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**Integrating ESG Principles into Risk Management: Enhancing Corporate Sustainability and
Governance**

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Chapter 1: Introduction

1.1 Background of the Study

Over the past few years, the realm of global business has increasingly recognized the paramount role which Environmental, Social, and Governance (ESG) principles can play in driving corporate sustainability and governance. Among the complex challenges the world faces at the moment, such as climate change, resource depletion and social inequality as well as corruption are thus ESG subjects which businesses think need to consider as they intend to properly run their businesses with their eyes open. Today these principles are no longer peripheral to corporate strategy, but are becoming integral elements needed in order to attain resilience and long-term success(Landi et al., 2022).

Increasing pressure from stakeholders including investors, regulators, customers, and public, has forced organizations around the world to rise above financial performance and prove their pledge to sustainable and ethical ways of doing business. Companies that do not deal with ESG issues are increasingly more exposed to being damaged in terms of reputation, regulatory fines and even a loss of market share(Hoang, 2018). But those companies that consciously embed ESG factors into their practices tend to reap benefits: sharper brand reputation, better risk management and improved investor confidence, among other such gains. Especially in the Middle East regions, traditional industries are under fire, while sustainability is becoming a defining agenda in new business priorities(Cinciulescu, 2024).

In Saudi Arabia, a country poised at the forefront of the country's ambitious Vision 2030 initiative, the integration of principles of ESG in corporate strategies is at the top of everyone's mind. Saudi Vision 2030 targets diversification of the Saudi economy, decoupling it from the oil reliance and raise the Kingdom's position as a responsible corporate citizen globally. Saudi Arabia is spending big on renewable energy, sustainability of urban development and social reforms to position itself as a regional leader in sustainability. Achieving these goals however, demands more than that; there has to be active involvement from the private sector(AlNemer, 2024).

That means Saudi businesses find themselves under increasing pressure to play by ESG rules in order to achieve Vision 2030 goals. This evolving focus is seen also in organizations in Saudi Arabia, looking at how ESG principles can be injected into their risk management practices(Alghafes et al., 2024). ESG factors integration into risk management helps companies to

detect and manage a broader range of risks not captured by traditional risk management schemes. As an example, industries such as natural resources heavily dependent on environment risk such as climate change and resource scarcity will perform poor in the longer terms. Brand reputation and operational continuity are also subject to social risk, such as labor practices, relationships with communities and supply chain management. They are equally critical governance risks related to transparency, ethics and regulatory compliance which determine stakeholders trust and corporate integrity.

Addressing these more complex risks using ESG risk management not only helps keep organizations on good footing in the face of disruptions, but doing so also builds resilience. This proactive approach helps companies predict and address the changing problems that are developing on the horizon, staying in competition in this increasingly dynamic business situation(Karwowski & Raulinajtys-Grzybek, 2021). The integration of ESG into risk management positions itself in support of long-term sustainability as it enables companies to use practices that suit these societal values and environmental stewardship. Furthermore, this also supports ethical governance through promoting transparency, accountability and adherence to international standards(Dicuonzo et al., 2022).

For Saudi companies, the embedding of ESG into risk management is a strategic opportunity for them to bring their business objectives in alignment with the wider national Vision 2030 goals. Including ESG considerations into their risk management frameworks can enable organizations to fulfil their self-interests as well as support on the Kingdom's overall sustainability agenda. Particularly applicable to sectors such as oil and gas, manufacturing and construction where environmental and social impact can be high. It also is that as more and more global investors are placing ESG factors in their investment criteria, Saudi businesses which take ESG aligned approach to risk will be preferred by more foreign investment, thereby enhancing their global competitiveness and improving their reputation as being a responsible corporate citizen(Umar et al., 2024).

For organizations in Saudi Arabia, to become more sustainable and good governed, ESG principles have to be integrated into risk management. The aim of this study is to analyze how the adoption of ESG based risk management practices would enable corporate resilience, fuel sustainable growth and help achieve Vision 2030 targets(Chebbi & Ammer, 2022). This research will benefit

Saudi businesses that seek to understand the link between ESG factors and risk management as a means of navigating the messy corporate sustainability and governance.

1.2 Problem Statement

Even as a growing slice of the global focus on Environmental, Social and Governance (ESG) principles begins to gain traction, many Saudi Arabia-based organizations are far from making these considerations a part of their risk management frameworks(Abo Shareb, 2023). While some companies have started to understand the relevance of ESG factors in shaping sustainable and ethical business behaviors, many other companies do not have robust ESG integration strategies in their existing risk management framework(Oprean-Stan et al., 2020). Any gap in their ability to sufficiently perceive, evaluate and mitigate risks associated with ESG related issues, including climate change, social inequity and corporate governance risks will constrain their ability to effectively manage these types of risks.

Businesses in Saudi Arabia may find it challenging to adapt to emerging regulatory pressures, develop necessary abilities to respond to the needs of their stakeholders and adapt to the market shifts that arise from sustainability considerations, if there are no strong supports for ESG oriented risk management(Khamisu et al., 2024). This might directly result in financial losses, or more likely, damage to reputation, possible loss of competitiveness and, indeed, the widening of the gulf between the rich and the poor. Lack of Integration – This lack of integration is a real barrier for corporate resilience and long-term growth for organizations seeking to align to Saudi Arabia's Vision 2030, which prioritizes economic diversification and sustainability(Alharbi, 2021).

This paper is an effort to fill this gap by focusing on the effects of integration of ESG characteristics on risk management processes in Saudi Arabia. In doing so, it will investigate ways in which ESG focused risk management can help improve corporate sustainability and governance, thereby providing organizations leveraged to thrive in today's complexities of business.

1.3 Research Objectives

The main objectives of this study are:

1. To analyze the influence of Environmental Factors on risk management practices within organizations in Saudi Arabia.
2. To examine how Social Factors affect risk management practices in Saudi companies.

3. To assess the role of Governance Factors in shaping risk management practices.
4. To evaluate the overall impact of ESG-integrated risk management on Corporate Sustainability in Saudi Arabian organizations.

1.4 Research Questions

Based on the objectives, the study will address the following research questions:

1. What is the relationship between Environmental Factors and risk management practices in Saudi organizations?
2. How do Social Factors influence risk management practices in Saudi Arabia?
3. To what extent do Governance Factors impact risk management?
4. How does ESG-integrated risk management contribute to enhancing Corporate Sustainability in Saudi Arabian organizations?

1.5 Significance of the Study

The significance of this study is significant as it tackles an important research area in the dynamic arena of Environmental, Social and Corporate Governance (ESG) integration in the case of Saudi Arabia. Second, it adds to the growing literature on ESG by looking at how these principles can be leveraged for risk management in a highly transforming economic and social region. A deeper understanding of ESG integration's alignment to corporate ESG practices in Saudi Arabia as national sustainability aspirations are implemented in Vision 2030 are necessary to align organizational objectives with national sustainability aspirations. Through this concentrated lens, the study offers local insights grounded in the particular challenges and potential in Saudi businesses as they adjust to these major transformations.

