoption of IFRS by Saudi listed companies is significantly related to the level of risk disclosure practices. Given this, the ninth hypothesis is:

H9: *There is a positive relationship between the adoption of IFRS and voluntary risk disclosure practices in Saudi Arabian listed companies.*

3.5.4 Effect of Voluntary Risk Disclosure on Firm Value

A listed company's firm value can be determined based on the market mechanism of supply and demand, which is reflected in share prices. A higher stock price naturally enhances the value of a company. In the case of a company, the main objective is to maximize shareholder wealth and the company's value. Thus, managers ensure their companies are attractive to investors by demonstrating exemplary performance. The literature has shown a considerable interest in examining the value relevance of VRD (García-Sánchez et al., 2021; Marta, 2021; M. Wang & Hussainey, 2013; Z. Wang et al., 2013). A company's value should generally reflect the full range of publicly available information as reported to the public (Bravo, 2017). Voluntary disclosure theory suggests that companies may be encouraged to voluntarily disclose more information in the interest of increasing stakeholder confidence, specifically, among investors, about the companies' performance and future prospects (Hummel & Schlick, 2016).

However, stakeholders want to receive risk-related information for good judgement of the trading size and time, and it is claimed that transparent disclosures protect investors by increasing the accountability of the company (Xu et al., 2020). In this regard, García-Sánchez et al. (2021) indicated that companies may be interested in providing voluntary information to demonstrate their ability to maximise shareholder value. According to signalling theory and agency theory, companies have an incentive to provide investors with more information about risk to signal the quality of their underlying risk management and their ability to protect and create value for investors (Abdullah et al., 2015). Here,

Jorgensen and Kirschenheiter (2003) reported that voluntary disclosures affect companies' returns and share prices.

Several studies have demonstrated empirically that voluntary disclosure enhances firm value (Marta, 2021). As an example, Amir and Lev (1996) found that US firms' values increase when financial information is combined with non-financial information. Accordingly, non-financial information, which takes on a voluntary nature, is of interest to investors and complements the financial information (Abdullah et al., 2015). An investigation by Al-Akra and Ali (2012) examined the impact of voluntary disclosure on the value of Jordanian firms. According to their study, voluntary disclosure includes information about businesses' backgrounds, directors, capital market data, products and services, employees and research. Al-Akra and Ali argued that voluntary disclosures are positively correlated with firm value. In their study of 129 Turkish firms, Uyar and Kiliç (2012) examined the effects of 96 items of information that were voluntarily disclosed. Their findings indicate that disclosure is positively related to the value of a firm.

Furthermore, Abdullah et al. (2015) examined the impact of voluntary risk management disclosure on firm value. According to them, information about risk disclosure is collected through content analysis whereas firm value is calculated using three variables: market capitalisation, Tobin's Q and a market-to-book ratio. Using a sample of 395 companies listed on Bursa Malaysia's main market in 2011, this study found that voluntary risk management disclosure has a positive and significant relationship with firm value. Elsewhere, Marta (2021) investigated whether IFRS 7 financial instruments and their disclosures are associated with firm valuation. Using data on premium listed UK companies, for the period from 2007 to 2019, the findings indicate that firm value (proxied by Tobin's Q) is negatively associated with the quantity of IFRS 7 interest and credit risk

disclosures. The study further found that firm value declines with the presence of quantitative information that is tabulated in disclosures. Likewise, Bravo (2017) studied the effect of risk disclosure on firm value. Using 95 manufacturing companies as a sample, it demonstrated that a firm's value is positively correlated with the disclosure of risk information. The findings of this study highlight the importance of corporation reputation in improving risk disclosure practices. Recently, Qamruzzaman et al. (2021) found a positive relationship between VRD practices and firm value. Evidence of this type is vital in understanding the value of disclosing information about risks in a company's communication with its stakeholders.

However, other studies have claimed otherwise (Abdullah et al., 2015). For example, O. A. Hassan et al. (2009) indicated that voluntary disclosure has a significant and negative impact on firm value in Egypt's capital market. Another study by Robayany and Augustine (2019) examined the impact of the voluntary disclosure of non-financial risk management on firm value. They claimed that there is a significant and negative relationship between VRD and firm value. As was documented by Bokpin (2013), voluntary disclosure in Ghana's stock market has no significant impact on the market-to-book value of equity ratio or stock price. Z. Wang et al. (2013) reached the same conclusion for China's capital market. In their work, Danisman and Demirel (2019) examined the impact of corporation risk management on firm value among non-financial Turkish companies for the years 2010 to 2015. The findings reveal that risk management does not increase firm value. Likewise, Jankensgård et al. (2014) investigated the value relevance of corporation risk disclosure for a sample of 114 Swedish derivative users. Their findings suggest that when holding the level of derivative usage constant, firm value diminishes in the level of risk disclosure. In a similar study, Qiu et al. (2014) found that

environmental information disclosure has no significant effects on firm value. Miihkinen (2013) found that risk disclosure is negatively correlated with information asymmetry in the context of risk disclosure. An increase in firm value is normally associated with a reduction in information asymmetry (Gordon et al., 2010).

3.5.4.1 Association Between Voluntary Risk Disclosure and Market-to-Book Value

The association between VRD practices and MTBV is discussed here. In signalling theory, it is presumed that when a company's performance is good, the directors may be more likely to signal that performance to their various stakeholders, perhaps by reporting more information voluntarily. Similarly, voluntary disclosure theory predicts that companies may be inclined to disclose more to retain the confidence of stakeholders, particularly investors (Hummel & Schlick, 2016). Linsley et al. (2006) indicated that the purpose of voluntary disclosure is to build a good market reputation and to increase a firm's value. However, it should be noted that there is still some debate about the relationship between VRD practices and MTBV. The first argument is that there is a positive relationship between VRD practices and MTBV, which is supported by Al-Akra and Ali (2012), Uyar and Kılıç (2012) and Jorgensen and Kirschenheiter (2003). Another argument is that insignificant relationships between VRD and MTBV exist (Bokpin, 2013; Z. Wang et al., 2013). It is posited here that the risk disclosure practices of Saudi listed companies are positively related to the MTBV of those companies. Thus, the tenth hypothesis is:

H10: *There is a positive relationship between voluntary risk disclosure practices and the market-to-book value of Saudi Arabian listed companies.*

3.5.4.2 Association Between Voluntary Risk Disclosure and Return on Assets

There is an association between VRD and ROA, which is examined here. According to voluntary disclosure theory, directors report better performance by disclosing more

information to various stakeholders (Hummel & Schlick, 2016). In addition, the theory suggests that highly profitable companies provide investors with signals of their quality (Hummel & Schlick, 2016). There is a positive relationship between VRD practices and ROA. As reported by Botosan and Plumlee (2002), increased disclosure levels positively affect a company's profitability. This is a result of shareholders' appreciation for the information that is disclosed in annual reports and it assists them to make better investment decisions. Thus, it can be concluded that an annual report becomes more valuable to an investor when it contains complete and accurate information (Gallego-Álvarez et al., 2010). In line with this discussion, it is expected that the risk disclosure practices of Saudi listed companies are positively related to the ROA made by those companies. Given this, the eleventh hypothesis is:

H11: *There is a positive relationship between voluntary risk disclosure practices and firms' ROA in Saudi Arabian listed companies.*

3.6 Control Variables

For this thesis, three other firm characteristics are included as control variables. Firm size, leverage and growth are among the factors that have been used frequently in studies (Elshandidy et al., 2013; M. Wang & Hussainey, 2013). The size of a firm has been shown to be associated with disclosure in several studies (Chavent et al., 2006). It is believed that managers in large companies disclose more risk information than those in small businesses because of the lower cost of providing risk information in large companies. Moreover, small businesses are more sensitive to the disadvantages that are associated with disclosing risk information to competitors. However, mixed findings have been reported in the literature about risk disclosure. Beretta and Bozzolan (2004) found that

size does not have a significant impact on aggregated risk disclosures whereas Linsley et al. (2006) found that these two variables are positively correlated.

Second, in line with signalling theory, it is expected that leverage might have a positive relationship with the level of corporation disclosure. For example, M. C. Jensen and Meckling (1976) argued that highly leveraged firms have larger monitoring costs. One possible response that enables highly leveraged firms to reduce these costs is to report more information in their annual report to convey value-relevant information to satisfy their creditors' needs. Empirical studies on the determinants of corporation disclosures have offered mixed results. For example, Barako et al. (2006) found that high leverage ratios lead to greater risk. Therefore, highly leveraged companies are expected to increase their level of disclosure to reduce financing costs and required risk premiums at the required rates of return. However, Eng and Mak (2003) found evidence that lower levels of leverage are linked to greater numbers of disclosures. Other empirical studies have found no statistical association between leverage ratios and levels of corporation disclosures (Abraham & Cox, 2007; Ho & Wong, 2001). This study controlled for the impact of growth, which was measured by dividing the change in sales by the sales. Elshandidy and Neri (2015) argued that a firm's ability to fund its growth opportunities improves if it has a full and credible disclosure policy. Disclosures of this type greatly help a company's growth. This argument is supported by empirical evidence (Chavent et al., 2006; O'Sullivan et al., 2008; Saggar & Singh, 2017).

Table 3.1

Summary of Literature on Corporate Governance and Voluntary Risk Disclosure

N	Author	Study Period	Country	VRD Measure	Theory	Independent Variable	Study Finding
1	Mokhtar and Mellett	2013	Egypt	Content analysis	Agency, stakeholders, political cost, signalling and legitimacy theories	Board size, role duality, ownership concentration	Board size (+) sig, role duality (insig), OwnCon (insig)
2	Elshandidy and Neri	2015	UK and Italy	Content analysis	Agency theory	Board size, presence of Non-Exe directors, independent non-executive directors, CEO duality, audit quality, Concentrated ownership structure	Board size (+) sig, presence of Non-Exe directors (+) sig, presence of Indep Non-Exe directors (insig), CEO duality (insig), audit quality (insig), and OwnCon (insig)
3	Saggar and Singh	2017	India	Content analysis	Agency and signalling theories	Board size, gender diversity, prop of independent Non-Exe directors, board meetings, CEO duality, ownership	Board size (+) sig, gender diversity (+) sig
4	Alkurdi, Hussainey, Tahat and Aladwan	2019	Jordan	Unweighted index	Agency theory	Board size, independent directors, managerial ownership, the separation of duties, audit committee meetings	Board size (+) sig, independent board (+) sig, separation of duties (+) sig and audit committee meetings (+) sig have a statistically positive impact on voluntary risk disclosure

N	Author	Study Period	Country	VRD Measure	Theory	Independent Variable	Study Finding
5	Alnabsha, Abdou, Ntim and Elamer	2018	Across countries	Unweighted index	Agency, stakeholder, resource-dependence and legitimacy theories	Board size, duality in position, board composition, frequency of meetings, audit committee, foreign ownership, government ownership, institutional ownership, director ownership	board size (–), board composition (–), frequency of board meetings (+) and presence of an audit committee (+) have an impact on the level of corporation disclosure the level of corporation disclosure is affected by ownership structures in a non-linear way
6	Allini, Rossi and Hussainey	2016	Italy	Computer-based content analysis procedure to generate a risk disclosure score	Agency theory	Board size, board meeting, board independent, multiplier, women, education, age	Women (+) sig, age (+) sig, education (–) sig, company size (+) sig, internet visibility (+) sig
7	Khlif and Hussainey	2016	Across countries	Meta-analysis of a sample of 64 empirical studies	Economic theory approach, social and political theory approach	Board composition, CEO duality, audit committee	Board size (+) sig, board composition (+) sig and audit committee (+) sig have a significant positive impact on voluntary disclosure CEO duality (insig)

Table 3.2

Summary of Literature on Voluntary Risk Disclosure and Firm Value

N	Author	Study Period	Country	Firm Value	Theory	Independent Variable	Study Finding
1	Charumathi and Ramesh	2020	India	Tobin's Q Ratio	Agency, stakeholders and positive accounting theories	Voluntary disclosure score including sub-indices	(+) sig voluntary disclosures and firm value (+) sig
2	Qamruzzaman, Jahan and Karim	2021	Bangladesh	Tobin's Q, earnings per share, market value of assets (MVA)	Agency theory	Voluntary disclosure	(+) significant relationship between voluntary disclosure relating to financial statistics, social corporation governance, responsibility information and the firms' value (–) significant relationship between accounting policies, company information and the firms' value
3	Robayany and Augustine	2019	Indonesia	Market capitalisation (MCAP) and Tobin's Q (TOBIN)	Signalling, agency and stakeholders theories	Voluntary risk management disclosure	Voluntary non-financial risk management disclosure has (–) significant impact on firm value Composition of independent commissioners does not affect the value of the company

N	Author	Study Period	Country	Firm Value	Theory	Independent Variable	Study Finding
4	Abdullah, Shukor, Mohamed and Ahmad	2015	Malaysia	Market capitalisation (MCAP), TOBIN, MTBR	Signalling and agency theories	Voluntary risk management disclosure	VRMD has a (+) sig and significant relationship with firm value
5	Al-Maghzom, Hussainey and Aly	2016	Saudi Arabia	MTBV, ROA	Signalling theory	Voluntary risk disclosure	(+) sig and significant association between the levels of voluntary risk disclosure and firm value

3.7 Research Gap

A review of the existing literature on corporate voluntary risk disclosure practices revealed that most recent studies focus on risk disclosure in developed economies. Relatively few studies have addressed risk disclosure drivers and practices in Saudi Arabia, e.g. (AL-Dubai & Abdelhalim 2021; Al-Maghzom, Hussainey & Aly 2016; Habtoor, O, Hassan & Aljaaidi 2019; Habtoor, OS et al. 2017; Ibrahim, Habbash & Hussainey 2019). These studies adopt the holistic, non-specific investigation approach to measure the integrated level of voluntary risk disclosure among Saudi-listed companies, which often yields ambiguous insights or results (Al-Janadi et al., 2016). Moreover, these studies are limited to investigating the impact of corporate-related variables, e.g., corporate governance, ownership structure, and audit committee, on the risk disclosure level. Consequently, they analyse the drivers of risk disclosure and elements that may improve risk disclosure practices, ignoring evaluating or measuring the desired outcomes behind improving risk disclosure, such as enhancing firm value.

It is important to note that previous research has focused on voluntary risk disclosure in developing countries (Salem et al., 2019), while other research indicates that further analysis regarding the impact of CG and IFRS on Saudi Arabian risk disclosure practices is still required. Additionally, considering the rapidly changing nature of the economy, it is important for corporations to commit to higher levels of risk disclosure, which will improve the level of investor confidence (Ntim et al., 2013). Further, it is noteworthy that this thesis emphasizes the importance of board characteristics, ownership, and IFRS, as an internal CG mechanism, in ensuring transparency and providing credible risk information to different stakeholders. Thus, this research examines the impact of CG

mechanisms (i.e., board characteristics and ownership structure) and IFRS on voluntary risk disclosure practices in Saudi Arabia especially.

After carefully reviewing the literature on corporate voluntary risk disclosure practices, it appears that most recent studies have focused on risk disclosure in developed economies. The Arab world has a limited understanding of corporate risk disclosure, particularly in the Gulf Cooperation Council (Al-Maghzom, 2016). Therefore, this study examines a specific form of risk disclosure: VRD. It provided a better opportunity to investigate VRD volume, practices, and effects on company performance, firm value, and investment decisions. In light of the competitive and uncertain nature of changing economies, board characteristics such as internal CG mechanisms, ownership, and IFRS are crucial for ensuring transparency and providing credible disclosure of risk to various stakeholders. In contrast to other studies that have investigated corporate voluntary disclosures, this study provides more information on one specific disclosure type, VRD, and how it has been shaped by the CG process in Saudi Arabia.

Therefore, this thesis expands the research scope by examining the voluntary risk disclosure impact on firms' value. This study responds to different calls from earlier research that recommend investigating the relationship between voluntary risk disclosure and firms' value (Habbash, 2016) and others that suggested further research to determine the impact of risk disclosure on the firm's value in Saudi Arabia (Al-Maghzom, Hussainey & Aly 2016). Therefore, investigating the impact of voluntary risk disclosure and firm value in the Saudi context is considered a noticeable research gap. Further, three theories are applied in this study: agency, signaling, and voluntary disclosure; the interrelationship

between these three theories enhances the harmonisation of the theoretical framework and optimizes the understanding of the results. Moreover, various advanced analyses are employed in this thesis to address the endogeneity problem, including reverse causality analysis, instrumental variable analysis (2SLS), and propensity score matching (PSM). The advanced analyses performed allowed us to confirm the thesis findings while taking into account and dealing with the issue of endogeneity.