Secondly, this study's findings provide important guidelines for corporate leaders, policymakers and stakeholders in Saudi Arabia on ways they can use ESG principles to improve both corporate governance and sustainability. With growing investor interest in such sustainable and ethically governed companies, the ability to incorporate ESG into risk management is not only good at addressing the emerging risks, but also in providing credibility and attracting investment. This research provides guiding practical lessons and identify key factors that influence successful ESG

integration and allow organizations to increase their resilience, competitiveness and long-term viability in a rapidly, changing market landscape.

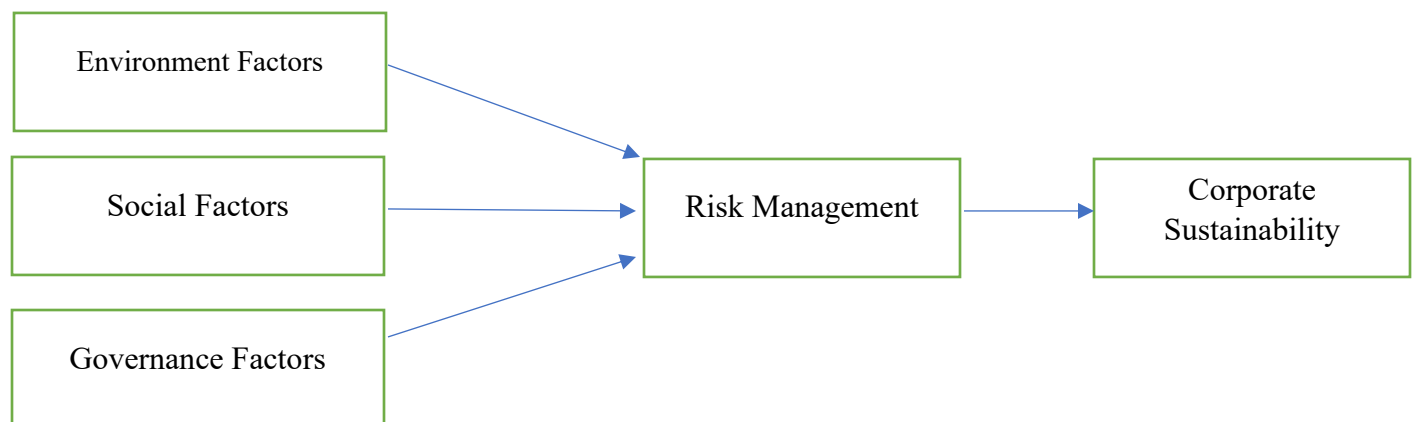
The study outlines a roadmap for other emerging economies interested in similar practices. The study highlights the significance of the role of corporate governance while ensuring the ESG integration aids sustainable development by means of demonstrating how effective strategies in managing ESG related risk converge into robust benefits for responsible business practice.

1.6 Scope of the Study

In this study, we focus on organizations located within Saudi Arabia across the oil and gas, manufacturing, financial services, healthcare, and construction industries. This research will use a quantitative research approach where a survey questionnaire will be used to get data from in professionals engaged in risk management, ESG or sustainability roles. First, this study will examine how Environment, Social and Governance factors affect risk management; and then it will explain how the adoption of ESG integration influences corporate sustainability as a whole. The focus of this research is to take a stance on the perspective from corporate professionals in Saudi Arabia, excluding organizations outside the country.

1.7 Research Model

The research model for this study is designed to examine the relationship between three independent variables—Environmental Factors (EF), Social Factors (SF), and Governance Factors (GF)—and one dependent variable, Corporate Sustainability and Risk Management (RM) is mediating variable.



The model hypotheses are as follows:

H1: Environmental Factors (EF) positively influence Corporate Sustainability (CS).

H2: Social Factors (SF) positively influence Corporate Sustainability (CS).

H3: Governance Factors (GF) positively influence Corporate Sustainability (CS).

H4: Risk Management (RM) mediates the relationship between Environmental Factors (EF) and Corporate Sustainability (CS).

H5: Risk Management (RM) mediates the relationship between Social Factors (SF) and Corporate Sustainability (CS).

H6: Risk Management (RM) mediates the relationship between Governance Factors (GF) and Corporate Sustainability (CS).

1.8 Structure of the Thesis

The thesis is organized as follows:

- **Chapter 2: Literature Review** - This chapter provides an overview of existing literature on ESG principles, risk management, and corporate sustainability, with a particular focus on the Saudi Arabian context.
- **Chapter 3: Research Methodology** - This chapter outlines the research design, data collection methods, and analytical techniques used in the study.
- **Chapter 4: Data Analysis and Results** - This chapter presents the analysis of the data collected and discusses the results concerning the research hypotheses.
- **Chapter 5: Discussion and Conclusion** - The final chapter discusses the implications of the findings, provides recommendations for corporate leaders and policymakers, and outlines areas for future research.

Chapter 2: Literature Review

2.1 Introduction

Over the last few years, Environmental, Social, and Governance (ESG) has been a main force in corporate governance and sustainability. The growth of ESG from a voluntary commitment to a central risk management tool reflects the increasing pressure requiring businesses to account for increased stakeholder, regulatory, and social demands. Integrating ESG in risk management is effective as it enables the organizations to navigate those new risks brought about by climate change, mismatches in social inequality and governance failures and enables the long-term success of the organization as well as corporate resiliency(Neri, 2021). The purpose of this chapter is to provide a comprehensive review of the literature on ESG principles, the role of ESG principles in risk management, and the way ESG principles play a role in improving corporate sustainability, with a special emphasis on the peculiar situation of Saudi Arabia.

Because Saudi Arabia's Vision 2030 has only heightened the urgency for corporations to embrace sustainable practices that meet national goals, the Saudi Arabian General Investment Authority (SAGIA) offers its CEO Mohamed Al Madaikh the opportunity to collaborate with further international corporations in the region(Rahman, 2021). In the realm of business, as companies around the Kingdom embark on diversifying the economy and decreasing their reliance on oil, understanding the incorporation of ESG principles into risk management practices is crucial in helping businesses practice responsible business and ultimately generating long term economic growth. In this literature review, we provide a broad overview of the state of global ESG trends, key theoretical frameworks of global agenda for ESG, the role played by risk management, and finally how ESG integration can promote corporate sustainability(Yu, 2023).

2.2 Environmental, Social, and Governance (ESG) Principles

2.2.1 Definition and Importance of ESG Principles

ESG, or, Environmental, Social, and Governance, are three critical ways to measure the ethical impact and sustainability of a business. The Environmental aspect refers to the impact a company makes on a natural environment, which includes its carbon emissions, waste management and energy efficiency. Social aspect considers how a company manages relationships with employees, suppliers, customers, and communities with regard to issues such as diversity, labor standards and social justice. Corporate governance structures, such as transparency, ethics and shareholder rights are included within the Governance component(Becchetti et al., 2022).

More and more, the wider integration of ESG principles is recognized as essential to long term corporate success. In other words, Zumente and Bistrova (2021) prove that companies with strong ESG practices perform better than those that do not give any consideration to such factors both in terms of financial performance and risk mitigation, as well as corporate brand reputation. With the urging of more and more stakeholders for greater transparency and accountability; businesses are being called out to integrate ESG principles as a part of their core strategy.

2.2.2 Evolution of ESG in Business Practices

Environmental, Social, and Governance (ESG) principles over the past two decades to rise up from being simply a fashionable management fad to a cornerstone of modern business strategy and corporate governance. ESG is the more structured, more measured way to assess the sustainability or ethical impact of a corporation's activities, originally derived from a broader notion of Corporate Social Responsibility (CSR). Whereas CSR was concentrated on philanthropic work and socially responsible behavior, ESG offered this to the next level by expanding it to measurable, tangible and standardize actions intrinsically related to corporate long-term sustainability and risk management(Kotsantonis et al., 2016).

Global environmental social challenges have been one of the key catalysts for the development of ESG. Stakeholders now expect simple things out of corporate accountability: they wonder what happened to climate change, resource depletion, human right's violation and governance scandals(Maroun, 2022). The growing need from investors, consumers and regulatory authorities for companies to realize the ESG principles has led companies to not just recognize, but also incorporate ESG principles within its operational and strategic decision making.

Advances in this evolution have been driven by global initiatives such as the United Nations' Sustainable Development Goals (SDGs) and the Paris Agreement. In 2015, the SDGs were launched into existence, and defined a global agenda aiming at addressing such other issues as poverty, inequality, climate change and the environmental degradation within 2030. In response to these goals, companies have increasingly come to think of their operations in terms of ESG metrics, with which environmental, social, and governance metrics allocate meaning and direction. Also, many businesses are putting into practice what the Paris Agreement seeks, linking action to mitigate environmental risks, and promote sustainability(Dathe et al., 2024).

The Global Reporting Initiative (GRI), launched in 1997, is a significant milestone of institutionalization of practices related to ESG. It was just one of the first organizations to standardize sustainability reporting and offer companies a framework to report on their environmental, social and governance performance. Through this initiative, the corporate landscape became more transparent and stakeholders now can better learn how to assess the sustainability of the businesses better. Since then, these GRI standards have spread rapidly among organizations across industries for ESG reporting, with a clear and consistent method(Alvi, 2022).

After the GRI, a number of other frameworks have arisen to raise the bar for ESG disclosure and integration. For example, The Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) established itself in 2015 to set guidelines for companies to report on climate related financial risks(De Bernardi et al., 2019). So, while the TCFD framework is growing in popularity globally, many organizations are now reporting via their ESG reporting to become more transparent about how climate change affects their financial stability and long-term viability. The United Nations Principles for Responsible Investment (UNPRI) have also contributed significantly to promote ESG practice by encouraging institutional investors to integrate ESG into the investment decision making(Kim & Yoon, 2023).

Another progression in ESG evolution is the shift from a compliance-based approach to an ESG a strategic lever for business success. In the first few years, ESG was usually considered an expense or a compliance requirement. ESG activities will be conducted by companies primarily for the sake of regularity or to enhance their public image(Kim & Yoon, 2021). With the understanding of ESG's value maturing, businesses know that now ESG is now a driver of innovation, efficiency and competitiveness. And ESG principles have seeped into corporate strategies, affecting product development, supply chain management, customer relations, as well as the bottom line.

Companies are showing by their investment in renewable energy, sustainable supply chains, and socially responsible products that this is an ongoing strategic integration of ESG. As we can see, rising demand for eco-friendly products, like those in fashion, technology and consumer goods industries have increased for this type of product. From attracting environmentally conscious consumers to the ability to mitigate long term risks like regulatory changes and resource scarcity that impacts profitability, businesses who align their operations with ESG values score(Eccles et al., 2017).

ESG is being increasingly acknowledged by the financial sector as a critical factor for investment decisions. Over the past few years, the growth of ESG focused investment funds, which are often also referred to as sustainable or socially responsible investments (SRI), has been noticeable (Matos, 2020). More and more investors are incorporating ESG measures into portfolio management, because companies with strong ESG ratings have an advantage at both minimizing risks to their stock valuation and nurturing long term returns. Then along came impact investing, and investors are fishing in two ponds simultaneously: They're looking to make money and have a positive social, or environmental, impact. So, evolution of ESG has not only changed corporate governance, it has also restructured financial markets (Cadman, 2011).

2.2.3 ESG in the Context of Saudi Arabia

The concept of ESG principles has come in vogue in the last few years in Saudi Arabia, particularly due to the government's Vision 2030. This national development plan strives to bring down dependence on oil for economic development; encourage environment sustainability; and improve social welfare. The responsibility has been imposed by Vision 2030 on public and private sector organizations alike to adopt responsible business practices that complement the country's bigger sustainability goals (Chebbi & Ammer, 2022).

As a part of the Vision 2030 economic diversification agenda, businesses across sectors are being encouraged to make ESG a part of its operation. For example, environmental sustainability is a leading priority where efforts have been made to lower the country's carbon footprint and encourage the use of renewable energy sources like solar and wind power. Kouaib (2022) state as several Saudi companies especially in the energy sector have begun to invest in clean energy projects as a result of their predisposition to the environmental impact of their operations.

However, in Saudi Arabia, the ESG principles have yet to be adopted in an early stage compared to more mature markets in Europe and North America. The problem has been that historically, the business model of such companies has been oil & gas businesses which are highly based on fossil fuels, and to integrate ESG practices has been very hard in Saudi companies (Umar et al., 2024). Yet the advent of a global push towards sustainability in tandem with Saudi Arabia's drive to reform its economy makes the case for ESG more reasonable.

According to Bamahros et al. (2022) Capital Market Authority (CMA) has played a major part in pushing ESG adoptions within Saudi Arabia. The CMA has highlighted that ESG disclosures in

helping to attract the foreign investment and support the competitiveness of Saudi companies on the global stage. The CMA reported in 2022 that ESG related disclosures by Saudi companies have increased significantly, specifically in relation to environmental sustainability and corporate governance. Ali (2017) noted that companies listed on the Saudi Stock Exchange (Tadawul) now must report on their ESG practices as part of their annual reporting, a sign of progress toward a more transparent and accountable outcome.

On the other hand, some challenges need to be addressed before ESG principles are put into practice within Saudi businesses. The biggest problem, however, is there is no overarching regulation strictly specifying ESG transformation throughout the entire industry. While Saudi Arabia has demonstrated its commitment to the ESG disclosures inclusions, no countrywide standard is yet enforced by the CMA regarding ESG practice and implementation, making the specification and adoption of ESG practices and disclosures inconsistent. However, many companies, mostly small and medium-sized enterprises (SMEs), simply lack the resources or expertise to fully integrate ESG into their company's risk management and operational strategy (Alofi, 2020).

It is a challenge also in readying oneself for the cultural shift that is needed in order to adopt ESG principles. Traditional business practice in Saudi Arabia has too often seen short term financial convenience over sustained success. Mindset is an enemy of ESG, especially in industries that have always been distaste for change (Chebbi & Ammer, 2022). As well, Saudi businesses must raise awareness of the financial and reputational advantages associated with ESG integration. Yet, many companies still see ESG as a compliance requirement rather than a strategic opportunity to improve competitiveness and to attract foreign investments, and to mitigate risks.

But against that, there are some good leading signs that Saudi companies are starting to realize the worth of ESG. A handful of leading companies in sectors including banking, real estate and consumer goods have begun to implement ESG strategies in the wake of growing investor demand, new regulations and consumer awareness. As part of promoting ESG standards in the Kingdom, the Tadawul also launched the MSCI Tadawul 30 ESG Index (MT30), which lists the ESG performance of the top 30 listed companies (Alrowais, 2022).