3.8 Chapter Summary

This chapter explained in detail the theoretical framework that was chosen for this study. It started with an explanation of the meaning of VRD. This refers to the practice of voluntarily disclosing risk-related information other than the risk information that is required by accounting standards and other relevant regulations. Then, it discussed the relevant theories that have been used to explain VRD behaviour. In addition, the research hypotheses were developed and explained.

Chapter 4: Research Methodology

This chapter explains the research methodology that was chosen for this study. The research philosophy and the strategy that was adopted and used to answer the research questions and to achieve the overall aim are explained. There is a detailed description of the data collection methods, sample selection process, research instruments, and procedures used. In this study, statistical data analysis techniques were adopted that were pivotal to the study's success.

4.1 Research Paradigm

This study chose the philosophy of positivism, which is one class of epistemology. The philosophy was critical in presenting the argument about how the data for board composition and ownership structure on VRD was collected. Further, it was useful for assessing the impact of VRD on firm value (Bravo, 2018; Elshandidy et al., 2018). This paradigm is similar to a lens through which individuals view the world. In essence, various inquiry processes measure real, quantifiable phenomena and obtain facts about them (McGann et al., 2018). The context of any given situation or circumstance is important and can shape the character of the facts. The insights that are gained from a given situation are of great importance. That is, numerous experiences play a key role in the acquisition of real knowledge. Therefore, what is observed and the experiments that are conducted to support each claim are crucial aspects of the process.

Positivist research does not focus on context. Rather, the circumstances of a given situation are not deemed relevant when seeking to establish facts about the real world (Black, 2019). In this regard, the positivist paradigm does not appeal to most people, predominantly because it totally disregards the context of a given situation. In accordance

with this, the post-positivist paradigm was devised to counter some of these flaws by introducing the idea of hypothesis testing (McGann et al., 2018). Through this, the various theories that surround a phenomenon are considered and all assertions are tested, either proving or falsifying the claims made. The paradigm ties social reality to the idea that so much can be understood by not only observing what is happening but also supporting claims that are found through reason. This paradigm helped the researcher to investigate all the hypotheses in this thesis. This thesis starts by investigating the impact of board composition, ownership structure and IFRS on companies' VRD practices and what these mean for firm value. The analysis process that was selected for this thesis was conducted by applying regression models, which is typical of the quantitative approach.

4.2 Research Method

The research philosophy dictated the research direction. Greener (2008) noted that positivist and interpretivist approaches are very different. The positivist school of thought uses deductive reasoning to discover reality whereas inductive reasoning means an interpretation of events. This study's philosophy is positivist because it applies deductive reasoning (Creswell & Creswell, 2017). Unlike the interpretivist approach, the positivist approach tests a theory or theories (Greener, 2008). According to Collis and Hussey (2003), deductive research is a 'study in which a conceptual and theoretical structure is developed and then tested by empirical observation; thus, particular instances are deducted from general inferences' (p. 15). Researchers use the deductive method to generate expectations or hypotheses based on a general assumption or theory and then collect evidence to verify or refute those expectations.

Given the aim of this study, a quantitative research method was employed to study certain phenomena. This was because financial reporting includes risk disclosure and several theories have been devised for examining the impact of board structure and ownership structure on financial reporting (Elshandidy et al., 2018). The quantitative method was selected for this study because it has been deemed to be very appropriate for assessing causal relationships (Sekaran & Bougie, 2016). Many similar risk disclosure studies have employed this method to investigate the relationship between board composition, ownership structure and risk disclosure (Alkurdi et al., 2019; Bravo, 2018). Furthermore, this method was selected to ensure that an appropriate approach was employed to answer the research questions given the constraints of budget and time.

4.3 Measurements of Study Variables

In this section, the measurements of the variables that examined the impact of corporate board composition and ownership structure on the VRD practices of a sample of Saudi listed corporations and companies are presented.

4.3.1 Dependent Variable: Voluntary Risk Disclosure

A variety of analytical approaches have been used to study the risk disclosure practices of companies (García-Meca & Sánchez-Ballesta, 2010). The two most commonly used ones are content analysis (Elzahar & Hussainey, 2012; Rajab & Schachler, 2009) and developing a disclosure index (Elghaffar et al., 2019; M. K. Hassan, 2009; F. Ismail & Arshad, 2016; Probohudono et al., 2013). Given that this study aims to explore the impact of corporate board composition on the VRD practices of Saudi listed companies, the disclosure index methodology was considered the best strategy to be employed (Alkurdi et al., 2019; O. S. Habtoor & Ahmad, 2017; Lim et al., 2007). Further, content analysis

determined the presence or absence of risk disclosure items within the annual reports of the relevant companies (Rajab & Schachler, 2009). One of the main dependent variables is VRD. A disclosure index coded as VRD was developed using a checklist that includes seven items (Gregoire & Affleck, 2018). This checklist was prepared in accordance with the items that were included in prior studies (see Table 4.1). It includes the following items: compliance risks, reputational risks, operational risks, strategic risks, technological risks, commodity risks and sustainability risks. After this, the data were gathered by searching the contents of selected companies' annual reports.

The literature has applied weighted and unweighted approaches for scoring items in the disclosure index. A score of 1 was given for each item that was disclosed in the annual reports of the chosen companies. Meanwhile, a score of 0 was given to any undisclosed items. The total score for each company was calculated by adding up the values (i.e. 1 and 0) of each disclosed and undisclosed item. The total score for each company was derived by adding up the total number of items disclosed for each sample and dividing that by the maximum number of items disclosed. According to Kutum (2014), compliance, reputational, operational and strategic information risks should all be considered part of VRD.

Table 4.1

Voluntary Risk Disclosure Items

Voluntary Risk Disclosure	Studies That Adopted the Same Standards of Voluntary Risk Disclosure
Compliance risks	Alkurdi et al., 2019; Elshandidy et al., 2015; Kutum, 2014
Reputational risks	Abdullah et al., 2015; Alkurdi et al., 2019; Kutum, 2014; Lipunga, 2014
Operational risks	Abdullah et al., 2015; Alkurdi et al., 2019; Al-Maghzom et al., 2016; Linsley & Shrives, 2006; Lipunga, 2014; Mokhtar & Mellett, 2013
Strategic risks	Alkurdi et al., 2019; Linsley & Shrives, 2006; Mokhtar & Mellett, 2013
Technological risks	Alkurdi et al., 2019; Linsley & Shrives, 2006; Mokhtar & Mellett, 2013
Commodity risks	Abdullah et al., 2015; Alkurdi et al., 2019; Al-Shammari, 2014; Elshandidy & Neri, 2015
Sustainability risks	Abdullah et al., 2015; Alkurdi et al., 2019; Al-Maghzom, 2016

Note. This table shows the reference lists that this thesis followed for VRD.

4.3.1.1 Validity and Reliability of Voluntary Risk Disclosure

A reliable coding procedure is necessary to draw valid results. Therefore, the researcher verified the reliability of the VRD index. Following Reguera-Alvarado and Bravo-Urquiza (2020), a stability test was applied. For the stability test, the researcher coded and recorded almost 20 companies on various dates to determine whether they were stable. This reliability test helped the researcher to check the coding stability across the VRD data. The researcher and other individuals have applied the recording at various times to ensure the consistency of the data (Milne & Adler, 1999). For the validity test, the VRD index was structured around seven categories of focus, each in accordance with pioneering literature. Further, this study sought to assess the validity of the VRD index by obtaining various subjective assessments.

4.3.2 Dependent Variable of Second Model: Firm Value

Given that firm value can be affected directly and indirectly, it was measured using two measurements: (1) a market-based measure and (2) an accounting-based measure. For

the former, the researcher followed O. A. Hassan et al. (2009), Nekhili et al. (2016) and Al-Maghzom, (2016) and used MTBV, which is the natural logarithm of the ratio of the market value of equity to the book value of equity. For the latter, firm value was measured using ROA. ROA is measured as the next income divided by the total assets (Al-Maghzom, 2016; Garay et al., 2013; Klapper & Love, 2002).

4.3.3 Independent Variables

4.3.3.1 Board Composition

For this study, corporate board composition is an independent variable. It includes five attributes: board size, independent board directors, board directors' qualifications, audit committee meetings and board directors' gender. The measurements of the board composition mechanisms are stated in the paragraphs that follow:

Board size, which was coded as BSIZE, was calculated by dividing the total number of non-executive directors by the total number of directors on the board. This helps to document the impact of board size on a company's VRD and has been used in other studies as a measure of internal governance (Alkurdi et al., 2019; Alnabsha et al., 2018; Elshandidy & Neri, 2015; O. S. Habtoor & Ahmad, 2017; Lim et al., 2007; Mokhtar & Mellett, 2013).

The independent board directors variable, which was coded as INDEP, was measured as a ratio of the total number of non-executive directors to the total membership of the board of the company (Alkurdi et al., 2019; Elshandidy & Neri, 2015; O. S. Habtoor & Ahmad, 2017; Lim et al., 2007). This measure helps to illustrate the impact of board independence on a company's VRD.

The board directors' qualifications variable, coded as BQUAL, was measured as a percentage of the total number of board directors who had accounting and finance qualifications out of the total number of board members of the company (Al-Hadi et al.

2016 and Bedard et al. 2008). This variable assists in examining the impact of holding an accounting or finance qualification on firms' VRD procedures.

The audit committee meeting variable, coded as ACMEET, was measured as the total number of meetings that the committee held during the financial year (Alkurdi et al., 2019; Alnabsha et al., 2018; O. S. Habtoor & Ahmad, 2017; Lim et al., 2007). This variable aids in examining the impact of the number of audit committee meetings on firms' VRD.

The board directors' gender diversity, which was coded as GENDER, was measured as a dummy variable set to 1 when there was a female presence on the board and 0 otherwise (Saggar & Singh, 2017; Sila et al., 2016). This measure helps to assess the impact of female members on a company board and how they contribute to VRD.

4.3.3.2 Ownership Structure

Ownership structure functioned as an independent variable. It includes three attributes: state ownership, family ownership and foreign ownership. Foreign ownership (coded as FORO) was measured as the proportion of the total number of shares that were held by foreign investors (see Alnabsha et al., 2018; Barako et al., 2006; Haniffa & Cooke, 2002; Huafang & Jianguo, 2007). The family ownership variable (coded as FAMO) was measured as the proportion of the total number of shares outstanding in the company that were held by a family member (Chau & Gray, 2002). State ownership (coded as STAO) was measured as the proportion of the total number of a company's outstanding shares that were owned by the Saudi government (Alnabsha et al., 2018; Ghazali & Weetman, 2006; Suwaidan, 1997). All three measures of ownership structure are important to a firm's VRD.

4.3.3.3 International Financial Reporting Standards

The international financial reporting standards variable (coded as IFRS) was measured as a dummy variable, where it equalled one for the years after the adoption of

IFRS and 0 for the years before the adoption. IFRS began in Saudi Arabia in 2017; thus, the years 2013, 2014 and 2015 represent the period before IFRS adoption whereas 2018, 2019 and 2020 constitute the post-adoption phase. According to Mylonas (2016), it is evident that IFRS adoption is not consistent and country attributes and firm characteristics play a significant role in the acceptance of IFRS. In addition, foreign ownership has created a need to apply IFRS in the KSA so that investors abroad and domestically can make comparative, reliable and logical financial assessments. Alsuhaibani (2012) stated that the KSA has introduced foreign ownership, prompting the need to apply IFRS. The updated version of the SCGC was the first to address the importance of having a risk management committee (Almania Omar, 2019). It is possible to increase the level of risk disclosure by establishing a risk management committee.

4.3.3.4 Control Variables

In terms of control variables, the study used three and these are a firm's size, leverage and a firm's growth.

- The size of a firm, coded as SIZE, was measured as the natural logarithm of the total assets (Al-Maghzom, 2016). The size was controlled for because a large company usually discloses more than a smaller one (Abdullah et al., 2015; Gul & Leung, 2004). Following other studies (Alkurdi et al., 2019; Alnabsha et al., 2018; Elshandidy & Neri, 2015; Mokhtar & Mellett, 2013; Saggar & Singh, 2017), this study controlled for the impact of company size on VRD practices. It is important to note that a company's size has a significant impact on its value. Accordingly, following Abdullah et al. (2015), Al-Maghzom (2016), and Charumathi and Ramesh (2020), the size of the company has been controlled.

- The leverage of a firm, coded as LEV, was measured as the long-term debt and total assets (Al-Maghzom, 2016). According to Khlif and Hussainey (2016), a company that has a high level of leverage is more likely to engage in more VRD. Following Alkurdi et al. (2019), this study controlled for the impact of company leverage on VRD. In addition, following other studies (Abdullah et al., 2015; Charumathi & Ramesh, 2020), the leverage of a company controls its impact on firm value. According to prior studies, company leverage has a negative relationship with firm value because leverage represents financial risk (Abdullah et al., 2015; Chen et al., 2006).
- The growth of a firm's sales was measured as the difference between the sales in year *t* and the sales in year *t*–1 divided by the sales in year *t*–1. According to Elshandidy and Neri (2015), VRD plays a role in enhancing a company's growth opportunities. Following other researchers (Alkurdi et al., 2019; Elshandidy & Neri, 2015; Saggar & Singh, 2017), company growth was controlled for. In terms of controlling for this growth, studies have shown that a company that has higher levels of growth indicates good future prospects (Abdullah et al., 2015; Al-Akra & Ali, 2012; O. A. Hassan et al., 2009).

Table 4.2

Summary of Variable Measurements

Variable	Acronym	Measurement	Reference
Board size	BSIZE	Board size, which was coded as BSIZE, was measured as the total number of board members of the company.	Alfraih & Almutawa (2017); Allini et al. (2016); Harun et al. (2020); Hussainey et al. (2019)

Variable	Acronym	Measurement	Reference
Audit committee meeting	AUDC	The audit committee meeting variable, which was coded as ACMEET, was measured as the total number of meetings that the committee held during the financial year.	Alkurdi et al. (2019); Allini et al. (2016); Harun et al. (2020)
Independent board directors	INDEP	Measured as a ratio of the total number of non-executive directors to the total membership of the board of the company.	Alfraih & Almutawa (2017); Alkurdi et al. (2019); Allini et al. (2016); Elshandidy & Neri (2015); Lim et al. (2007)
Qualification of board directors	BQUAL	Measured as a percentage of the total number of board directors who had accounting and finance qualifications out of the total number of board members of the company.	Al-Hadi et al. (2016); Bedard et al. (2008)
Gender diversity	GENDER	A dummy variable that was set to 1 when there was a female presence on the board and 0 otherwise.	Aribi et al. (2018); Chen et al. (2019); Harun et al. (2020); Manita et al. (2018); Saggar & Singh (2017); Sila et al. (2016)
Foreign ownership	FORO	Measured as the proportion of the total number of shares that were held by foreign investors in the firm outstanding.	Almaqtari et al. (2021); Alnabsha et al. (2018); Harun et al. (2020)
State ownership	STAO	Measured as the proportion of the total number of the company's outstanding shares that were owned by the government of the KSA.	Alnabsha et al. (2018); Habtoor et al. (2019)

Variable	Acronym	Measurement	Reference
Family ownership	FAMO	Measured as the proportion of the total number of shares outstanding in the company that were held by a member of the family.	Chau & Gray (2002); Habtoor et al. (2019); Hashed & Almaqtari (2021)
International Financial Reporting Standards	IFRS	Measured as a dummy variable that is equal to 1 for the years after the adoption of IFRS and 0 for the years before the adoption of IFRS.	Hashed & Almaqtari (2021)
Market-to-book value	MTBV	The natural logarithm of the ratio of the market value of equity to the book value of equity.	Harun et al. (2020)
Return on assets	ROA	Downloaded from DataStream codes number (WC08326).	
Firm size	FSIZE	Natural logarithm of non-financial firm's total assets in a given year.	Allini et al. (2016); Almaqtari et al. (2021); Harun et al. (2020); Imasuen et al. (2022)
Leverage	LEV	The leverage of a firm, coded as LEV, was measured as the long-term debt and total assets.	Harun et al. (2020); Khlif & Hussainey (2016)
Growth	GROWTH	Measured by dividing the change in sales on sales.	Elshandidy & Neri (2015); Saggar & Singh (2017)

Note. This table shows the study variable measurements and the references that were followed.