Stoning your way to growth is no longer the modern way and the future belongs to sustainable businesses, Saudi companies who avoid unhealthy hobbies like ESG write-offs will be favored in

attracting Foreign Direct Investment (FDI) and competing with international peers. Further, the integration of ESG to corporate strategies is not only a reaction to global trends, it is a must in support of Saudi Arabia's Vision 2030. Taking the stance of alignment with the sustainability goals of the nation, businesses can strengthen their long-term resilience, reputation, and profitability(Oyewole, 2021).

While ESG adoption in Saudi Arabia is still in its infancy, which is matched by the increasing awareness, driven by government effort, investor pressure and strong signals will increasingly make the Kingdom an ESG leader of the region(Umar, 2021). Regulatory and corporate governance frameworks, as well as awareness programs, will remain a must for Saudi businesses to fully adopt the ESG and contribute to Saudi's sustainable development agenda.

2.3 Risk Management and ESG Integration

2.3.1 Traditional Risk Management vs. ESG-Focused Risk Management

Traditionally, risk management has played a vital role in both a company's operations and has been focused on identifying and addressing risks that may negatively impact a business's financial performance, operational effectiveness, and regulatory compliance. This method groups risks as either financial, operational or compliance based and deals with them using known techniques such as risk assessment, insurance and contingency planning(Neuvonen, 2024). Traditional risk management intends to examine and mitigate the potential threats to company continuity short to medium term, and defend the continuity of the business and the profit margins.

While this approach is useful in dealing with immediate quantitative risk, it neglects other environmental and societal risks that may not come home to roost in this way immediately, but have significant long-term implications(Abramova, 2024). This does not mean that risks from environmental degradation, social inequities or governance failures do not directly impact on quarterly earnings or immediate business continuity, because they often do not, but they do constitute systemic risks that may threaten a company's sustainability, reputation and capital gain ability. Since businesses have become increasingly aware of non-traditional risks, such as climate change, human rights, and corporate governance, they are disclosable and hence businesses are under increasing pressure to disclose these risks(Zhong, 2023).

Another paradigm: integrating ESG principles in risk management practices goes far beyond an isolated action, instead it reflects a broader, more holistic approach in thinking about organizational

risk and making risk management more comprehensive. Risks that are ESG focused recognize that ESR factors can have direct or indirect effect on the organization's viability and therefore, ESG factors influence the risk assessment process. The view of risk is expanded to include the potential impacts of disruption to market performance (finances) as well as to stakeholders, the environment and long-term business sustainability(Williams, 2024).

One of the most pressing ESG related risks that companies are facing today is climate change. Much of the risk management that focuses on extreme events like weather might be based on consideration of how supply chains might break or infrastructure get damaged but ESG risk management looks more deeply into the causes and effects of climate change on an organization's strategic positioning(Ragazzo & Costa, 2023). Take for example, companies trying to see how their carbon footprint, or resource consumption, leads to climate change and working to mitigate that by utilizing sustainable ways. This is a reflection of fact that failure to address environmental risks potentially results in regulatory penalties, investor divestment, and reputation damage with their own very defined financial implications.

An aspect of ESG risk management which is no less important than environmental considerations is social factors. But traditional risk management consists of checks regarding employee safety or regulatory compliance; they often overlook the broader social risks caused by labor practice, exposure to the community, and product safety, for instance. Consider for instance a company purchasing materials from its suppliers who mistreat their workers and the company then has its reputation on the line if consumers and investment dollars start clamoring for ethical sourcing and fair labor treatment(Filipiak & Kiestrzyn, 2021). In terms of community relations, social risks can lead companies operating in communities exposed to negative environmental and social impacts caused by their operations to face protests, legal actions and operational permit challenges in the future. Incorporating these social factors into their risk management can help businesses make better predictions and take greater actions to mitigate any risks which could result in damage to their reputation, customer loyalty and social license to operate.

Another key part of ESG based risk management is the 'G' factor - governance factors. Traditional governance risk assessments tend to be focused around compliance with the laws, regulations and corporate policies. While governance risk management based on ESG tends to look at the bigger picture subjects such as executive remuneration, board diversity, transparency and

accountability(Ingebreetsen, 2023). For instance, corruption, lack of diverse governance, or weak board oversight can reduce confidence in the governance company, thereby generating financial losses, as well as a shabby image. Groups whose governance structures place their most significance on ethical conduct and transparency are presumably able to withstand regulators, investors and other interested parties better. Further, governance issues are becoming inextricably associated with environmental and social concerns: stakeholders are looking for proof that companies are not merely assuaging concerns around compliance but are pushing the envelope to reduce their total impact on the world(Banham, 2019).

However, one of the biggest benefits of ESG focused risk management is that it favors a proactive not reactive approach to risk. Traditional risk management focuses on reacting to risk as the risk arrives, often using short term measures to combat damage. In contrast, ESG focused risk management attempts to anticipate and mitigate risks prior to their materialization by integrating sustainability into corporate strategy and decision making(Dantini, 2021). For instance, companies invest in renewable energy to consider its environmental footprint or are investing in policies that promote workplace diversity and inclusion or make their governance more accountable. A focus on these factors allows organizations to create resilience, adapt to changing regulatory and market dynamics and deliver long term value to stakeholders.

2.3.2 The Role of ESG in Risk Identification and Mitigation

Incorporating Environmental, Social, and Governance (ESG) factors into risk management helps the organization recognize and mitigate a wider variety of risks that may be otherwise missed in traditional risk management methods. Typically, risk management has traditionally been around financial, operational and compliance risks, but ESG integration gives companies the foresight to prepare for risks surrounding environmental deterioration, issues in the social fabric of the organization and governance processes(Karwowski & Raulinajtys-Grzybek, 2021). This expanded scope of risk management is becoming more and more important, as organizations are facing complex, linked challenges that could severely affect the sustainability and resilience of the organization in the long term.

Environmental Risks

In today's business environment, one of the main environmental issues faced by businesses is environmental risks that result from factors like climate change, loss of biodiversity and depletion

of resources(Allan et al., 2000). Widespread acknowledgement comes from the World Economic Forum's 2020 Global Risks report, which lumps climate change with other major global economic risks to the order of the decade to come. Environmental risks can blow up in a company's face quite literally, causing disruptions to its supply chains due to extreme weather events, or on a highly symbolic level, as regulators pressure companies to reduce carbon emissions(Olsson et al., 2017). But as governments globally become more stringent on environmental regulations, companies that don't respond proactively to these risks may see penalties, higher operating costs and a bad reputation.

ESG strategic risk management helps companies predict environmental risks through the strategies of sustainability. For instance, companies can conduct an environmental impact assessment to gauge a possible danger due to the activity of their company concerning resource depletion or pollution. In addition, companies can take their own measures to minimize these risks, for example through expenditure on renewable energy, waste reduction and resource efficiency optimization(Chen et al., 2023). Early environmental risk addressing by businesses will protect them from possible future disruptions, increase their resilience and help them increase their long-term profitability.