4.4 Sample and Data Collection

The study's sample consisted of all the non-financial companies that were listed on Saudi listed companies (Tadawul). Tadawul is the only entity that is authorised by the Saudi government to act as a securities exchange and it was established in 2007. In addition, Tadawul ensures that market information is reliable and available to all stock exchange participants (Tadawul, 2013c). The board members (nine in total) of Tadawul represent various government organisations and they act under the Saudi Capital Authority (Saudi stock exchange law, 2009).

There are various reasons for choosing the Saudi market for the study samples. First, a major characteristic of the capital market of the country is that it is still at the nascent stage, where efforts are being made to improve its performance, in contrast to mature capital markets in other parts of the world (Moshashai et al., 2018). Second, the Saudi government is investing heavily to diversify the economy through other industries, such as tourism and entertainment, despite being a leading global oil exporter (Nurunnabi, 2017b). This has attracted a number of investors, both locally and internationally (Al-Maghzom et al., 2016b). Therefore, the Saudi government should ensure that corporations disclose adequate information regarding their performance, risk, and uncertainty (Habbash, 2016). This increases the importance of risk disclosure for the stability and profitability of local corporations (Al-Janadi et al., 2013). Third, the Saudi Organization for Chartered and Professional Accountants (SOCPA) has decided to adopt IFRS and requested that public listed companies adopt them as of the beginning of the 2017 financial year (Nurunnabi, 2017a).

Thus, given that all Saudi listed companies are required to publish all necessary disclosures and financial reports on the Tadawul website, the data were collected from it and from DataStream. For the period from 2013 to 2020, secondary data were gathered from the annual reports of all the Tadawul companies (www.tadawual.com.sa) and DataStream. The study used the year 2013 as a starting point for collecting data. The year 2013 has been chosen since this research is limited in time and relies on content analysis. The content analysis data are collected manually from the annual reports of listed companies. The VRD requires reading the whole annual report carefully. Further, the corporate governance and ownership variables have been collected manually. To obtain companies' annual reports, the author searched the Tadawul website. However, the years 2016 and 2017 were excluded because it was difficult to determine whether the 2016 fiscal year annual reports were released before or after IFRS became mandatory. In 2017, the CMA updated the Saudi CG procedures for the companies listed on Tadawul. The study sample contained 108 non-financial companies.

Financial firms were excluded because they are more likely to produce a significant variety of risk disclosures (Abdullah et al., 2015; Raimo et al., 2022). Furthermore, the regulation of banks and insurance companies differs from that of non-financial businesses. Considering this fact and given that they are exposed to distinct types of risks (Linsley & Shrives, 2005, 2006), following Abraham and Cox (2007), Beretta and Bozzolan (2004), Elzahar and Hussainey (2012) and Linsley and Shrives (2005, 2006), financial firms (e.g. banks and insurance) were omitted from the scope of this thesis (Muzahhem, 2011). Therefore, after removing any observations that were missing data, the final population consisted of 108 non-financial companies for a six-year period. This generated a total of 648 firm-year observations without missing values for the VRD, governance, firm value

and firm-level control variables. Table 4.3 presents the sample-cleaning procedure. Secondary data were gathered from the annual reports of all the companies that were listed on Tadawul and from DataStream for the years 2013 to 2020. It should be noted that the data on firm value used market-to-book values (MTBV) and return on assets (ROA) in addition to the control variables obtained from DataStream.

Table 4.3

Population and Sample

Sample at Year 2013	163
Non-financial companies	116
Excluded (financial companies)	(47)
Excluded (missing data firms)	(8)
Study sample	108

Note. This table presents the thesis sample.

4.5 Data Validity and Regression Assumptions

In disclosure investigations, parametric tests and, specifically, multiple linear regression tests have frequently been used. Regression analyses help to explain the connections between variables. Although this type of regression is a strong test, some conditions must be satisfied to accept the regression findings as valid and reliable (Allen & Bennett, 2012; Kavitha & Nandagopal, 2011; Statistics Solutions, 2013). First, there should be a linear relationship between the dependent and independent variables. Second, it is necessary for any residual errors to be distributed normally. Third, there should not be any problems with multicollinearity. An examination was performed to find any outliers in the obtained data before the statistical analysis began. Then, the regression assumptions were verified to see whether they had been satisfied. This thesis has applied an ordinary least squares model with robust standard errors, as well as a firm fixed effect for all. To evaluate

the research model and test the hypotheses, several data analysis procedures were used and these are explained in the subsections that follow.

4.5.1 Outliers

Outliers are observations that differ significantly from other observations (Walfish, 2006). The concept of an outlier in a data set refers to an unusual observation or extreme result that stands out from the rest of the sample. The data set was checked for any outliers and missing values. Thus, to control for potential outliers, all the variables except for the dummy variables were winsorised at the 1% and 99% levels (Zaman et al., 2021). In addition, to do so, missing value and frequencies analyses were run.

4.5.2 Linearity

Linearity is the first assumption that must be satisfied for a data set to be employed in a valid linear regression. Each independent variable should be correlated linearly with the dependent variable. In cases in which the dependent and independent variables exhibit non-linear relationships, alternative regression methods should be used instead of multiple linear regression.

4.5.3 Normality

A normal distribution of residual errors among the variables is required to satisfy the normality condition. Brooks (2008) and Coakes and Steed (2001) considered samples that have a count of more than 200 observations to be normally dispersed. Even though 684 company-year observations were included in this thesis' sample and this is considered large, several tests were run to ensure normality to increase confidence.

4.5.4 Multicollinearity

When two or more independent variables have a strong correlation, this is known as multicollinearity (Field et al., 2012). In linear regression, multicollinearity is considered a

serious violation of the assumptions. The multicollinearity issue was checked using the Pearson correlation matrix and variance inflation factor (VIF), which revealed the nature of the association between the VRD index, board composition attributes, ownership structure and firm value. Any correlations above the threshold value of 0.70 are deemed to exhibit a multicollinearity problem (Tabachnick et al., 2007). Therefore, this assumption was checked among the variables to ensure that it was met.

4.6 Data Analysis

4.6.1 Descriptive Analysis

After the data set was checked, a descriptive statistical analysis was conducted. This analysis describes research samples as well as the research variables in terms of the measures of central tendency and dispersion. Specifically, descriptive statistics, including minimum, maximum, mean, median and standard deviation, were run for the VRD index as well as for each corporate board attribute, ownership structure and firm value.

4.6.2 Empirical Model

The regression analysis technique investigated the effect of corporate board composition attributes, IFRS and ownership structures on Saudi listed firms' VRD practices. Regression analysis tested the null hypothesis of the board composition attributes, IFRS and ownership structure's effects on the VRD practices against its alternative hypothesis. To do so, a multiple regression model considered the size of the board, the independence of board officials, audit committee meetings, the qualifications of board members, board gender diversity, IFRS, state ownership, family ownership and foreign ownership as independent variables; VRD functioned as the dependent variable (see Section 4.6.2.1). Another multiple regression model was used by considering VRD as an

independent variable; firm values constituted the dependent variable (see Section 4.6.2.2). Following Boone et al. (2007), these regressions were entered separately, including all the control variables. They argued that including different measures together causes the attenuation bias that results from using multiple proxies. Lubotsky and Wittenberg (2007) argued that 'putting multiple proxies in the regression may likely result in many insignificant individual coefficients' (p. 550). The model assessed the joint and individual effects of the independent variables on the dependent variable simultaneously (Sekaran & Bougie, 2016). The joint effect was assessed using the R-squared statistic whereas the individual effects were assessed using coefficient analysis (Tabachnick et al., 2007). This method has been used elsewhere (Alkurdi et al., 2019; O. S. Habtoor & Ahmad, 2017; Lim et al., 2007).

4.6.2.1 First Model

For testing H1: To test Hypothesis (1), this model was applied to investigate the relationship between board size and VRD. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$VRD = \beta 0 + \beta 1\ BSIZE + \beta 2\ Size + \beta 3\ Lev + \beta 4\ Growth + e \quad (1)$$

where VRD is voluntary risk disclosure as described in Section 4.3.1, BSIZE is the total number of board members working in the company and the control variables are SIZE, LEV and Growth.

For testing H2: This model was applied to investigate the relationship between board qualification and VRD. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$VRD = \beta 0 + \beta 1\ BQUAL + \beta 2\ Size + \beta 3\ Lev + \beta 4\ Growth + e \quad (2)$$

where BQUAL is the percentage of the total number of board directors who have accounting and finance qualifications (see Section 4.3.3).

For testing H3: This model was applied to investigate the relationship between board independence and VRD practices. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$VRD = \beta 0 + \beta 1\ INDEP + \beta 2\ Size + \beta 3\ Lev + \beta 4\ Growth + e \quad (3)$$

where INDEP is the ratio of the total number of non-executive directors.

For testing H4: This model was applied to investigate the relationship between audit committee meetings and VRD practices. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$VRD = \beta 0 + \beta 1\ ACMEET + \beta 2\ Size + \beta 3\ Lev + \beta 4\ Growth + e \quad (4)$$

where ACMEET is the total number of meetings that were held by the audit committee.

For testing H5: This model was applied to investigate the relationship between board gender and VRD. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$VRD = \beta 0 + \beta 1\ GENDER + \beta 2\ Size + \beta 3\ Lev + \beta 4\ Growth + e \quad (5)$$

where GENDER is a dummy variable that is set to 1 when there is a female presence on the board and 0 otherwise.

For testing H6: This model was applied to investigate the relationship between foreign ownership and VRD. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$VRD = \beta 0 + \beta 1\ FORO + \beta 2\ Size + \beta 3\ Lev + \beta 4\ Growth + e \quad (6)$$

where FORO denotes the total number of shares that are held by foreign investors.

For testing H7: This model investigated the relationship between family ownership and VRD practices. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$VRD = \beta0 + \beta1\ FAMO + \beta2\ Size + \beta3\ Lev + \beta4\ Growth + e \quad (7)$$

where FAMO is the total number of shares outstanding in the company that is held by a member of the family.

For testing H8: This model examined the relationship between state ownership and VRD practices. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$VRD = \beta0 + \beta1\ STAO + \beta2\ Size + \beta3\ Lev + \beta4\ Growth + e \quad (8)$$

where STAO is the proportion of the total number of the company's outstanding shares that are owned by the government of the KSA (see Section 4.3.3.2).

For testing H9: This model explored the relationship between IFRS and VRD practices. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$VRD = \beta0 + \beta1\ IFRS + \beta2\ Size + \beta3\ Lev + \beta4\ Growth + e \quad (9)$$

where IFRS is equal to 0 for the years before the adoption of IFRS and 1 for the years after the adoption.

4.6.2.2 Second Model

Where the dependent variable is firm value.

For testing H10: The two models that follow investigated the relationship between VRD practices and firm value. Each model was run twice in accordance with the two measurements of firm value. The firm fixed effect was controlled for. Further, the robust standard error was included in all the regressions. The following model was run:

$$Fv = \beta 0 + \beta 1\ VRD + \beta 2\ SIZE + \beta 3\ LEV + \beta 4\ Growth + \varepsilon \quad (10)$$

where FV is firm value, which was measured using two measures: a market-based measure (FV = firm value [measured using MTBV]) and an accounting-based measure (FV = firm value [measured using ROA]).

4.6.2.2.1 Robustness Tests for Second Model

To ensure that the results of the relationship between VRD and FV were robust, the researcher applied Fama–MacBeth's (1973) two-step procedure, including to all the controls variables. The firm fixed effect was included. This analysis provided evidence that the results were in fact consistent.

4.6.2.2.2 Endogeneity Tests

Endogeneity tests were applied to control for the endogeneity problem that could exist between VRD and FV. Researchers have employed reverse causality, instrumental variable approaches (2SLS) and propensity score matching (PSM) to address potential endogeneity issues.

Reverse causality: To implement this analysis, the researcher chose companies that had two consecutive years of unchanged VRD percentages, essentially to control for the endogeneity problem. The unchanged VRD percentages were unlikely to have a reverse impact.

Instrumental variable approaches (2SLS): The researcher applied an instrumental variable to deal with the endogeneity problems. The research measured the instrumental variable using the average of an industry in which a company operated. The industry in which a firm operates may enhance its VRD. Consequently, the VRD instrumental variable was used in the first stage. For the second stage, the researcher used the predicted values of the VRD instrumental variables to estimate the regressions.

Propensity score matching: The researcher used PSM analysis to compare the MTBV and ROA between two groups of companies. In the analysis, the VRD variable was calculated as a dummy variable that equalled 1 when it was above the median of VRD companies, which represented a high level of VRD, and 0 otherwise, which represented a low level of VRD. The first group functioned as the treatment group, which comprised companies that had a high level of VRD. The second group was the control group and this included companies that had a low level of VRD. This analysis was applied by selecting matching samples of the control variables and checking that there were no significant differences between them. This method makes it possible to compare the treatment and control firms along all the observable dimensions.

4.7 Chapter Summary

This chapter explained the methodology that was employed in this study to test the hypotheses and to answer the research questions. It begun with an explanation of the paradigm and method, including justifications for doing so. Moreover, it described the variables measures and the processes that were followed to estimate the extent of VRD in the annual reports of listed Saudi companies. Further, it explained the method of collecting data from the annual reports of these businesses. The disclosure index methodology was deemed to be the best approach to use for this study. Content analysis was also used to determine the presence or absence of risk disclosure items in companies' annual reports. A disclosure index, coded as VRD, was developed using seven voluntary risk disclosure items. To conclude, this chapter described and justified the statistical analysis techniques that were used to test the hypotheses in this study. The chapter that follows reports the

findings of the empirical analysis and assesses the hypotheses that were devised in Chapter 3.

Chapter 5: Empirical Results

5.1 Introduction

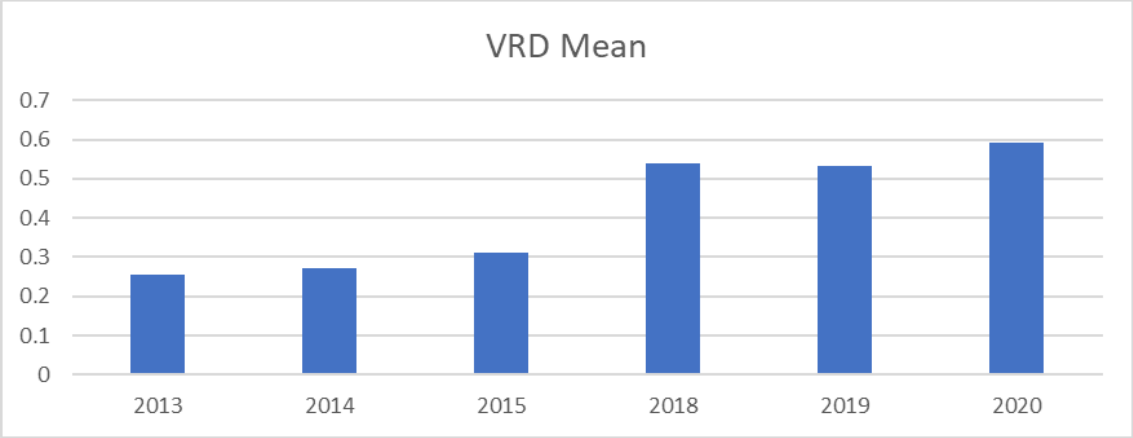
This chapter presents the outcomes of the statistical analyses that were used to test all the hypotheses and to explore the relationships between board composition, ownership structure, IFRS and VRD practices and the relationship between VRD and the firm value of Saudi listed companies. This chapter starts by explaining the procedures that were used to check the data set for errors, missing values and outliers, among others. Then, a descriptive analysis of all the independent and dependent variables is performed. The two multiple regression analyses' outcomes are presented to assess the hypotheses. All the assumptions of the regression analysis are carefully checked.

5.2 Mean of Voluntary Risk Disclosure in Saudi Economy From 2013 to 2020

This section presents the mean value of VRD in the Saudi economy for the stipulated six-year period. As is shown in Figure 5.1, there has been an increase in VRD. In 2013, it had a percentage of 25%. By 2014, VRD had increased to 27%. There was a further increase in VRD in 2015, reaching 31%. VRD rose sharply in 2018 and reached 54%. VRD in 2019 was 53%, which was almost in the same range as that in 2018. During the year 2020, VRD reached 60%.