Social Risks

Social risks if taken as an entire question, include such issues as labor practices, diversity, community relations and human rights. The prominence of the social dimension of ESG derives from the fact that as investors and consumers become more aware of their corporations' social responsibility. If companies don't live up to very high standards in these areas, they risk harm to their reputation, regulatory action and lost stakeholder trust. For instance, a firm with poor labor practices may suffer boycotts, protests or other forms of legal action that have serious financial and operational costs(Al-Meedani & Al-Dlaigan, 2016).

Risk management in including social factors assists organizations to identify the risk concerning workforce management, community impact and the stakeholder relationship. Something like, companies can do assessments of their labor practices to make sure they are meeting fair labor standards, things like adequate wages, safe working conditions, non-discriminatory practices(Sassen et al., 2016). Furthermore, organizations can work with local communities on potential concerns to resolve them and build up good relations with them, which is indispensable

to obtain the operating permit as well as obtaining a social license to operate. Proactive social risk management enables companies to help build trust with their stakeholders, reducing risks of conflicts and promoting positive corporate reputations.

Governance Risks

Governance risks are issues pertaining to corruption, lack of transparency, executive misconduct and absence of good leadership. Poor governance practices can wipe out an organization's ability to operate sustainably, leading to a loss of confidence among investors and other stakeholders. For instance, companies with non-transparent reporting process or weak oversight mechanism will be accused of fraud, mismanagement or unethical behavior. Such incidents can cost in terms of big money, fines and lasting damage to reputation(Cohen, 2023).

The ESG focused risk management focuses also on the importance of good governance structure with transparency, accountability and ethical behavior improving governance. A company can reduce the risk of corporate misconduct and enhance its decision-making process with good governance practices defined in formal procedure(Renn, 2017). The risk management can be geared towards governance focus like setting of anti-corruption policies, ensuring board diversity, and having independence on financial reporting and compliance through audit committees. Improving the corporate governance as such will, besides having an effect on reducing the risk, will work towards enhancing financial performance and attractiveness to investors.

Case Examples of ESG in Risk Identification and Mitigation

Unilever's sustainability initiatives are one notable example of ESG integration to identifying and mitigating risk. To source 100% of its agricultural raw materials sustainably and reduce carbon footprint, Unilever has committed. Unilever has ensured that supply risk related to resource scarcity, climate change and supply chain disruptions has been managed through the environmental and social consideration being incorporated in its risk management practices. At the same time, the company has increased its ability to cope with regulatory changes as many of the countries across the globe are setting more stringent environmental regulations(Nkwo et al., 2024).

As a result, companies such as Patagonia have increasingly included social and environmental issues into their risk management strategy, as well. Environmental activism, sustainable sourcing and ethical labor practices might not seem unusual, but those are the values that Patagonia has

made its brand around (P Shravan & Vaishali, 2024). Patagonia has also made environmental and social risks proactive by tackling them and has gained a loyal customer who subscribes to sustainability values. ESG approach of the company minimized supply chain disruptions, labor disputes and regulatory compliance related risks and increased the company's brand equity.

HSBC, in the financial sector, includes governance and environmental risks into its risk assessment processes. HSBC knows that climate change presents risks, and has therefore committed to being a net zero bank by 2050, directing its lending and investing in portfolios to support the objectives of the Paris Agreement (Light & Skinner, 2021). For HSBC, either way, by incorporating ESG factors into its risk management framework, HSBC is well placed not only to 'do the right thing' but also to take advantage of opportunities created by sustainable finance.

Including ESG into the risk management process not only enables companies to face current risks but also empowers them to cope with changing market conditions and regulatory environments. Environmental, social and governance (ESG) risks can have implications for an organization's financial performance, reputation and operational resilience, over time (Nițescu & Cristea, 2020). The more holistic approach towards risk management that incorporates ESG factors allows companies to be more in tuned with the kind of risks that may not otherwise be spotted by the more traditional frameworks.

As stakeholders will be more and more demanding about sustainable and responsible business practices, ESG will provide its value of risk identification and mitigation. Organizations that understand the value of ESG focused risk management will be able to better navigate the complex challenges across their business today, seize new opportunities in tomorrow's world, and create value for shareholders and stakeholders alike. Proactive management of environmental, social, and governance risks is a means for companies to build resilience, increase their competitiveness and contribute to a more sustainable and fairer global economy (Antoncic, 2019).

2.3.3 ESG as a Tool for Enhancing Corporate Resilience

Increasingly, companies are integrating Environmental, Social, and Governance (ESG) principles into risk management to highlight and, where possible, manage risks and increase corporate resilience. Corporate resilience is the capacity of an organization to tolerate, absorb, restore, and adapt to disruption and risk in order to maintain continuity and long-term sustainability. Failing to

address ESG related risks proactively puts companies at risk to remain static and inflexible to the changing market conditions, regulatory demands, and stakeholders' expectations(Câmara, 2022).

Escrig-Olmedo et al. (2019) found that companies with high ESG performance cross cheaper in crisis. Owing to this those these companies are better geared for regulatory changes, changing consumer preferences and roles of the environmental. For example, such businesses are less exposed to volatility of fossil fuel prices and can more easily react to tougher environmental regulations. Such a proactive approach to environmental risk not only increases operational stability, but also helps to meet the regulatory requirement, and helps to boost firm's reputation.

To add to corporate resilience, however, social factors play a role supporting stronger ties to employees, to current and future customers, and to our communities. For an example, companies that put a priority on fair labor practices and diversity during hiring will indeed attract and retain top talent, keep employees highly engaged and build customer loyalty. Additionally, because so many socially responsible companies exist, there's a high rate of brand loyalty and community support, which is helpful during tough times(Chairani & Siregar, 2021).

Corporate resilience is crucially dependent on the functioning of governance factors as means of transparency, accountability, and an ethical impulse for decision making. Companies that have robust governance – independent boards and sound audit committees, for example – are more likely to weather crises while maintaining stakeholder confidence and managing the type of risks that come with executive misconduct or operational failure(de Souza Barbosa et al., 2023). Poor governance practices can have the same negative impact on access to capital as can strong governance practices, since investors increasingly want to support companies with high standards of corporate governance.

According to Gericke et al. (2018) ESG integration strengthens corporate resilience by driving the formation of a more sustainable, adaptable and stakeholder centered organization. When it comes to risk mitigation, companies that factor ESG issues into their decision making are better able to do so; they are more agile when responding to disruptions in their market and obtain a competitive edge. As ESG stays fit as a topic for investor expectations and regulatory landscapes, the role that ESG plays in building corporate resilience will be pivotal for companies who wish for long term success.

2.3.4 Challenges and Barriers to ESG Integration in Risk Management

While ESG integration into risk management has clear benefits, businesses struggle to get started. The main barrier is a lack of standardised framework for the ESG implementation. Throughout the world, there are many Global initiatives such as Global Reporting Initiative (GRI) and Task Force on Climate related Financial Disclosures (TCFD) that provide guidelines for ESG reporting, however, there is no universal standard of ESG risk management. As a result of this intrinsically inconsistent approach, companies can vary in their approach to and measurement of ESG risks, which hurts stakeholders' ability to compare ESG performance across the organizations and sectors(Rezaee, 2017).