Figure 5.1

Mean of Voluntary Risk Disclosure



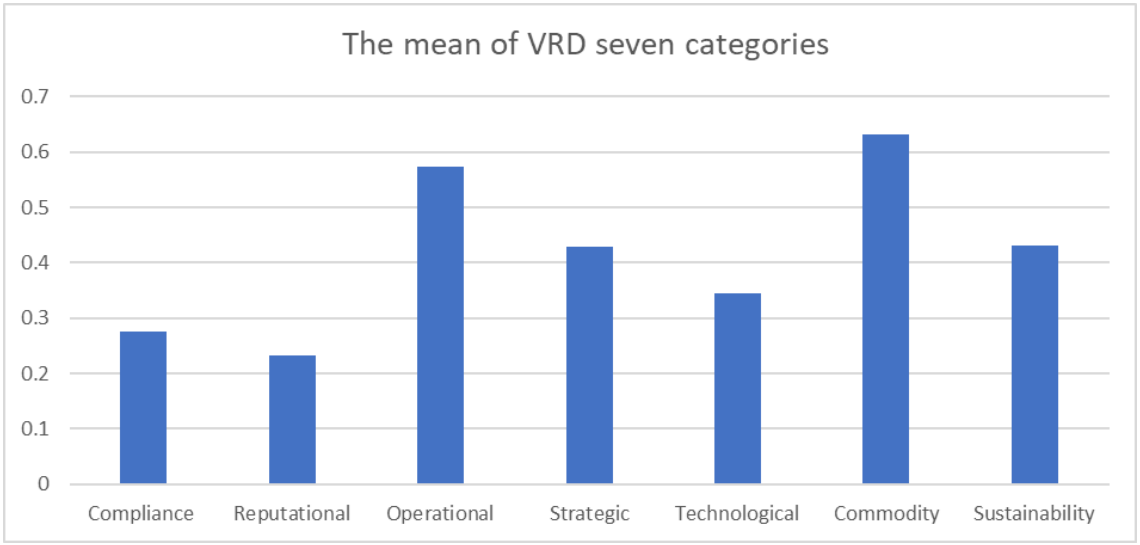
5.2.1 Means of Seven Categories of Voluntary Risk Disclosure

This section presents the means of the seven categories of VRD and these refer to the following risks: compliance, reputational, operational, strategic, technological, commodity and sustainability. In terms of these categories, commodity risks had the highest mean at 63%. It was followed by operational risk at 57%. Sustainability risks and strategic risks reached 43%. Following this, technological risks were placed at 34%, followed by the compliance risks at 28%. Finally, reputational risks stood at 23%.

Figure 5.2 indicates that commodity risks were the most important category of VRD for Saudi listed companies. Meanwhile, reputational risks constituted the least important category.

Figure 5.2

Means of Seven Categories of Voluntary Risk Disclosure

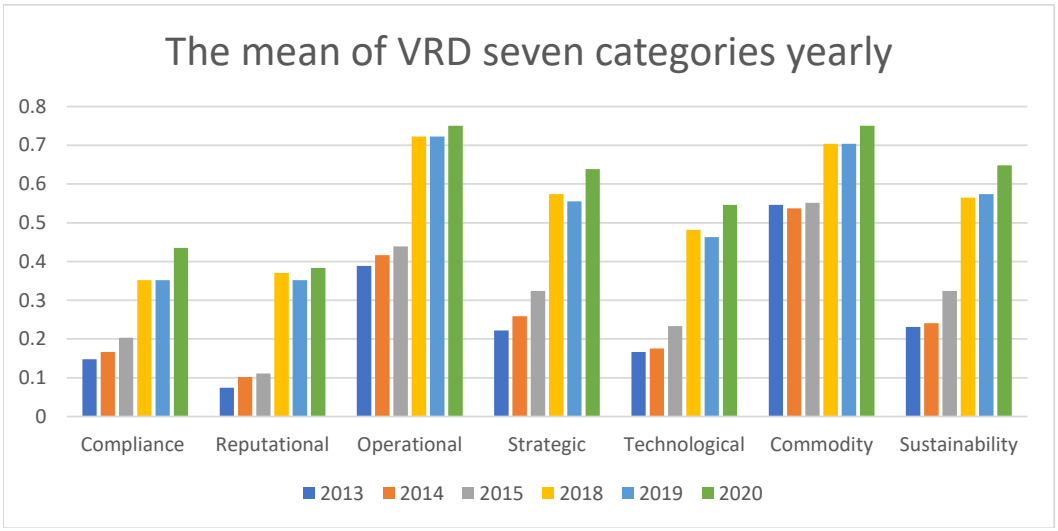


5.2.2 Means of Seven Categories of Voluntary Risk Disclosure Year by Year

This section illustrates the means of the seven categories of VRD on a yearly basis. The categories of risks are the same as those stated earlier for the years 2013 to 2020.

Figure 5.3

Yearly Means of Seven Categories of Voluntary Risk Disclosure



Compliance risks were initially 15% in 2013. The following year, the percentage increased to 17%. Another increase occurred in 2015, which increased compliance risks to 20%. There was an increase in 2018 and they reached 35%. For the year 2019, compliance risks remained at 35%. In 2020, they reached 43%. For reputational risks, these started at 7% in 2013 and then increased to 10% in 2014. Then, another gradual increase to 11% was witnessed in 2015. For the year 2018, reputational risks increased to 37% but these dropped to 35% in 2019. Finally, they reached 38% in 2020.

In 2013, operational risks stood at 39% and this increased to 42% in 2014. In 2015, they reached 44%. In 2018, operational risks were 72%. Operational risks for 2019 remained at 72%. By the year 2020, they had reached 75%. Strategic risks began at 22% in 2013 and by the end of 2014, these had reached 26%. In 2015, the percentage increased to 32% and by the end of 2018, it was 57%. However, the percentage of strategic risks dropped to 55% in 2019, followed by another increase to 64% in 2020.

Technological risks began at 17% in 2013. By the following year, the rate had increased to 18%. For the year 2015, the technological risks increased to 23%. In 2018, it increased to 48%. However, the following year, the rate decreased to 46%. In 2020, technological risks reached 55%. In terms of commodity risk, in 2013, the rate started at 55% but decreased by only 1% to reach 54% in 2014. During 2015, commodity risks increased to 55%. The rate increased in 2018 to 70%. Commodity risks remained at 70% for 2019 and then by 2020, the rate reached 75%.

Sustainability risks began at 23% by the end of 2013. Following that, it increased to 24% by the end of 2014. The percentage amounted to 32% by the end of 2015. In 2018, the sustainability risks rate increased to 56%. Similarly, the rate for 2019 increased and reached 57%. By the end of the year 2020, the rate had reached 65%.

5.3 Descriptive Analysis

Data were collected from a sample of 108 companies. The number of observations for each variable amounted to 648. Table 6 indicates that the VRD index for Saudi companies ranged from 0 to 1, having a mean of 0.43 across the six years. Some companies did not voluntarily disclose any risk-related information about the selected seven items. However, other companies voluntarily disclosed all risk-related information. In addition, the average number of board members was 8.42, from boards ranging between 4 and 14 members. During the financial years, the average number of meetings that were held by the audit committees was 5.13 and the highest and lowest frequency were 1 and 16 meetings, respectively. Each board had an average of 0.48 directors who were independent. The mean number of directors who had accounting or finance qualifications was 0.24. The minimum value was 0, which indicates that some companies had no directors who had accounting or finance qualifications. The percentage of female members on the boards amounted to approximately 0.05%. This indicates that the number of female board members in Saudi listed companies is very low at 5%.

Table 5.1

Descriptive Analysis

Variable	N	Mean	SD	Min	Median	Max
VRD	648	0.42	0.299	0	0.43	1.00
BSIZE	648	8.42	1.5447	4.00	9.00	14.00
AUDC	648	5.13	1.9667	1.00	5.00	16.00
INDEP	648	0.48	0.1666	0.00	0.43	1.00
BQUAL	648	0.24	0.1542	0.00	0.22	1.00
GENDER	648	0.05	0.2136	0.00	0.00	1.00
STAO	648	0.07	0.1603	0.00	0.00	0.84
FAMO	648	0.04	0.0837	0.00	0.00	0.59
FORO	648	0.04	0.0543	0.00	0.00	0.29
IFRS	648	0.50	0.5004	0.00	0.50	1.00
ROA	648	0.05	0.0929	–0.62	0.04	0.38
MTBV	648	7.89	1.5870	0.29	7.72	12.87
FSIZE	648	7.91	1.5918	3.66	7.75	13.09
LEV	648	0.42	0.3438	0.01	0.41	6.91
Growth	648	0.06	0.3828	–0.65	0.03	2.74

Note. This table shows the descriptive analysis of the study variables; VRD: voluntary risk disclosure; BSIZE: the total number of board members of the company; AUDC: the total number of meetings that the committee held during the financial year; INDEP: the total number of non-executive directors from the total membership of the board of the company; BQUAL: the total number of board directors who had accounting and finance qualifications out of the total number of board members of the company; GENDER: a dummy variable set to 1 when there was a female presence on the board and 0 otherwise; STAO: the proportion of the total number of the company's outstanding shares that were owned by the government of the KSA; FAMO: the proportion of the total number of shares outstanding in the company that were held by a member of the family; FORO: the total number of shares that were held by foreign investors in the firm outstanding; IFRS: a dummy variable equal to 1 for the years after the adoption of IFRS and 0 for the years before; FSIZE: natural logarithm of non-

financial firm's total assets in a given year; LEV: the long-term debt and total assets; Growth: dividing the change in sales on sales; MTBV: natural logarithm of the ratio of the market value of equity to the book value of equity.

In term of ownership structure, the average percentage of state ownership was 7%, which indicates that the Saudi government has invested in the Saudi market at an average of 7%. State ownership ranged between 0.0% and 0.84%. This implies that the government owns 84% of some companies. In terms of family ownership, the average was 0.04%. Thus, the average value of firms that were owned by family members was 4% of that of Saudi listed companies. In terms of foreign ownership, the average was 0.04%, which means that 4% of Saudi firms had this type of ownership. Foreign ownership ranged between 0.0% and 0.29%

IFRS was a dummy variable that had an average value of 50%, which indicates that the study period represents a balanced period before and after the adoption of IFRS. A firm's value is represented by ROA and MTBV. In terms of ROA, the average was 0.05%. It ranged between −0.062% and 0.38%. It appears that some firms achieved a return on assets of 38%. For MTBV, the average was 7.89%. There was a wide range of MTBV in Saudi listed companies, ranging from 0.29% to 12.87%.

As a control variable, the average firm size was 7.91%. There was a range of 3.66% to 13.09% between the minimum and maximum size of firms in the Saudi market. In terms of leverage, the average was 0.42%. The range of leverage was 0.01% to 6.91%. Finally, the sale growth averaged 0.06% and ranged from −0.655 to 2.74%.

Furthermore, for the multicollinearity the correlations between the research variables were checked using the correlation matrix and VIF. For the VIF test, the range were between 1.03 and 1.77 (see appendix A). Therefore, Therefore, the multicollinearity problem is not apparent in this case since the VIFs are below 10 (Kline, 2005, Menard, 2002).

Table 5.2 displays the correlation coefficients among all the dependent and independent variables. An examination of the correlations revealed that there were no highly correlated relationships among the variables. Overall, the correlation coefficients among the variables ranged from 0.461 to 0.002. The association between VRD index and board size was 0.097 whereas the coefficient of the association between VRD and the number of audit committee meetings that were held in a financial year was 0.002. This indicates that the degree of VRD is cumulative in accordance with the frequency of audit committee meetings that are held each year. The relationship between the number of independent directors on a board and VRD was 0.247, which illustrates a negative correlation. The correlation between the number of qualified accounting or finance professionals and VRD was 0.120, which illustrates a positive correlation. Finally, there was a positive association of 0.075 between female representatives on a board and the level of VRD. This shows that the degree of VRD increases as the number of female board members grows.

Table 5.2

Correlation Matrix

Variable	MTBV	ROA	VRD	BSIZE	AUDC	INDEP	BQUAL	GENDER	STAO	FAMO	FORO	IFRS	FSIZE	LEV	Growth
MTBV	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ROA	0.292*	1	–	–	–	–	–	–	–	–	–	–	–	–	–
VRD	0.152*	0.262*	1	–	–	–	–	–	–	–	–	–	–	–	–
BSIZE	–0.107*	0.127*	0.097	1	–	–	–	–	–	–	–	–	–	–	–
AUDC	–0.005	0.012	–0.002	0.140*	1	–	–	–	–	–	–	–	–	–	–
INDEP	–0.026	–0.134*	–0.247*	–0.183*	–0.072	1	–	–	–	–	–	–	–	–	–
BQUAL	0.001	0.036	0.120*	0.077	0.044	–0.043	1	–	–	–	–	–	–	–	–
GENDER	0.024	0.045	0.075	0.028	–0.045	–0.042	0.113*	1	–	–	–	–	–	–	–
STAO	0.025	0.087	0.066	0.147*	0.316*	–0.178*	0.107*	0.095	1	–	–	–	–	–	–
FAMO	–0.059	–0.088	0.085	–0.017	0.007	0.022	0.057	–0.023	–0.112*	1	–	–	–	–	–
FORO	–0.024	0.134*	0.095	0.212*	–0.044	–0.093	–0.06	0.029	–0.01	–0.109*	1	–	–	–	–
IFRS	0.249*	0.223*	0.461*	0.034	–0.019	–0.051	0.158*	0.08	0.028	0.035	–0.022	1	–	–	–
FSIZE	–0.191*	0.198*	0.317*	0.398*	0.182*	–0.303*	0.094	–0.032	0.385*	–0.111*	0.369*	–0.011	1	–	–
LEV	0.061	–0.133*	0.094	0.011	0.056	–0.128*	0.002	–0.06	0.019	–0.016	0.07	–0.079	0.217*	1	–
Growth	0.063	0.131*	0.036	0.016	0.115*	0.002	0.067	–0.012	0.079	–0.045	–0.04	0.087	0.02	–0.013	1

Note: This table illustrates the correlation matrix among the study variables; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; VRD: voluntary risk disclosure; BSIZE: the total number of board members of the company; AUDC: the total number of meetings that the committee held during the financial year; INDEP: the total number of non-executive directors out of the total membership of the board of the company; BQUAL: the total number of board directors who had accounting and finance qualifications out of the total number of board members of the company; GENDER: a dummy variable set to 1 when there is a female presence on the board and 0 otherwise; STAO: the proportion of the total number of the company's outstanding shares that were owned by the government of the KSA; FAMO: the proportion of the total number of shares outstanding in the company that were held by a member of the family; FORO: the total number of shares that were

held by foreign investors in the firm outstanding; IFRS: a dummy variable equal to 1 for the years after the adoption of IFRS and 0 for the years before; FSIZE: natural logarithm of non-financial firm's total assets in a given year; LEV: the long-term debt and total assets; Growth: the change in sales among the years on sales; MTBV: natural logarithm of the ratio of the market value of equity to the book value of equity.

5.4 Regression Analysis

Several regression analyses were run to test the hypotheses. Each regression analysis assessed the relationship between VRD and all five attributes of corporate board composition (size, independent directors, qualifications, audit committee meetings and gender), IFRS and the three ownership structure attributes (state, family and foreign). Another two linear regressions were executed to test the relationships between VRD and firm value, as measured by MTBV and ROA. For all these relationships, three variables, SIZE, LEV and Growth, were included as control variables. These analyses are explained in the subsections that follow.

5.4.1 Board Composition, International Financial Reporting Standards, Ownership and Voluntary Risk Disclosure

The first group of regression analysis was conducted to assess the relationship between VRD as a dependent variable and each of the nine independent variables (board size, independent board directors, board directors' qualifications, audit committee meetings, board directors' gender, IFRS, state ownership, family ownership and foreign ownership). In addition, the study controls variables were included in all the regressions. The outputs of these analyses are explained to test the hypotheses and thus answer the research questions.

5.4.1.1 Board Composition and Voluntary Risk Disclosure

H1: Board size and Voluntary Risk Disclosure: This hypothesis aimed to determine whether there was a positive relationship between board size and the VRD of Saudi listed companies. The regression analysis in table 5.3 showed regression model statistically significantly with a *P* value of 1%. The R^2 was 0.5768, which indicates that

board size explained 57.6% of VRD. However, this hypothesis was rejected. The analysis outputs indicated that there was no significant relationship between board size and VRD ($\beta = 0.0165$ and $p > 0.05$). This could be explained as VRD is not affected by board size.

H2: Audit Committee Meetings and Voluntary Risk Disclosure: This hypothesis aimed to determine whether there was a positive relationship between audit committee meetings and VRD in Saudi listed companies. The regression analysis in Table 5.3 showed regression model statistically significantly with a P value of 1%. The R^2 was 0.5760, which means that audit committee meetings explained 57.6% of VRD. However, this hypothesis was rejected. The analysis outputs suggested that there was no significant relationship between these meetings and VRD ($\beta = -0.0064$ and $p > 0.05$). It is possible to explain this by the fact that VRD is not affected by the meeting of audit committees.

H3: Board Independence and Voluntary Risk Disclosure: This hypothesis aimed to determine whether there was a positive relationship between board independence and VRD in Saudi listed companies. The regression analysis in Table 5.3 showed that board independence could statistically significantly predict VRD with a *P* value of 1%. The R^2 was 0.5815, which indicates that board independence explained 58.1% of VRD. The analysis outcomes indicated that a significant relationship between board independence and VRD was evident ($\beta = -0.2112$ and $p < 0.05$). However, this relationship was negative so this hypothesis was rejected. This means that Saudi corporations that have a larger number of independent directors disclose less voluntary information about risk.

H4: Qualifications of Board Members and Voluntary Risk Disclosure: This hypothesis aimed to determine whether there was a positive relationship between the qualifications of board members and VRD in Saudi listed companies. The regression analysis in Table 5.3 showed that the qualifications of board members could statistically

significantly predict VRD with a *P* value of 1%. The R^2 was 0.5886, which indicates that the qualifications of board members explained 58.8% of VRD. The analysis revealed that there was a significant relationship between these qualifications and VRD ($\beta = 0.4021$ and $p < 0.05$). It should be noted that this result indicates that VRD is positively influenced by the qualifications of a board. Therefore, this hypothesis was accepted and it means that Saudi listed companies that have staff who have accounting or finance qualifications engage more in VRD.

H5: Gender Diversity Among Board Members and Voluntary Risk Disclosure:

This hypothesis aimed to determine whether there was a positive relationship between the gender diversity of board members and VRD in Saudi listed companies. As is shown in Table 5.3, the regression analysis showed that board gender could statistically significantly predict VRD with a *P* value of 1%. The R^2 was 0.5786, which means that the gender diversity of board members explained 57.8% of VRD. The analysis found a significant relationship between gender diversity and VRD ($\beta = 0.1158$ and $p < 0.05$); thus, this hypothesis was accepted. This indicates that Saudi listed companies that have more female directors on their boards are more likely to voluntarily disclose risks.

Table 5.3

Regression Analysis

	VRD (M1)	VRD (M2)	VRD (M3)	VRD (M4)	VRD (M5)	VRD (M6)	VRD (M7)	VRD (M8)	VRD (M9)
BSIZE	0.0165	–	–	–	–	–	–	–	–
	(1.37)	–	–	–	–	–	–	–	–
AUDC	–	–0.0064	–	–	–	–	–	–	–
	–	(–0.99)	–	–	–	–	–	–	–
INDEP	–	–	–0.2112	–	–	–	–	–	–
	–	–	(–2.91)***	–	–	–	–	–	–
BQUAL	–	–	–	0.4021	–	–	–	–	–
	–	–	–	(4.39)***	–	–	–	–	–
GENDER	–	–	–	–	0.1158	–	–	–	–
	–	–	–	–	(2.00)**	–	–	–	–
FORO	–	–	–	–	–	–3.2840	–	–	–
	–	–	–	–	–	(–3.66)***	–	–	–
STAO	–	–	–	–	–	–	1.3277	–	–
	–	–	–	–	–	–	(5.37)***	–	–
FAMO	–	–	–	–	–	–	–	0.5154	–
	–	–	–	–	–	–	–	(1.56)	–
IFRS	–	–	–	–	–	–	–	–	0.2702
	–	–	–	–	–	–	–	–	(21.60)***
FSIZE	–0.0838	–0.0837	–0.0748	–0.0575	–0.0782	–0.0665	–0.0807	–0.0905	–0.0367
	(–2.17)**	(–2.12)**	(–1.92)*	(–1.45)	(–2.01)**	(–1.60)	(–2.06)**	(–2.30)**	(–1.29)
LEV	–0.0944	–0.0993	–0.0958	–0.0866	–0.096	–0.0974	–0.0914	–0.098	–0.0479
	(–2.42)**	(–2.51)**	(–2.52)**	(–2.40)**	(–2.53)**	(–2.43)**	(–2.29)**	(–2.59)***	(–2.51)**
Growth	0.0657	0.0662	0.0626	0.0605	0.0625	0.0650	0.0623	0.0631	0.0224
	(2.93)***	(2.89)***	(2.94)***	(2.62)***	(2.80)***	(2.91)***	(2.71)***	(2.81)***	–1.13
_cons	0.976	1.1487	1.1464	0.8078	1.0659	1.1216	0.9946	1.1466	0.5902
	(3.00)***	(3.67)***	(3.79)***	(2.54)**	(3.49)***	(3.49)***	(3.24)***	(3.75)***	(2.62)***
R2	0.5768	0.576	0.5815	0.5886	0.5786	0.5823	0.5873	0.577	0.7741
F	6.12	5.39	8.33	11.35	6.27	9.58	13	5.96	134.25
Prob > F	0.0001	0.0003	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000
N	648	648	648	648	648	648	648	648	648

Note: This table shows the regression results for the study variables; M1: illustrates the regression results between BSIZE and VRD; M2: illustrates the regression results between AUDC and VRD; M3: the regression results between INDEP and VRD; M4: the regression results between BQUAL and VRD; M5: the regression results between GENDER and VRD; M6: the regression results between FORO

and VRD; M7: the regression results between STAO and VRD; M8: the regression results between FAMO and VRD; M9: the regression results between IFRS and VRD.

5.4.1.2 Ownership Structure and Voluntary Risk Disclosure

***H6: Foreign Ownership and Voluntary Risk Disclosure*:** This hypothesis aimed to establish whether there was a relationship between foreign ownership and VRD in Saudi listed companies. Table 5.3 reveals that foreign ownership could statistically significantly predict VRD with a *P* value of 1%. The R^2 was 0.5823, which indicates that foreign ownership explained 58.2% of VRD. The analysis reported that there was a significant relationship between foreign ownership and VRD ($\beta = -3.3284$ and $p > 0.05$). In this case, it could indicate that foreign ownership negatively influences VRD. However, this relationship was negative and the hypothesis was rejected.

H7: State Ownership and Voluntary Risk Disclosure: This hypothesis aimed to confirm whether there was a relationship between state ownership and VRD in Saudi listed companies. As is depicted in Table 5.3, the regression analysis highlighted that state ownership could statistically significantly predict VRD with a *P* value of 1%. The R^2 was 0.5873, which indicates that state ownership explained 58.7% of VRD. The analysis indicated a significant relationship between state ownership and VRD ($\beta = 1.3276$ and $p < 0.05$). Thus, this hypothesis was supported and Saudi companies that are owned by the government have a higher level of VRD.

H8: Family Ownership and Voluntary Risk Disclosure: This hypothesis aimed to determine whether there was a negative relationship between family ownership and VRD in Saudi listed companies. Table 5.3 shows that regression model statistically significantly with a P value of 1%. The R^2 was 05770, which indicates that family ownership explained 57.7% of VRD. It is possible to explain this by the fact that VRD is not affected by family ownership. However, this hypothesis was rejected and the analysis confirmed that there was no significant relationship between family ownership and VRD ($\beta = 0.5154$ and $p > 0.05$).

5.4.2 International Financial Reporting Standards and Voluntary Risk Disclosure

H9: International Financial Reporting Standards and Voluntary Risk Disclosure: This hypothesis aimed to establish whether there was a significant relationship between the adoption of IFRS and VRD in Saudi listed companies. As is shown in Table 5.3, the regression analysis demonstrated that IFRS could statistically significantly predict VRD with a *P* value of 1%. The R^2 was 0.7741, which indicates that IFRS explained 77.4% of VRD. This implies that VRD is significantly improved after the adoption of IFRS. This hypothesis was accepted. The analysis strongly suggested that a significant relationship existed between IFRS and VRD ($\beta = 0.2701$ and $p < 0.05$).

5.4.3 Second Model of Thesis

5.4.3.1 Voluntary Risk Disclosure and Firm Value

In this section, the researcher examines the relationship between VRD, MTBV and ROA. Before evaluating the relationship between these variables, the researcher conducted a *T*-test of companies that had high levels of VRD and low levels of VRD and compared their means of MTBV and ROA.

Table 5.4

T-Test of High and Low Levels of Voluntary Risk Disclosure

	High VRD		Low VRD			
	Obs	Mean	Obs	Mean	Diff	*T*-stat
MTBV	346	0.8622	302	0.6552	0.2071	4.2705***
ROA	346	0.0710	302	0.0295	0.0415	5.8102***

Note: This table shows the differences in means among the high-level VRD firms and low-level VRD firms; the *T*-test = High VRD–Low VRD. The VRD variable was calculated as a dummy variable that represents High VRD and Low VRD according to the median of VRD;

High VRD equalled 1 when it was above the median of VRD companies and 0 when it was below the median of VRD, which represents Low VRD; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

For the purpose of comparing high- and low-level VRD firms, a dummy variable with 1 value if above the median of VRD companies, and 0 value if below the median of VRD companies, was used. The study sample consisted of 648 observations, which were organised as follows: 346 observations for High VRD companies and 302 observations for Low VRD companies. The *T*-statistic for MTBV and ROA were 4.2705*** and 5.8102***, respectively. This illustrates that companies that have high levels of VRD have more value of MTBV and ROA than low-level VRD companies. Meanwhile, the second group in the regression analysis was run to assess the relationship between VRD and firm value. To assess the hypotheses, the results of the regression analyses are explained in detail in the paragraphs that follow.

***H10: Voluntary Risk Disclosure and Market-to-Book Value*:** This hypothesis was devised to determine whether there was a positive relationship between VRD and MTBV in Saudi listed companies. As is shown in Table 5.5, the regression analysis suggested that VRD could statistically significantly predict MTBV with a *P* value of 1%. The R^2 was 0.6794, which indicates that VRD explained 67.9% of MTBV. A possible explanation for these results is that the MTBV of a company is positively influenced by VRD. This hypothesis was supported; thus, the analysis revealed that a significant relationship was evident between MTBV and VRD ($\beta = 0.5220$ and $p < 0.05$).

Table 5.5

Voluntary Risk Disclosure and Firm Value

	MTBV	ROA
	(1)	(2)
VRD	0.5220	0.1057
	(6.95)***	(8.35)***
FSIZE	–0.2078	0.0087
	(–2.58)**	(0.61)
LEV	0.1719	–0.0042
	(1.92)*	(–0.41)
Growth	0.0201	0.0296
	(0.46)	(2.96)***
_cons	2.1195	–0.0614
	(3.33)***	(–0.54)
R2	0.6794	0.6312
F	15.1	19.32
Prob > F	0.0000	0.0000
N	648	648

Note: This table presents the two regression models, including all the controls variables, that investigated the relationship between VRD, MTBV and ROA. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

H11: Voluntary Risk Disclosure and Return on Assets: This hypothesis was devised to determine whether there was a positive relationship between VRD and ROA in Saudi listed companies. According to the regression analysis, VRD could statistically significantly predict ROA with a *P* value of 1%. The R^2 was 0.6312, which means that VRD explained 63.1% of ROA. This indicates that the ROA of a company is positively influenced by VRD. This hypothesis was accepted. The analysis led to the finding of a significant relationship between VRD and ROA ($\beta = 0.1057$ and $p < 0.05$).

5.4.3.2 Robustness Test for Relationship Between Voluntary Risk Disclosure, Market-to-Book Value and Return on Assets

5.4.3.2.1 Fama–MacBeth's (1973) Two-Step Procedure

To test the robustness of the relationship between VRD, MTBV and ROA, the researcher applied Fama–MacBeth's (1973) two-step procedure.

The results that are shown in Table 5.6 illustrate that VRD was positively and significantly associated with MTBV and ROA ($\beta = 0.2894$ and $p < 0.05$). In addition, they reveal that VRD and ROA were related ($\beta = 0.0530$ and $p < 0.05$). Therefore, the relationship between VRD, MTBV and ROA was robust and consistent in Tables 5.5 and 5.6.

Table 5.6

Fama–MacBeth (1973) Two-Step Procedure

	MTBV	ROA
	(1)	(2)
	–	–
VRD	0.2894	0.0530
	(2.99)**	(15.39)***
FSIZE	–0.1147	0.013
	(–6.85)***	(4.37)***
LEV	0.4467	–0.093
	(3.22)**	(–4.95)***
Growth	0.0881	0.0351
	(1.22)	(1.98)
Year	YES	YES
R^2	0.1367	0.165
N	648	648

Note: This table shows the results of the Fama–MacBeth (1973) two-step procedure model to investigate the relationship between VRD, MTBV and ROA, including all the control variables; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5.4.3.3 Endogeneity

5.4.3.3.1 Reverse Causality

To conduct this test, the researcher chose companies that had reported two consecutive years of unchanged VRD percentages. The researcher did this to control for any endogeneity problems. The unchanged VRD percentages of two consecutive years were unlikely to have a reverse impact.

The results reported previously indicate that VRD was positively and significantly associated with MTBV and ROA. The firm fixed effect was applied in these regressions. It is evident that VRD and MTBV were positively related ($\beta = 0.6151$ and $p < 0.05$). Moreover, Table 5.7 illustrates that VRD and ROA were related ($\beta = 0.0707$ and $p < 0.05$). In addition, the relationship between VRD, MTBV and ROA was robust and consistent with that presented in Table 5.5.

Table 5.7

Reverse Causality

	MTBV	ROA
	(1)	(2)
	–	–
VRD	0.6151	0.0707
	(5.16)***	(3.31)***
FSIZE	–0.3429	0.0079
	(–2.70)***	(0.30)
LEV	0.113	–0.0076
	(2.51)**	(–0.89)
Growth	0.0541	0.052
	(0.87)	(2.72)***
_cons	3.1896	–0.0403
	(3.17)***	(–0.19)
R2	0.7404	0.632
N	357	357

Note. This table illustrates the relationship between VRD, MTBV and ROA, including all the control variables; the researcher chose companies that had unchanged VRD percentages across two consecutive years; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5.4.3.3.2 Instrumental Approach

The researcher applied an instrumental variable to deal with endogeneity problems. This used the average of the company industry. The industry in which a firm operates may enhance its VRD. Thus, the VRD instrumental variable was used in the first stage. As a part of the second stage, the researcher used predicted values of the VRD instrumental variable for estimating the regressions.

Table 5.8 in the first stage illustrates that VRD according to industry was positively and significantly associated with VRD ($\beta = 0.9334$ and $p < 0.05$). However, in terms of the second stage, predicted VRD was positively and significantly associated with MTBV and ROA. The results confirm that predicted VRD and MTBV were positively related

(β = 0.4974 and $p < 0.05$). Moreover, Table 5.8 illustrates that predicted VRD and ROA were related (β = 0.1051 and $p < 0.05$). Table 13 shows that the relationship between VRD, MTBV and ROA was robust and consistent with Table 5.5.

Table 5.8

2SLS

	MTBV	ROA	VRD
	Second Stage		First Stage
Predicted VRD	0.4974	0.1051	–
	(2.47)**	(3.44)***	–
VRD_Industry	–	–	0.9334
	–	–	(10.39)***
Control variables	YES	YES	YES
R^2	0.1905	0.0582	0.9627
N	648	648	648

Note: This table shows the relationship between VRD, MTBV and ROA using 2SLS; the control variables FSIZE, LEV and Growth were included; the dependent variables in the second stage were MTBV and ROA; the instrumental variable was calculated as the mean of VRD across the industries. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5.4.3.3.3 Propensity Score Matching

The researcher used PSM analysis to compare MTBV and ROA between two groups of companies. In the analysis, the VRD variable was calculated as a dummy variable that equalled 1 when it was above the median of VRD companies, which represented a high level of VRD, and 0 otherwise, which represented a low level of VRD. The first group was the treatment group, which comprised companies that had a high level of VRD. The second group was the control group and this included companies that had a low level of VRD. This analysis was implemented by selecting matching samples of the control variables and

checking that there were no significant differences between them. This method makes it possible to compare the treatment and control firms along all the observable dimensions.