Furthermore, many organisations see ESG integration as costly and resource intensive. A comprehensive ESG strategies implementation usually involves the injection of money, specific expertise, as well as the use of personnel. In particular, small and medium sized enterprises (SME) may not have the resources to build strong ESG frameworks(de Silva Lokuwaduge & de Silva, 2020). From an ESG perspective, integrating these initiatives into the operations of these companies is a big operational lift, especially if a circular return for an investment for a company is not immediate. This can cause a business to perceive that ESG practices come at high costs and, therefore, actively dissuades businesses from the adoption of ESG practices, if short term profitability is prioritized instead of long-term sustainability(Hübel & Scholz, 2020).

ESG initiatives are also constrained by narrow focus within businesses and the investment community alike. Quarterly or annual performance pressures, however, constrain many organizations and investors from adopting long term ESG strategies. However, financial benefits of ESG integration, including increased resilience and reduced risk, typically take time to materialise and companies that are focused on short term gains may not be able to justify the upfront costs and efforts required of ESG implementation(Shapsugova, 2023).

ESG integration faces significant data availability and quality challenges too. Armed with comprehensive and reliable data of environmental and social performance, it is difficult, however, to obtain such data in emerging markets where reporting standards are still immature. Oprean-Stan et al. (2020) reliable data, our companies may be unable to make educated judgments about the risks they face in addressing ESG issues and the credibility of their ESG efforts. In addition, globally active companies are challenged in complying with numerous regulatory requirements in

different jurisdictions, complicating the effort to establish globally consistent ESG strategies throughout their operations.

Lack of stakeholder engagement as well as unavailability of resources to guide ESG integration can stall ESG integration. ESG initiatives for many organizations are dictated mainly by investor or regulatory requirements, and for other stakeholders such as employees and customers they might not fully understand the meaning of those initiatives. If employees lack awareness about ESG initiatives, they might resist to it, due to perceiving ESG as peripheral to the core responsibilities. The ability of ESG strategies to be effectively implemented and sustained are less likely without broad based support(Aldowaish et al., 2022).

A multi facet approach is needed to address these challenges. This will include developing standardized ESG frameworks, better access to ESG data, long-term mindset of investors and executives and engagement of stakeholders at all levels, to overcome the other barriers in integrating ESG. As the benefits of using ESG focused risk management become more widely understood, it seems likely that more companies will work to address these challenges and begin to really take full advantage of using ESG as a vehicle for building sustainability and resilience(Samans & Nelson, 2022).

2.4 Corporate Sustainability and ESG Integration

2.4.1 Defining Corporate Sustainability

Corporate sustainability is the ability of a company to run on a long-term profitable basis, taking account of the social, environmental and economic effects of their actions. Corporate sustainability means realizing the needs of current stakeholders without compromising on the capacity of future stake holders to meet their needs (Meuer et al., 2020). It encompasses three core dimensions: They include economic, environmental, social sustainability.

2.4.2 ESG and Corporate Sustainability:

Environmental, Social, and Governance (ESG) principles are key components of corporate sustainability as they are used by businesses to operate in the long term within these frameworks and guidelines. ESG Measures are not just about compliance or management of risks, but ESG Practices are the drivers of growth and innovation. An overwhelming amount of research confirms the link between strong ESG practices and corporate sustainability. A study by Drempetic et al. (2020) estimated over 2,200 individual studies and thus found a positive correlation between ESG

performance and financial performance. The influence of this correlation means that companies that invest in ESG principles do more than reduce their risks; they can actually ensure the long-term strength of their finances.

One of ESG's pillars, environmental sustainability calls upon businesses to keep their footprint as small as possible. Companies with strong environmental practices invest in the energy efficient technology, renewable energy, programs to reduce waste and circular economy models. These measures enable organizations to cut their costs; pin down its reputation; and never mind future outcomes due to environmental risks like resource paucity and climate change. These environmentally responsible practices, in turn, ensure corporate sustainability by bringing the needs of the planet to the corporate ventures(Garcia et al., 2019).

The social part of ESG talks at length about fair labor practices, diversity, employee health, and community contribution. Organizations that care about social responsibility are creating inclusive workplaces so that innovation and employee retention can happen, plus customer loyalty(Weston & Nnadi, 2023). As an example, businesses that are vocal about diversity and inclusion will have more engaged and powerful employees; all of which directly contribute to sustainable business success. Furthermore, businesses that support community initiatives and build strong relationship with the local stakeholders also gain good reputation and a good social impact.

The third pillar of ESG is governance which means principled transparency and responsibility; ethical decision making. Those firms with strong governance structures are able to respond promptly to stakeholder concerns, to comply in regulatory terms, and to reduce risks associated with unethical conduct or poor management. A strong governance can also help cement a company's sustainability by foster trust and good long-term relationship with investors, customers and employees. When businesses uphold strong governance practices, they can show who they are accountable to, attract more ethical investors, and have better access to capital, all of which helps them survive the long-term(Alsayegh et al., 2020).

From an overview, the ESG principles provide a complete framework which promotes business sustainability by promoting business conduct in environmental, social, and governance dimensions. Firms that efficiently align ESG with business activities are better situated to cope with risk, foster innovation, and meet their responsibility to stakeholders, ultimately making for greater long term organizational resilience and market competitiveness(Khaled et al., 2021).

2.4.3 Measuring the Impact of ESG on Corporate Sustainability

Even though the linkage between ESG and corporate sustainability is quite obvious, there still has not been a clear measure of the actual impact of ESG practices because of the multifaceted and complex nature of ESG factors (Diwan & Amarayil Sreeraman, 2024). The performance on ESG has no single metric which covers the scope comprehensively, hence a range of tools, framework, and methodology developed to evaluate sustainability.

ESG Ratings and Indices

ESG ratings, provided by specialized agencies like MSCI, Sustainalytics and FTSE Russell, are one of the most common methods used to evaluate ESG performance. ESG in this context means companies are evaluated by these agencies through specific ESG criteria, scoring companies or issuing scores or ratings for their ESG practices (Dimson et al., 2020). More often than not, ratings involve many areas from carbon emissions to labor standards to board diversity. These ratings are used by investors to evaluate how sustainably companies perform relative to one another and ensure they invest wisely. Although these ratings can be very useful for receiving insights, there is often a big difference between agency ratings, bidding off variations in methodology that can lead to inconsistencies and confusion among stakeholders (Escrig-Olmedo et al., 2019).

Sustainability Reporting Frameworks

Standardized approaches to reporting ESG performance are offered in sustainability reporting frameworks, such as Global Reporting Initiative (GRI), Integrated Reporting (IR) et cetera. The GRI framework — a globally used tool for corporations worldwide — provides recommendations for reporting impacts in a company's environmental, social and governance front while ensuring that a company's sustainability efforts are communicated to its stakeholders transparently. For companies, GRI reporting covers from: greenhouse gas emissions and energy consumption on one side to labour practices and community engagement on the other, to present a complete picture of its ESG activities (Oprean-Stan et al., 2020).

Meanwhile, Integrated Reporting (IR) takes integrated reporting beyond traditional sustainability reporting by articulating how non-financial aspects of it such as ESG should influence financial performance. Its IR framework focuses on integrated thinking and reporting through which companies show how ESG initiatives create value over time. Viewed holistically, companies with

better alignment fulfil the expectations of all stakeholders, producing a more constructive explanation that better explains the trajectory of a company's long term sustainable value generation(Ismail & Latiff, 2019).