A comparison of the means of the treatment and control firms is shown in Panel A of Table 5.9 using all the control variables. In terms of the PSM analysis, the researcher created a dummy variable from VRD that equalled 1 when a firm's level of VRD was above the median of VRD companies and 0 when it was below. After this, the matching samples were selected using the study of control variables. Accordingly, the matching sample of the treatment group, consisting of companies that had a high level of VRD, was 77, whereas the matching sample of the control group (companies that had a low level of VRD) amounted to 77. Revealed here is a higher mean for MTBV and a higher mean for ROA in the treatment group. In Panel B of Table 5.9, the researcher executed the PSM regression analysis using the matching samples shown in Panel A. This had an observation of 154, which is the combined observations of the treatment and control groups. Firm fixed effects were included. From the results, it emerges that MTBV and VRD were positively and significantly associated ($\beta = 0.6832$ and $p < 0.05$). Furthermore, the results indicate that ROA and VRD were positively and significantly associated ($\beta = 0.0844$ and $p < 0.05$). The relationship between VRD, MTBV and ROA in Panel B of Table 14 was robust and consistent with Table 5.5.

Table 5.9

PSM Analysis

Panel A				
Variable	N	Treatment	N	Control
MTBV	77	0.87521	77	0.63231
ROA	77	0.06576	77	0.02438
FSIZE	77	7.7058	77	7.8050
LEV	77	0.39235	77	0.46265
Growth	77	0.11531	77	0.15317
Panel B				
		MTBV		ROA
VRD	–	0.6832	–	0.0844
	–	(4.05)***	–	(3.25)***
Control variables	–	Yes	–	Yes
R^2	–	0.6500	–	0.5533
N	–	154	–	154

Note. Panel A shows the differences between the treatment and controls firms; the treatment group firms had a high level of VRD and the controls firms had a low level of VRD; Panel B presents the PSM regression analysis; the control variables FSIZE, LEV and Growth were included; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5.5 Chapter Summary

This chapter explored the extent to which risk-related information was disclosed in the annual reports of Saudi listed companies from 2013 to 2021. It presented the empirical analysis outcomes from investigating the relationship between board composition, ownership structure and IFRS and how this related to the voluntary disclosure of risk. The results of the descriptive analysis revealed that the level of VRD in the annual reports was quite low (0.42), ranging from 0 to 1. Further, the results of the hypotheses testing were reported. The regression analyses revealed that VRD was positively and significantly associated with board members' qualifications, gender diversity, state ownership and IFRS.

It also revealed that the extent of risk disclosure subsequently influences firm value. These findings are discussed in relation to the existing literature in more detail in the next chapter.

Chapter 6: Findings Discussion

6.1 Introduction

This chapter explains the influences of CG and IFRS on the VRD practices of the KSA's listed companies. It also discusses the impact of VRD on the value of a firm. A discussion of the hypotheses and research questions is presented. This chapter provides a theoretical explanation for the empirical results. Further, it compares the current findings with the relevant literature.

6.2 Board Composition and Voluntary Risk Disclosure Practices

The first factor was that board composition might have a relationship with the VRD practices undertaken by Saudi listed companies. This section discusses the findings of the regression analysis in relation to the relevant existing literature.

6.2.1 Association Between Board Size and Voluntary Risk Disclosure Practices

A large board size is frequently described as a compelling factor for elevating transparency in corporation decisions (Bravo, 2018), a significant source of diversified expertise (Samaha et al., 2015) and a powerful means for improving the board's control over business operations and activities. Consequently, a large board size could increase the number of non-financial information disclosures significantly. Agency theory emphasises the influential role that board size could play in determining the board's functionality, specifically, in terms of its supervision and advisory functions. It was postulated in this thesis that the size of the boards of directors in Saudi listed companies plays a substantial role in VRD practices. The result was an insignificant relationship between them in our sample. Saudi companies that have larger boards are not necessarily likely to support a higher level of voluntary disclosure practices. Interestingly, this finding is not in line with

agency theory, which postulates that more directors could help to mitigate the conflict between managers and owners (Elshandidy & Neri, 2015; Ntim et al., 2013). It also contradicts other research findings, which have reported that large boards of directors are better at VRD than smaller boards. For example, W. M. Al-Bassam et al. (2018), Alkurdi et al. (2019) and Elshandidy and Neri (2015) advocated the significance of retaining a large board of directors when it comes to dealing with VRD. However, Cheng and Courtenay (2006) found no significant relationship between voluntary disclosure and board size.

6.2.2 Association Between Audit Committee Meetings and Voluntary Risk Disclosure

It was postulated in this thesis that more frequent audit committee meetings should mean a higher level of VRD from Saudi companies. Agency theory points to the frequency of board meetings as a significant indicator of a board's dynamics. There was, according to our analysis, no significant relationship between audit committee meetings and VRD. However, agency theory assumes that when such meetings occur regularly, there is a higher likelihood of VRD. Meanwhile, the regression analysis revealed that audit committee meetings had an insignificant impact on the level of risk information that was disclosed by Saudi companies. Companies that meet more frequently to review audited financial records are not likely to voluntarily report more risk-related information. This finding is consistent with some studies that have found no relationship with these two variables (e.g. Allegrini & Greco, 2013; Cheng & Courtenay, 2006; Ha, 2022). However, it does align with the results documented by Abdullah et al. (2017), Al-Shammari and Al-Sultan (2010) and Carmona et al. (2016), who highlighted that the more companies are committed to holding audit committee meetings, the better the related VRD.

6.2.3 Association Between Independent Directors and Voluntary Risk Disclosure

In terms of the independence of board directors, it was postulated that more independent directors could lead to more VRD by Saudi companies. However, the regression analysis revealed that the number of independent directors had a statistically significant impact on the level of VRD by these businesses, the impact was negative. Therefore, when the number of independent directors on a board increases, it results in less VRD. This outcome contradicts some of the existing literature that has reported a significant and positive relationship between independent directors and VRD (Alkurdi et al., 2019; Adelopo et al., 2021; Raimo et al., 2022). However, the outcome of this analysis is consistent with the findings of Abdullah et al. (2017), who reported that there is an insignificant connection between director autonomy and VRD.

6.2.4 Association Between Qualifications of Board Directors and Voluntary Risk Disclosure

Agency theory suggests that educational background could affect managers' ability to accomplish planned outcomes (Prabowo et al., 2017). Managers that have accounting and finance qualifications are more likely to disclose risk than those from other disciplines (Allini et al., 2016). However, it was hypothesised that Saudi companies that have more directors that have accounting or financial qualifications would disclose more risk. The results revealed a strong and positive relationship between qualified accounting or finance professionals and VRD. The regression analysis revealed that qualifications exert a positive and significant effect on VRD. Saudi listed companies that employ more board members that have accounting or finance qualifications tend to engage in more VRD. This finding provides strong evidence for the link between directors' qualifications and VRD practices. It is essential for a board to have a balanced composition to improve the board's decision-

making capacity and the willingness of its members to improve risk disclosure and to reduce or remove information asymmetry. This result is consistent with that of Ho and Wong (2001), who reported that qualified board directors might be aware of the importance of disclosing risk-related information and report it to stakeholders. However, the thesis findings are different to those of Allini et al. (2016) and Prabowo et al. (2017).

6.2.5 Association Between Gender Diversity and Voluntary Risk Disclosure

Female representatives on a board of directors were assumed to influence the level of VRD by Saudi companies. The findings of the regression analysis supported this hypothesis. Companies that have more women on the board have a greater likelihood of voluntarily disclosing risks. According to agency theory, gender diversity could improve a board's function of supervising business activities (Marquardt & Wiedman, 2016) where, frequently, female representation is associated with distinctive monitoring functions and active participation in various board committees (Aladwey et al., 2022). Although agency theory does not specify female participation as a driver for transparency and increased risk disclosure, there is an evident correlation between gender diversity and adopting a positive attitude towards risk disclosure (Yasser et al., 2017). This thesis outcome supports other findings that female directors have been proven to be better decision-makers (Allini et al., 2014) and have a positive impact on risk disclosure. Allini et al. (2016) found that boards that have female members are more likely to engage in risk disclosure than men-only boards. Further, Raimo et al. (2022) found that board gender diversity is positively and significantly associated with risk disclosure. However, this outcome is inconsistent with some other studies, such as that conducted by Abdullah et al. (2017).

6.3 Ownership Structure and Voluntary Risk Disclosure

The second factor that was of interest in this research study was that ownership structure might have a relationship with the VRD practices of Saudi listed companies. Three ownership structures were investigated. This section discusses the findings of the regression analyses in relation to the existing literature.

6.3.1 Association Between Foreign Ownership and Voluntary Risk Disclosure

In Saudi Arabia, many foreign companies operate in various sectors of the economy. It was hypothesised that such companies might have more VRD practices. The outcomes of the regression analysis indicated that there was a significant but negative relationship between the foreign ownership structure and VRD. Agency theory suggests that firms in a diffused ownership environment are more likely to disclose extra information to minimise agency costs. In general, it has been found that foreign investors exert pressure and demand more risk disclosure to reduce information asymmetry (Onoja & Agada, 2015). However, for Saudi listed companies, this impact was negative. This means that Saudi listed companies that are owned by foreigners may have a lower level of VRD. However, these negative results are not only the case in Saudi Arabia. An interesting study by Laidroo (2009) found a negative and significant relationship between corporation voluntary disclosure and foreign ownership. Laidroo (2009) mentioned that there is potential for the disclosure of information to be reduced if there is a significant concentration of shares among one shareholder. Further, a study by Supriyanto and Resnika (2023) concluded that foreign ownership negatively affected voluntary disclosure.

Therefore, if a particular ownership form, such as foreign ownership, is the sole significant holder, then VRD may decrease. Further, another interesting study that was conducted in Nigeria by Adelopo (2011) found an insignificant and negative relationship between corporation voluntary disclosure and foreign ownership. However, this thesis' result does not agree with some empirical studies that have detected a positive correlation between risk disclosure and foreign ownership (Abraham & Cox, 2007; Reeb et al., 1998; Makhlouf and Al-Ghosheh., 2022). In their research, Tan et al. (2017) discovered that disclosed risk information is more evident in international companies.

6.3.2 Association Between State Ownership and Voluntary Risk Disclosure

It was very important to investigate the impact of state or government ownership on the VRD practices of Saudi listed companies. VRD practices enhance the transparency and integrity of state-run businesses. State ownership implies that a government owns the business or possesses the majority of its shares; thus, it directs the business operations. Consequently, state-owned companies are likely to actively participate in VRD to respond to government directions on releasing more risk-related information or to demonstrate their reliability and commitment to the public (Ghazali & Weetman, 2006). The regression analysis revealed a positive and significant impact of state ownership on VRD practices and these types of organisations typically engage in a higher level of risk disclosure. This result is consistent with the expectations of the study, which was that government ownership is likely to improve the level of risk disclosure. The Saudi government promotes good governance, social responsibility, transparency and disclosure practices by all companies that operate in the country to increase local and international investment. It echoes the findings of many studies that have found a positive association between the two variables (Eng & Mak, 2003; Ntim et al., 2013). However, this finding differs from that of Ghazali

and Weetman (2006), who found a negative relationship between government ownership and the extent of voluntary disclosure.

6.3.3 Association Between Family Ownership and Voluntary Risk Disclosure

In terms of family ownership, it was postulated that there is a positive relationship between foreign ownership and the VRD practices of Saudi Arabian listed companies. The results indicate that the impact of family ownership on VRD practices was not significant. This is because family businesses are less likely to voluntarily report risk-related information (Liu & Taylor, 2008). This outcome is consistent with some prior empirical studies, including that by Lagasio and Cucari (2019), who did not find any significant relationship between family ownership and VRD. This could be justified by the notion that insider ownership may be linked to board members and executive managers who may have full access to all the information that they need so they do not have any incentive to increase the level of risk disclosure (Haddad et al., 2015). However, this result is inconsistent with other findings. For example, Bansal et al. (2018) found that family ownership encourages disclosure, especially about corporation social responsibility. In addition, Haddad et al. (2015) found a significant impact of family membership on the level of voluntary disclosure. Further, Makhlouf and Al-Ghosheh (2022) found that family ownership negatively impacted risk disclosure.

6.4 International Financial Reporting Standards and Voluntary Risk Disclosure

The third factor of interest was that the adoption of IFRS might be linked to the VRD practices of Saudi listed companies. This section discusses the findings of the regression analysis with reference to the relevant literature on risk disclosure, which

confirms that IFRS can, conditionally, stimulate VRD when a fluctuating relationship exists between financial risk disclosure that is mandated by IFRS and VRD in which the correlation between the two variables is positive up to a specific point before it turns to a negative correlation, where VRD decreases with the expansion in mandatory disclosure (Onoja, 2014). One of the main objectives of adopting IFRS for Saudi companies is to improve the accuracy of financial and non-financial reporting. A larger number of Saudi listed companies employed more VRD practices after IFRS became law.

As was hypothesised, the findings indicate a significant and positive impact of IFRS on the VRD level of Saudi firms. After the adoption of IFRS, Saudi listed companies provided a higher level of VRD. This finding is in line with prior studies that have revealed that accounting standards, including IFRS, can encourage companies to voluntarily disclose more information. It echoes the work of Onoja and Agada (2015), who reported that there is a significant relationship between risk disclosure and IFRS. In addition, Nahar et al. (2016) reported a significant impact of IFRS adoption on risk disclosure.

6.5 Voluntary Risk Disclosure and Firm Value

The fourth factor that was studied concerned how or if VRD practices have a relationship with Saudi companies' firm value. To analyse the relationship between VRD practices and firm value, linear regression analyses were conducted. Given that firm value was measured using two approaches, the first analysis assessed the relationship between VRD practices and MTBV. Meanwhile, the second method analysed the relationship between VRD practices and ROA.

6.5.1 Association Between Voluntary Risk Disclosure and Market-to-Book Value

The analysis revealed a positive and significant relationship between VRD practices and MTBV. More VRD practices result in a higher market value for companies. This is consistent with signalling theory, which postulates that when a company performs well, its directors are more likely to signal this performance to their stakeholders by voluntarily reporting more information. This finding also aligns with voluntary disclosure theory, which predicts that companies may be incentivised to voluntarily disclose more information to increase the confidence of stakeholders, specifically, investors (Hummel & Schlick, 2016). The purpose of doing this is to develop a good market reputation and to increase a firm's value (Linsley et al., 2006). This outcome agrees with those of Al-Akra and Ali (2012), Uyar and Kılıç (2012) and Jorgensen and Kirschenheiter (2003), who reported that voluntary disclosure greatly benefits firm value. However, other studies have disputed this and have found only insignificant relationships (Bokpin, 2013; Z. Wang et al., 2013).

6.5.2 Association Between Voluntary Risk Disclosure and Return on Assets

In terms of the link between VRD practices and ROA, the outcomes of this analysis highlighted a positive and significant relationship between those two variables. The higher the level of VRD practices, the higher the ROA for the affected companies. This result is consistent with voluntary disclosure theory, which assumes that directors report better performance trends to disclose more information for various stakeholders (Hummel & Schlick, 2016), and signalling theory, which proposes that highly profitable companies send signals of their good or high quality to investors (Hummel & Schlick, 2016). Other studies have agreed with this assumption. For example, Botosan and Plumlee (2002) found that increased levels of disclosure positively help a company's profitability. This is because shareholders greatly value the information that is disclosed in annual reports because they

rely on such information to make good investment decisions. The annual report has greater value relevance for investors when it contains more accurate and complete information. According to Gallego-Álvarezet al. (2010), disclosure positively impacts dividends and value creation for shareholders.

6.6 Chapter Summary

This chapter explained the influence of CG and IFRS on VRD practices in the KSA's listed companies. Further, it discussed the impact of VRD on a firm's value. A discussion of the hypotheses and research questions was provided, as well as an explanation of the acceptance or rejection of each hypothesis. This chapter provided a theoretical explanation for the empirical results. Then, it related the research findings to the relevant literature. Furthermore, this chapter provided an explanation for some unexpected results and a rationale for those results using the literature.

Chapter 7: Conclusion

7.1 Introduction

This chapter is the result of the research effort. It provides a summary and frame of the knowledge gained during the extensive research process and any results or conclusions reached. Accordingly, this chapter summarises the study's purpose and methodology as well as the theoretical framework and critical findings from the literature review that contributed to producing the research hypotheses and conceptual model. Further, this chapter introduces the key results from the regression analysis, the regulation and managerial implications, the study's contributions to the literature on risk disclosure, the research limitations and suggestions for further research.

7.2 Research Overview

Increasingly, risk disclosure has attracted the attention of business management scholars and practitioners as a crucial business practice that can support the maintaining of corporations' resilience to the severe, successive and restless global market changes, particularly following the dramatic implications of the GFC in 2008. There is an abundance of literature on corporation risk management that addresses risk disclosure. It differentiates between two main risk disclosure types: mandatory risk disclosure, which obliges corporations to report their financial performance indicators, such as profits, outlays, losses and other financial-related risks (Bhasin et al., 2012; Elshandidy et al., 2015), and VRD, which is concerned with revealing information about other non-financial risks, such as strategic, operational, technological and organisational risks (Cordazzo et al., 2017). In this vein, Noh et al. (2019) argued that there is a complementary relationship between mandatory and VRD in which a disciplined 'mandatory disclosure' is likely to increase the

credibility and efficacy of 'voluntary disclosure', which supports executives in making informed directions and decisions. However, the voluntary disclosure of pertinent information could maximise capitalisation of financial reports, increase their effectiveness, help to precisely interpret economic indicators and eliminate information asymmetries (Elshandidy & Neri, 2015; Solomon et al., 2000).

Driven by the heightened financial risk that is associated with increased globalisation and the hectic transition to digitalisation, the expected advantages of voluntary disclosure reports as a powerful instrument of risk identification and management have stimulated investors, shareholders, regulators and other stakeholders to put increased pressure on corporations to voluntarily disclose additional non-financial information. Shareholders aim to improve financial risk management through supplementary non-financial information and to diminish uncertainty when making investment decisions (Brown et al., 2011; Cordazzo et al., 2017). In this vein, Salem et al. (2019) argued that VRD is a crucial corporation practice to respond to pressure from stakeholders about revealing risk-related information, which assists stakeholders in precisely evaluating a corporation's risk profile and market value. Moreover, it is an effective technique for increasing a firm's value by enhancing its corporate image, demonstrating its credibility and strengthening its public relations by demonstrating its perceptiveness of mutually beneficial relationships with other market players and a keenness to achieve public benefits (Rodríguez & LeMaster, 2007). Chung et al. (2015) confirmed that intact CG frameworks are significant drivers for constructive disclosure practices and for releasing a sufficient volume of accurate and non-confidential information, which usually leads to an increase in a corporation's market value, expanding its market share (Plumlee et al., 2015).

Given the perceived importance of VRD for supporting effective corporation risk management procedures and outcomes and producing informed investment and financial decisions, defining the factors that influence the tendency to adopt VRD practices among organisations was essential. Accordingly, the study strove to determine these factors and their impact on corporations' VRD behaviour. Reviewing the literature on VRD revealed that the degree of embracing VRD within an organisation significantly correlates with its existing CG tools and structure (Elshandidy & Neri, 2015; Ntim et al., 2013). Adequately-governed corporate systems and operations are more likely to produce disciplined annual reports that have a substantial amount of information, including risk indicators or identified risks (Soleimani et al., 2014). Typically, sufficient CG mechanisms elevate transparency within business operations, procedures and decisions (N. Shehata, 2013) and positively influence the disclosure of risk-related information in corporation annual reports (Elshandidy & Neri, 2015). However, the absence of disciplined CG mechanisms could enable multiple integrity-related and dishonesty issues, leading to financial crises and, eventually, business collapse (Hebb, 2006; Peters & Bagshaw, 2014).

The significance of CG for promoting VRD made it vital to understand the factors that could affect the establishment of a supportive CG regime, which highlights CG structures, configurations and characteristics as critical factors that could influence the discipline and adequacy of CG in an organisation and, consequently, affect the degree to which this organisation adopts VRD. In this vein, Mnif and Znazen (2020) argued that factors such as a company's ownership type and structure and the configuration and power of a company's board (i.e. board size, board members' expertise and gender diversity, frequency of audit committee meetings and board independence) could significantly affect the corporation's adoption and commitment to voluntary disclosures. Many studies have

confirmed a degree of correlation between these factors and promoting VRD practices. For example, pointing to a firm's ownership type and board structure, Al-Hadi et al. (2016) confirmed that family-owned companies, in which the company's board typically incorporates a high level of representation of family members, are inclined to disclose more risk-related information, particularly during financial hardships and crises. Al-Maghzom, (2016) affirmed that the type of company ownership, frequency of audit committee meetings, board size and predominant gender in a board's composition are critical variables that significantly affect the degree of risk disclosure. At the same time, Allini et al. (2016) emphasised the seniority and experience of board members and the high level of representation of females as crucial drivers of risk disclosure.

Accounting standards, including IFRS, could also be significant drivers of VRD. In this vein, Mnif and Znazen (2020) suggested that adopting IFRS typically leads to more frequent and superior financial disclosure practices and outcomes. Studies that have addressed the influence of adopting IFRS on risk disclosure practices confirmed its advantages in increasing risk disclosure frequency (Iatridis, 2011) and the quality of corporations' annual reports (Bischof, 2009) and in attracting investors who rely on the information that is obtained from corporations' voluntary disclosures to make informed investment decisions (X. Li & Yang, 2016).

This study examined the influence of board composition, ownership structure and IFRS on VRD practices in the KSA's listed companies. It also examined the impact of VRD on a firm's value.

7.2.1 Corporate Governance and Risk Disclosure Practices in Saudi Arabia

Investigating the current status of financial and non-financial information and risk disclosure in Saudi Arabia revealed that financial reporting, auditing and financial

information disclosure practices are relatively deficient. The comprehensive economic reforms of the Saudi government increased focus on CG after a long period of neglect led to many issues in corporations' reporting and full disclosure and significant defects in financial reporting practices (Al-Janadi et al., 2016; Hussainey & Al-Nodel, 2008). Since the 'disclosure and transparency' criterion was set in 1985, the Saudi authorities have increasingly paid more attention to disclosure issues. Accordingly, the Saudi government established the CMA in 2003 to improve and reinforce CG regulations in the Kingdom. A government revision of the CG regulations was made possible by the Tadawul Listing Regulations, passed in 2004. These regulations have been acknowledged and applied by the CG Index, which assesses compliance with the corporate standards set by the government. The 15 items in Section 6 of the Listing Rules, titled 'Continuing Obligations', cover various topics, including the integrity of firms' yearly reports and minimising the negative consequences of asymmetrical information (Tadawul, 2017).

Moreover, exploring the existing laws and regulations that drive CG and disclosure practices in Saudi Arabia revealed that the SCGC, Capital Market Law and Listing Rules are the leading origins of CG policies and procedures; these legislative resources strongly emphasise the value of transparency and disciplined disclosure activities. For example, the CMA's Capital Market Law obligates Saudi corporations to include the necessary information to enable investors and their advisers to make informed investment decisions in their prospectuses. The standards that were developed by the authority mandate the disclosure of critical financial information, such as financial status, audited financial balance sheet, profit and loss account and cash flow statement, non-financial information, such as the size of the corporation's board, and transparency and disclosure policies.

Similarly, the Listing Rules regulation addresses disclosure from an organisational lens and considers timing, forms and means of disclosure and examines quality.

Further, it was discernible that CG regulations and practices in Saudi Arabia have evolved tremendously to help to achieve the ambitious economic objectives of Saudi Vision 2030. Using the directions of the Saudi government and the Ministry of Commerce, the CMA 2017 conducted changes and revised the CG regulations to promote transparency, accountability and stewardship of the capital invested in the Saudi market. Eventually, it introduced a new framework of the SRCG (H. M. Ali, 2019; Al-Janadi et al., 2013). In accordance with the requirements of the capital market and companies laws, the SRCG 2017 framework mandates that companies report updated, factual and precise information to various stakeholders. The framework provides guidelines on forming boards and committees that are required to facilitate the surveillance role of the board. Further, it obligates the board to follow information disclosure standards, tailor internal policies and procedures to guide the information disclosure process and publish financial and non-financial information reports on the corporation's official website.

In terms of the commitment of Saudi corporations to disclosure practices, it can be claimed that despite the Saudi government's efforts to promote risk disclosure practices, the large scale of the Saudi economy and the availability of reasonable CG rules and guidelines, corporations' disclosure practices in the Saudi economic sector are deemed to be insufficient compared with other developed economies and even some developing economies in Arab countries. The case for VRD is even worst. The probability that Saudi corporations would voluntarily disclose information about their business operations, associated risks and any other possible negative effects on the Saudi economy is considerably low (Habbash et al., 2016). Corporation ownership type is a significant

determinant factor of Saudi corporations' tendency to adopt disclosure practices in general and VRD in particular. Although Saudi firms that are owned by the government and members of the royal family are likely to voluntarily disclose more information on business operations-related risks, institutional and family ownership of firms negatively influences disclosure practices in these corporations, leading to a low level of VRD (O. S. Habtoor & Ahmad, 2017).

7.2.2 Key Findings From Literature Review

The aim of the literature review was to develop the researcher's understanding of the phenomenon being studied (VRD), its importance, the factors that could influence the degree to which corporations could adopt VRD and its economic implications. Another aim was to create a theoretical research framework, which was employed to develop the research hypotheses, guide the data analysis and understand and interpret the findings. Key findings from the literature review confirmed that VRD practices could play a significant complementary role in emphasising and enhancing the outcomes of mandatory disclosure practices. The literature on business management, CG and risk disclosure highlighted many advantages of adopting VRD practices, such as improving transparency and decreasing information asymmetry between internal and external corporation stakeholders (Kang & Gray, 2019), allowing managers a higher level of information disclosure flexibility (Cheung et al., 2010), enabling informed investment decision-making and minimising the misleading of investors (Cabedo & Tirado, 2004; Onoja & Agada, 2015).

Moreover, the additionally released information through voluntary disclosure could help to reduce capital costs, increase investor trust and improve the marketability of shares (Bravo, 2017; Elshandidy et al., 2013). Further, transparent voluntary disclosure enhances stakeholders' confidence in a company's management approach, reduces the perceived risk,

enables better estimation of a company's forthcoming performance and minimises the probability of financial failure (Onoja & Agada, 2015). Despite the wide range of risk-related information that could be included in VRD, the literature emphasised the importance of information that addresses risk within critical business areas, such as compliance, operational, reputational, strategic, technological, commodity and sustainability risks (Alkurdi et al., 2019; Linsley et al., 2006; Oliveira et al., 2011c). It is worth noting that this study employed these types of risks to measure the VRD variable in the research model. Reviewing the literature on risk disclosure underlined three main interrelated drivers of voluntary disclosure: the composition of a company's board, a company's ownership type and the degree of adoption of IFRS. These drivers were the fundamental pillars of the conceptual research framework.

In terms of board composition, the findings confirmed that boards have the power to drive, assess and reform a company's business operations to respond to associated risks (Elshandidy et al., 2013), develop ambitious management strategies and frameworks to successfully navigate the company through the competitive market environment (Lim et al., 2007) and oversee the implementation of strategies, policies and procedures (Linsley & Shrives, 2005). Therefore, it is the responsibility of corporate boards to identify any potential risks, develop measures and plan for risk mitigation and report potential risks (O. S. Habtoor & Ahmad, 2017). Consequently, the composition of corporate boards could determine the corporation's orientation of risk handling and VRD to external stakeholders and the level of information that companies disclose in their annual reports (Bravo, 2017; M. Wang & Hussainey, 2013). Deciding whether to voluntarily disclose certain information is likely to be influenced by several board attributes (Allini et al., 2016; Chung et al., 2015; Jaggi et al., 2018). Factors such as board size, board members' expertise and gender

diversity, frequency of audit committee meetings and board independence have been found to have significant effects on a company's VRD practices (Al-Hadi et al., 2016; Allini et al., 2016; Al-Maghzom, 2016). Accordingly, this study focused on five factors: board size, independent board directors, audit committee meetings, directors' qualifications and gender diversity. These five attributes are among the key variables that could influence a board's overall effectiveness and tendency to support VRD (M. Wang & Hussainey, 2013).

Moreover, the literature review revealed that corporation ownership type significantly affects the composition of a corporate board, indirectly influencing VRD practices (Al-Hadi et al., 2016). There is an evident relationship between corporation ownership structure and VRD (Alnabsha et al., 2018; Bansal et al., 2018; Ghazali & Weetman, 2006; Habtoor et al., 2019). Typically, the corporation ownership structure dictates specific disclosure policies and is considered a determinant factor of the volume and quality of the information that is included in annual reports (Habtoor et al., 2019). Given the predominant corporation ownership structures in Saudi Arabia, three types of ownership were investigated in the literature review: foreign ownership, state ownership and family ownership. State ownership demonstrated a degree of superiority in driving robust disclosure practices to other ownership types.

In terms of accounting standards, it was found that accounting standards, including IFRS 7, significantly affect risk disclosure practices. These standards require a firm to disclose qualitative and quantitative information about the risks associated with financial instruments (Bischof, 2009; Kravet & Muslu, 2011). Quantitative risk disclosure refers to reporting financial-related information, such as credit risk, liquidity risk, market risk and their concentrations, whereas qualitative risk disclosure addresses the risks associated with financial management procedures (e.g. objectives and policies), describes the consequences

and severity of risk exposure for each financial instrument type and defines the changes that occurred (Cordazzo et al., 2017). Accounting standards, including IFRS, can stimulate companies to voluntarily disclose more information and usually positively affect VRD (Almeida & Rodrigues, 2017; Hellman et al., 2018). However, a significant, non-monotonic interaction stands between the mandatory risk disclosure that is stipulated under IFRS and VRD, which creates a conditional positive relationship between mandatory and VRD to a specific threshold, beyond which the extent of VRD declines with the increase of mandatory risk disclosure (Onoja, 2014). Further, high levels of uncertainty and perceived risk could lead to a negative interaction between mandatory and VRD within IFRS (Servaes & Tufano, 2006).

7.2.3 Theoretical Framework

Reviewing the literature yielded valuable information about theories, concepts and models that are relevant to the research topic and which significantly assisted in building the theoretical research framework. It was evident that prior studies on risk disclosure have employed diverse behavioural and economic theories to examine and understand the factors that drive the orientation and conduct of voluntary corporation disclosure (Healy & Palepu, 2001; Linsley & Shrives, 2005). Accordingly, agency, signalling and voluntary disclosure theories were selected to lead the research efforts, including the data collection and analysis. This selection is justified in the paragraphs that follow:

Agency theory is frequently used and can be considered the common denominator of the theoretical frameworks in most studies on financial and non-financial risk disclosure and CG practices (e.g. Buckby et al., 2015; Elshandidy & Neri, 2015; Saggar & Singh, 2017). Agency theory was explained thoroughly in Chapter 3 (see Section 3.3.1). However, it is worth mentioning that the selection of agency theory was because of its obligatory

dimension for risk disclosure as a base of the relationship between a principal and agent and its effectiveness in interpreting the agency cost phenomenon. It defines the relationship between shareholders (principal) and corporation management (agent) as an agency relationship. The principal delegates authority to the agent, aiming for better corporation financial performance, obligating the agent to create accurate financial reports and to disclose risk-related information; thus, the principal can evaluate the overall business performance and make informed investment decisions (Bosse & Phillips, 2016; Darussamin et al., 2018; Uyar et al., 2013). Furthermore, agency theory addresses another significant dimension, specifically, agency cost, which typically arises because of a conflict of interest between the principal and agent, leading to information asymmetry between them (Abraham & Cox, 2007; Foerster et al., 2014; Solomon et al., 2000). These dimensions of agency theory assisted in interpreting corporation disclosure behaviours and defining the triggers of agency costs to eliminate them.