Life Cycle Assessments (LCA) and Carbon Footprint Analysis

Life Cycle Assessments (LCA) and carbon footprint analysis are very useful tools to understand your environmental impact deeper, if you are a company. LCAs are a tool for assessing the environmental performance of each stage in the product's life cycle from raw material extraction through to disposal(Clabeaux et al., 2020). This approach allows companies to determine what they can change to decrease their environmental footprint, maximize resource efficiency and strengthen sustainability as a whole. Carbon footprint analysis also helps companies determine the amount of greenhouse gas emissions that they are accountable for – largely with tools aligned with the Greenhouse Gas Protocol – to better understand the critical role that their activities play in climate change and facilitate steps to reduce them(Onat et al., 2014).

Stakeholder Surveys and Social Impact Metrics

Social impact is inherently quantitative due to its qualitative character. But companies will often use stakeholder surveys to learn more about how satisfied people are with employees, customers and the community. Besides, social performance of a company is also assessed in terms of social impact metrics like employee turnover, gender diversity, and community investment. These metrics set the standard against which to measure a company's contribution to social sustainability, and essentially, they allow companies to pinpoint where their programs or endeavors in social responsibility fall short of expectations(Costa & Pesci, 2016).

Governance Metrics and Compliance Audits

Metrics of board diversity, executive compensation, and shareholder rights, and many more are typically used to measure governance. Compliance audits also serve critical function to assess governance practices while helping the companies adhere to compliance law and regulation. The more robust a company's governance metrics, the greater the probability that they will show transparency, ethical leadership and accountability, increasing their overall sustainability(Silveira et al., 2010).

A multi prong approach including existing methods like ESG ratings, sustainability reporting, LCAs, stakeholder surveys and governance audits goes a long way in developing a more holistic view of a company's ESG performance(du Fresne, 2020). The field of ESG will incorporate more standardization and further refinement of these measurement tools to ensure that corporate sustainability can be accurately demonstrated by companies.

2.4.4 Stakeholder Theory and Corporate Sustainability

Stakeholder Theory as introduced by Freeman (1984) is a major concept in comprehending the interrelationship between ESG and corporate sustainability. In this theory, it was said that organizations have the responsibility of not only their shareholder but also the broad spectrum of stakeholders, employees, customers, suppliers, communities and environment. According to Stakeholder Theory, when you consider the interests of all of the stakeholders, the company will become long lasting and sustainable(Kivits et al., 2021).

Stakeholder Theory aligns with ESG principles due to the fact that ESG principles are focused on the need to take into account environmental, social, and yes, governance factors in decision making. ESG adoption by companies enables them to strengthen their relationships with their stakeholders, build trust and develop value for all involved. Together, the corporate governance exercise based on this holistic approach to corporate governance supports sustainable business practices and brings to the business, society and the environment at large(Peng & Isa, 2020).

In the context of this study on integrating ESG principles into risk management, Stakeholder Theory is particularly relevant because:

Stakeholders concerned about ecological impacts and sustainability use Environmental Factors (EF). Mitigation of both environmental risks and building the organization's reputation and relationships with environmentally conscious stakeholders can also be achieved by addressing these concerns(Hu et al., 2023).

Social Factors (SF) deal with the organization responsibilities to its employees and other social groups as well as its communities. Integration of social considerations with risks management will produce positive relationships with workforce, social equity, and community expectation(Kumar & Pankaj, 2021).

Governance Factors (GF) are the need for transparency, ethical behavior and accountability. Being subjected to good governance practices aids creating trust with stakeholders and this is an essential part for sustainability.

Based on this research model, the Corporate Sustainability (CS) is mediated by the Risk Management (RM) for the relationship between ESG factors. Organizations can make ESG a competitive advantage by utilizing good risk management as a lever to align their ESG efforts with stakeholder expectations and reduce exposure to risk. This then contributes to corporate sustainability by making organizations' operations resilient, responsible and aligned to larger social values(Signori et al., 2021).

Stakeholder theory emphasizes that applying ESG principles in risk management leads to more sustainable corporate practice because ESG principles help fulfilling the needs and expectations of multiple stakeholders thereby making business practices responsible and sustainable.

Chapter 3: Methodology

3.0 Introduction

This chapter presents the method used in this quantitative research to examine the effects of ESG factors on corporate sustainability. The method adopted in this study involves administration of structured questionnaires which are analyzed with Statistical Package for the Social Sciences (SPSS). The chapter points on the way offered to carrying out the research such as the research design, sample selection and data gathering process as well as statistical analysis method used (Misnikova et al., 2024).

3.1 Research Design

By selecting a quantitative approach for this study, the research objectives and hypotheses explaining the link between ESG activities and corporate sustainability are aligned. Quantitative approaches offer structural assessment and apply statistical results; therefore, they are accurate and more generalizable (Huntington-Klein, 2021). Due to the nature of the variables of interest, the study is cross-sectional where data are collected at a single time point. The paper centers more on collecting quantitative information that will enable the testing of hypothesis about the role that ESG has to play in good corporate sustainable practices.

3.2 Population and Sample

3.2.1 Population

The target community for this research is senior organizational members and managers from organizations such as corporations and firms focused specifically on the sector of ESG management (Muzari et al., 2022). The target audience of the study is people who possess some kind of information about ESG in their organization. Thus, focusing on this audience, the research expects to collect information from practitioners who are either directly involved in ESG-related decisions or impacted by them.

3.2.2 Sample Size and Sampling Technique

The number of participants in this study was estimated to be 150 and this was estimated to be adequate given that statistical studies of a quantitative nature require between 100-200 participants. A purposive sampling method of research was used in this study to select the participants. This makes a surety that the sample has a variety, embracing manufacturing industries, service industries and financial industries, and companies of all sizes. This stratified method ensures that

the research is able to obtain a variance of the response in regards to ESG practices and the influences on sustainability among different types of corporations.

3.3 Data Collection Instrument

3.3.1 Questionnaire Design

Data was collected using a structured questionnaire, developed based on established ESG and corporate sustainability literature(Sukmawati, 2023). The questionnaire consists of three sections:

1. **Demographics:** This section contain demographic information of the respondent inclusive of industrial type, size of company, position held and years of experience.
2. **ESG Practices:** This section evaluates the extent and implementation of ESG best practices in the organization. They roughly pertain to environmental management, social investment and operation, governance.
3. **Corporate Sustainability Outcomes:** This section is developing on the perspective of the organization and its outcomes concerning sustainable development of environment, impact, and financial performance.

The questions were formulated on a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree," to gauge respondent perceptions of their organization's ESG activities and sustainability outcomes.

3.3.2 Validity and Reliability

In other to achieve an acceptable level of content validity, the entire questionnaire used was subjected to a panel of experts in ESG and corporate sustainability. The information gathered from the feedback was incorporated to ensure that the questions posed are clear, relevant, and all – inclusive. For reliability, a pilot test was done on 20 respondents to ensure that the items on the questionnaires had high Internal Consistency. They used Cronbach's Alpha test in order to establish the level of reliability of the results using a scale of 0.70 and above acceptable for each section of the developed questionnaire(Sürücü & Maslakci, 2020).