However, signalling theory, discussed in Chapter 3 (see Section 3.3.2), seeks to justify corporation's voluntary disclosure behaviour in which companies are driven by external stakeholders' need to obtain information from reliable sources about the company's previous, current and future financial positions to make informed investment decisions. Signalling theory lies within the broader scope of agency theory. However, it focuses on management's intention to share information and to send and receive signals from the market, stakeholders and wider society, pre-contractual information problems (i.e. hidden information) and factors that could affect the credibility of signals and lead to information asymmetries, such as conflicts of interest between agents and principals and management inefficiencies (Bae et al., 2018; Basoglu & Hess, 2014). According to signalling theory, corporation management is motivated to voluntarily reveal additional

information by the expected positive outcomes of this practice in which accurate and reliable VRD sends a reassuring signal from the agent to the principal, showcases the outstanding business performance, emphasises the agent's ability to handle perceived risks and justifies the reasons for high risks (Abraham & Cox, 2007; Agyei-Mensah & Buertey, 2019; Linsley et al., 2006).

Exploring signalling theory reveals its motivational role for voluntary disclosure within the agency relationship stated in agency theory. Corporate management could employ financial and non-financial reports to convey positive signals on their orientations and expectations to investors, increasing their confidence and improving the value and position of the business. Moreover, signalling theory can explain the impact of factors such as board composition (e.g. size, diversity and independence), ownership structure and embracing accounting standards (e.g. IFRS) on the effectiveness of corporations' management decisions and their tendency to adopt VRD, in which these factors can convey clear signals about the quality of decisions and financial reporting, risk management efficiency, independence and accurate stock prices (Abdullah, 2006; Certo, 2003; Connelly et al., 2011; Delgado-García et al., 2010).

Voluntary disclosure theory is the third component of the theoretical research framework. It is a prevalent theory that is used intensely in voluntary and financial corporation disclosure research (Bewley & Li, 2000; Guidry & Patten, 2012; Hummel & Schlick, 2016; Nishitani et al., 2021). The voluntary disclosure theory was employed in this research to explain the impact of voluntary disclosure on corporation value. The theory attributes corporations' adoption of disciplined VRD to their interest in demonstrating robust financial and non-financial performance. According to voluntary disclosure theory,

companies that have a superior sustainable performance are more likely to voluntarily disclose non-financial information to highlight their outstanding performance, distinguish themselves from competitors, gain higher competitive advantages and increase their market value. However, companies that have a poor performance disclose less voluntary information to avoid criticisms (Clarkson et al., 2008; García-Sánchez et al., 2021; Healy & Palepu, 2001; Silva-Gao, 2012).

The interrelationship between the three theories increases the harmonisation of the theoretical framework and optimises the understanding of the outcomes. The three theories are linked in a complementary relationship. For example, agency theory assists in explaining the relationship between companies and external stakeholders and the critical role of voluntary disclosure in strengthening this relationship, increasing the reliability of financial reporting and decreasing information asymmetry and agency costs. At the same time, signalling theory clarifies the extent of risk disclosure in annual reports, provides motivations for adopting voluntary disclosure and explains how organisational factors, such as board composition, ownership structure and accounting standards, can signal expected corporation performance and the volume and quality of the information in the voluntary disclosure. In addition, signalling and voluntary disclosure theories can be jointly used to explain the impact of voluntary disclosure on corporation market value. In short, integrating these three theories in a consolidated theoretical framework was significantly helpful for drawing a holistic, intelligible image of voluntary disclosure practices and their determining factors within the Saudi context.

7.3 Research Methodology and Findings

The study adopted a quantitative approach that embraced a positivist philosophy and applied a deductive reasoning technique by constructing a theoretical framework to guide the study and to develop hypotheses and a conceptual model that was examined through empirical observation (Collis & Hussey, 2003; Creswell & Creswell, 2017). The study's sample included all 108 non-financial companies that were listed on Tadawul. Secondary data were collected from annual reports on the Tadawul website and DataStream for 2013 to 2020, generating observations for each variable that amounted to 648. Given uncertainty about mandating IFRS before or after 2016, reports from the fiscal year 2016 to 2017 were excluded. It is worth mentioning that the data on firm value used MTBV and ROA in addition to the control variables that were obtained from DataStream.

7.3.1 Key Findings

The regression analysis showed a considerable increase in VRD practices within the Saudi listed companies from 25% in 2013 to 60% in 2020. Calculating the mean of the VRD elements (compliance, reputational, operational, strategic, technological, commodity and sustainability risks) indicated that companies prioritised disclosing commodity risks (63%); however, they paid minimal attention to reputational risk disclosure (23%). The mean of the other risk disclosures varied between the two values (operational risks 57%, sustainability risks 43%, strategic risks 43%, technological risks 34% and compliance risks 28%). However, regardless of the prioritisation of the VRD elements in the Saudi listed companies' disclosure practices, calculating the annual mean of the VRD element disclosures demonstrated a notable increase in disclosing each risk from 2013 to 2020. For example, reputational risk disclosure, companies' lowest disclosure priority according to

the VRD mean over the entire period, increased from 7% in 2013 to 38% in 2020. Analysing the correlation between the variables (see Chapter 5, Table 7 and the correlation matrix) demonstrated a flat correlation between them in which the correlation coefficients ranged from 0.461 to 0.002. The regression analysis was run to assess the relationship between VRD as a dependent variable and other independent variables (i.e. board composition, IFRS adoption and the type of firm ownership structure) and to test the hypotheses (see Chapter 5, Table 8 and the regression analysis results). Moreover, two linear regressions were completed to test the relationships between VRD and FV, as measured by MTBV and ROA. Three control variables (SIZE, LEV and Growth) were used to assess all the relationships between the variables.

In terms of board composition, the results from the regression analysis confirmed a significant relationship between VRD and the qualifications and gender diversity of board members. However, there was no significant relationship between VRD and board size and audit committee meetings and a significant and negative relationship between VRD and board independence. Accordingly, H1, H2 and H3 were rejected whereas H4 and H5 were accepted. From these results, it can be inferred that within Saudi listed companies, the qualifications and gender diversity of board members are influential sub-variables of the board composition variable that could positively affect VRD. Boards that incorporate a higher number of qualified directors, particularly in finance or accounting, actively drive companies to engage in risk disclosure practices, indicating a significant and positive influence of the qualifications of board members on VRD activities. These results correspond to those of Ho and Wong (2001), who confirmed the positive impact of board members' qualifications on their awareness of VRD's importance in satisfying stakeholders. Similarly, the gender diversity of board members showed a positive influence

on VRD practices, specifically, companies that had a board that encompassed female representation demonstrated a higher propensity to voluntarily disclose more risk-related information. This finding aligns with that of Allini et al. (2016), who confirmed that boards that have female members are more engaged in risk disclosure than men-only boards.

However, board size and audit committee meetings have a minor impact on a company's orientation towards adopting VRD practices. Unlike agency theory's assertion about the expected positive influence of these elements on VRD (Elshandidy & Neri, 2015; Ntim et al., 2013), the results from the regression analysis showed an insignificant relationship between board size and VRD; in most cases, the large size of the companies' boards was not associated with increased VRD. Similarly, the frequency of audit committee meetings was not a predictor of sufficient VRD among Saudi listed companies. An insignificant relationship was displayed between audit committee meetings and VRD, which aligned with findings from other studies (e.g. Allegrini & Greco, 2013; Cheng & Courtenay, 2006). In terms of board independence, the analysis revealed a significant and negative relationship with VRD in which an increased number of independent members within a board's composition was inversely proportionate to the VRD level. This result aligns with the insignificant connection between director autonomy and VRD that was highlighted by Abdullah et al. (2017) and contradicts the findings from Alkurdi et al. (2019), and Adelopo et al. (2023) in which a significant and positive relationship was detected between VRD as a dependent variable and board independence as an independent variable.

In terms of companies' ownership structure and its relationships with VRD, the analysis indicated a significant relationship between VRD and state ownership, an insignificant relationship with family ownership and a significant but negative relationship

with foreign ownership. Accordingly, H6 and H8 were rejected whereas H7 was accepted. These results imply that Saudi government-owned companies, because they demonstrated a higher level of VRD, are more likely to disclose additional risk information than companies that have a different type of ownership, which could be attributed to their substantial level of compliance with legislation and adherence to CG policies as direct government-supervised entities. At the same time, family ownership showed a negative, however insignificant, influence on VRD, which could be explained by the relatively small board size of family-owned companies and the lack of incentives for voluntarily disclosing more risk-related information (Haddad et al., 2015). Although foreign ownership robustly and adversely affected VRD, this outcome does not match results from other empirical studies that have emphasised the significant and positive influence of foreign ownership on VRD practices (Abraham & Cox, 2007; Reeb et al., 1998), which points to a potential deficiency in the implementation of international disclosure standards and could threaten information consistency and foreign investments.

Finally, adopting IFRS as an independent variable was found to have a significant and positive relationship with VRD. Therefore, H9 was accepted because IFRS is considered a strong predictor of VRD practices. Most Saudi listed companies actively engaged in VRD practices and reported more risk-related information after mandating IFRS by company law. This finding aligns with those of prior studies that have confirmed that adopting accounting standards, including IFRS, has a robust relationship with VRD and can promote positive risk disclosure practices (Nahar et al., 2016; Onoja & Agada, 2015). After defining the relationships between VRD and the independent variables, which determined the influence of these variables on companies' engagement with and commitment to VRD practices, the impact of VRD on FV was examined through two dimensions: the effect of

VRD on market-to-book value (MTBV) and return on assets (ROA). Thus, a *T*-test was conducted to compare the means of the MTBV and ROA of companies that had high and low levels of VRD. The *T*-statistics for MTBV and ROA indicate that companies that have a high level of VRD have higher MTBV and ROA values than those that have low levels of VRD.

Moreover, the results from the regression analysis (see Chapter 6, Table 10) showed a significant relationship between VRD and MTBV and ROA. Furthermore, to support these results, a robustness test was conducted using Fama–MacBeth's (1973) two-step procedure (see Chapter 6, Table 11). The outcomes confirmed a robust and consistent relationship between VRD and MTBV and ROA. Furthermore, the variables' endogeneity was measured using a reverse causality test, an instrumental approach and PSM (see Chapter 6, Tables 12, 13 and 14). All the results corresponded and reflected robust relationships between VRD, MTBV and ROA.

7.4 Regulation and Managerial Implications

Analysing the present condition of risk disclosure has substantial implications for assisting policymakers and authorities within the Saudi economy to ensure information sufficiency, improve the capital market's effectiveness and achieve the objectives of Saudi Vision 2030 for economic diversification. The study advises the Saudi legislative institutions about the current status of VRD practices and their drivers within Saudi listed companies. This would help to make informed economic decisions to facilitate market adjustments and to stimulate local and international investments. For example, a relatively high degree of VRD could signify the success of the Saudi stock exchange (Tadawul) and the CMA's efforts to improve information transparency. However, a lower level of VRD

could be a significant indicator of the inadequacy of the existing regulations or a deficiency in their application.

The findings from this study highlight the relatively increasing level of risk disclosure during the investigation period (2013 to 2020). However, the level of risk-related information that was voluntarily disclosed in the annual reports of the listed companies was relatively low. This finding may suggest that more efforts from regulatory authorities are required to improve the volume of VRDs in companies' annual reports to give various stakeholders better insight into companies' management and risk handling approaches. Undoubtedly, disclosing sufficient risk-related information in yearly reports clearly indicates disciplined CG, which raises stakeholders' confidence about business sustainability and companies' longevity. Authorities and regulators should develop proper standards to improve corporations' engagement in risk disclosure practices, focusing efforts on developing a risk-reporting framework and guidance for disclosing pertinent risk information to help those who are seeking to assess a company's risk profile. Further, the results of this study provide practitioners and owners or managers with an understanding of the attractiveness of foreign investors and the implications that this has for their investment allocations in connection with VRDs. A better understanding of the disclosures of Saudi corporations may aid investors in making sound investment decisions.

Moreover, the top management of Saudi companies could benefit from the findings of this study. Evidence from the study's quantitative analysis confirmed a positive relationship between VRD and firm value, which could encourage executives to pay more attention to voluntary disclosure practices. Further, the study provided crucial empirical evidence about the impact of specific attributes of a board on the extent of VRD that is reported in companies' annual reports. For example, board directors' qualifications,

specifically, accounting and finance qualifications, and gender diversity were the most significant variables in explaining higher VRD levels. Consequently, the study suggests that a company board that includes members that have qualifications in accounting and finance disciplines and considers a balanced gender representation is more likely to support the voluntary disclosure of more risk-related information in the firm's annual reports. Furthermore, the findings of this study will be beneficial to Saudi Arabia and to other countries in the Gulf Cooperation Council that have similar environments to Saudi Arabia.

7.5 Contributions to Literature

This study contributes to the literature on risk disclosure in various ways. First, it contributes empirical knowledge on VRD practices within the business sector in developing countries by defining the influential factors that could shape the degree and quality of VRD in Saudi Arabia. This was done by quantifying and analysing the risk disclosure volume in the annual reports of Saudi listed companies. Further, it enriches the existing knowledge on the impact of CG mechanisms (i.e. board composition and ownership structure) and IFRS on VRD practices in Saudi Arabia. The literature on CG in Saudi Arabia addresses risk disclosure from a holistic perspective without discriminating between its various types, which might deliver ambiguous insights (Al-Janadi et al., 2016; Ibrahim et al., 2019; Salem et al., 2019). The study addresses this gap, focusing on a specific risk disclosure type: VRD. This enabled a better opportunity to investigate VRD volume, practices and implications on companies' performance, firm value and investment decisions. Further, it facilitates the obtaining of precise results for measuring the impact of various variables on the support for adequate VRD practices.

Moreover, the study contributes to the literature by introducing detailed insights into specific VRD drivers that have been ignored by prior studies, such as the relationship between corporate board composition and VRD. Accordingly, the study introduced a framework that links corporation-specific attributes to the relative increase in VRD practices. The framework incorporates three main influential factors: board composition (board size, audit committee meetings, independent board directors, directors' qualifications and gender diversity), ownership structure (foreign ownership, state ownership and family ownership) and IFRS. These factors were examined and demonstrated to have a degree of correlation with the extent of the disclosure of risk-related information voluntarily in corporations' annual reports. Given that there are no globally unified and accepted determinants of risk disclosure because of differences in regulations and predominant organisational and ownership structures between countries (Onoja & Agada, 2015), this framework enriches the literature on risk disclosure determinants in the Saudi context. Saudi decision-makers can use these findings and this framework as guidelines to increase VRD and to ensure high levels of compliance with regulations.

7.6 Limitations and Future Research

The outcomes of this study are not limitation free. First, the study relied on collecting data on VRD from Saudi listed companies' annual reports, available from the Tadawul website, which is a reliable source. However, that could violate the principle of source diversity. This study did not consider alternative sources, such as prospectuses, company websites, interim reports and press releases, despite the possibility that they included data that could affect the analysis results. Second, the research was confined to the annual reports from a specific period (2013 to 2020) of non-financial companies and within

the Saudi economic context, making generalisation of the findings and the conceptual framework possible only in similar economic conditions in developed countries.

The limitations open further research horizons. Accordingly, this study proposes other areas for future research. Given that the study was confined to a limited period and within a sole data source, further research is needed to expand the research to a longer period and to consider various data sources, which could provide broader data scope, an opportunity for defining similarities and differences in the data and more reliable results. Further, the mono-research context could be expanded by investigating VRD in countries that have similar economic settings, such as the countries of the Gulf Cooperation Council, completing a comparative study and creating a conceptual framework that has greater generalisation potential. The study adopted quantitative approaches to measure the relationships between VRD and its determinant factors. The analysis introduced significant findings that are consistent with the theoretical background and can be explained by one or more theories that are relevant to risk disclosure.

In this thesis, the focus was primarily on corporate-related variables such as corporate governance, ownership structures, and audit committees, which limited the scope of analysis. Future research may examine other factors that may influence VRD practices, such as organizational culture, the role of technology, or regulatory environments. Furthermore, there is potential for future research to examine VRD as a moderating variable among board composition, ownership structure, and firm performance. This would provide valuable insight into VRD's role. Moreover, future research could explore the impact of VRD on new types of firm performance, such as Tobin's Q, earnings per share as a measure of market performance, and return on equity as a measure of financial performance.

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Appendices

Appendix A: Variance Inflation Factor (VIF)

Variable	VIF	1/VIF
FSIZE	1.77	0.564889
STAO	1.35	0.738208
FORO	1.24	0.80874
BSIZE	1.22	0.820856
AUDC	1.15	0.866008
INDEP	1.13	0.888028
LEV	1.08	0.926205
BQUAL	1.06	0.941131
GENDER	1.06	0.944949
IFRS	1.05	0.953631
FAMO	1.04	0.960738
Growth	1.03	0.970596
Mean VIF	1.18	