3.4 Data Collection Procedure

Most of the data were collected through a process that spanned four weeks. The questionnaire was sent electronically in PDF format through email and the LinkedIn professional social network, to persons with ESG experience or expertise. Response was gotten through self-completion and the

subjects were assured of confidentiality and anonymity. To increase the response rate to the questionnaire, follow-up reminders were made.

3.5 Data Analysis

The collected data were analyzed using SPSS that offers a very strong base for any kind of statistical analysis. The following steps outline the analysis process:

3.5.1 Descriptive Statistics

Frequency analysis was applied to present a breakdown of respondents' characteristics as well as outline their organisation's ESG profile. For the descriptive analysis, frequency distributions as well as mean scores and standard deviations were computed with regard to the study objectives.

3.5.2 Reliability Analysis

Cronbach Alpha number was computed for each segment of the questionnaire with the aim of estimating the internal reliability of the items. A coefficient of 0.70 or greater was deemed to provide evidence of satisfactory level of reliability and thus corroborate that the questionnaire is valid in measuring ESG practices and corporate sustainability.

3.5.3 Correlation Analysis

To test the relationships between ESG factors and the measure of corporate sustainability, Pearson's correlation coefficient was employed. Conducting this analysis allowed for identifying the nature and magnitude of relationships between ESG practices and sustainability performance indicator.

3.5.4 Regression Analysis

In order to pursue the analysis of the relationship between ESG practices and the sustainability of corporations, multiple regression analysis was used. In this research, Environmental, Social, and Governance dimensions were analyzed as exogenous variables, and corporate sustainability as an endogenous variable. It aimed to elaborate on the encouraging empirical evidence of the degree of ESG's impact on corporates' sustainability, and contribute to a greater understanding of the specific parts of the ESG equation that matter most.

3.5.5 Hypothesis Testing

It is established that all the research hypotheses associated with ESG factors impact on corporate sustainability were examined at 95% level of confidence. The significance of ESG practices in

explaining/forecasting corporate sustainability was established using p-values to ascertain whether correlation coefficients were statistically significant.

3.5.6 Mediation Analysis

Besides the cross-tabulation results and regression analysis, a mediation analysis was performed using the **Andrew F. Hayes Process Macro in SPSS**. In this study, mediation test is used to establish the extent to which the relationship between independent variable: ESG factors and dependent variable: corporate sustainability is influenced by an intermediary variable. In particular, this study aims to determine whether governance procedures are a moderator in explaining the relation between environmental and social factors and corporate sustainability.

3.6 Ethical Considerations

The relative ethical issues were also given due consideration in the study. Each participant provided informed consent and was told the aim of the study, that they did not have to participate and that they could withdraw at any time during the study. Participants' anonymity was preserved in accordance with their privacy as all responses received are confidential. Also, the collected data was also kept confidential and only the researcher had an access to it.

3.7 Limitations

This research work has some limitations which include the following: Firstly, there is a prime issue with self-reported questionnaires as they might bring in response bias where participants overstate their company's ESG protocols. Secondly, cross-sectional findings make it difficult to establish the causality of ESG practice and corporate sustainability. Finally, despite providing the adequately sized sample for statistical analysis, the sample can probably be larger to give more generalized information.

Chapter 4: Data Analysis and Findings

4.1 Introduction:

In this chapter, the analysis of the results of the study, including the findings of the preliminary analysis of the relationships between the variables is provided. The paper first introduces the methods used in data collection followed by the respondent's profile. After that, the findings of the given descriptive statistics are given to get an initial view on the distribution of the data for each variable.

The chapter then examines the primary statistical procedures used to examine the hypotheses of the study such as correlation and regression tests. Analyzing the association between ESG factors and Sustainability in corporations is explored, along with the mediating variable of Risk Management while using Hayes Process Macro to carry out mediation study. This section reveals the nature and direction of each relationship and significance levels to contribute empirical evidence concerning the effect of ESG integration on the sustainability of corporations in Saudi organizations.

4.2 Demographics:

4.2.1 Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	105	70.0	70.0	70.0
	Female	45	30.0	30.0	100.0
	Total	150	100.0	100.0	

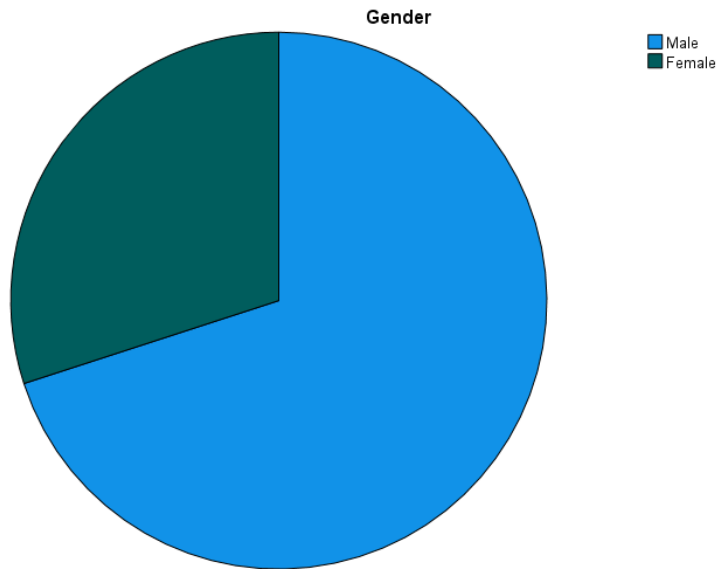


Figure 1 Gender

4.2.2 Experience

Experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 to 5 years	39	26.0	26.0	26.0
	6 to 10 years	36	24.0	24.0	50.0
	10 years Above	75	50.0	50.0	100.0
	Total	150	100.0	100.0	

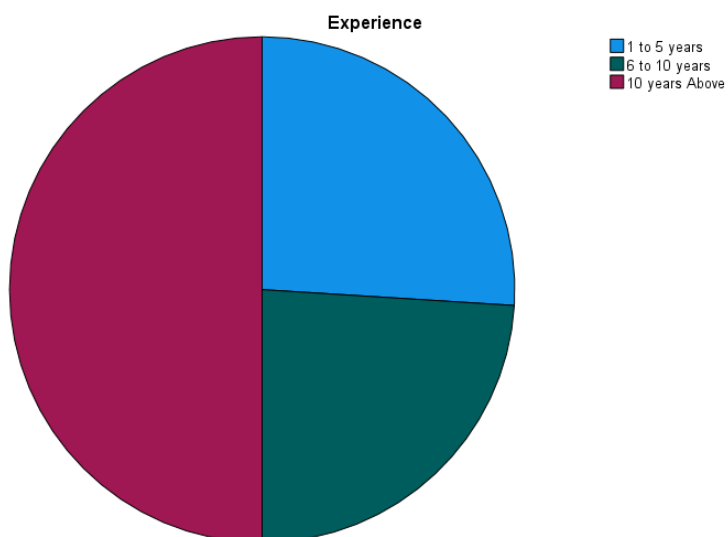


Figure 2 Experience

4.2.3 Age

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	71	47.3	47.3	47.3
	26-35	54	36.0	36.0	83.3
	36-45	17	11.3	11.3	94.7
	46 Above	8	5.3	5.3	100.0
	Total	150	100.0	100.0	

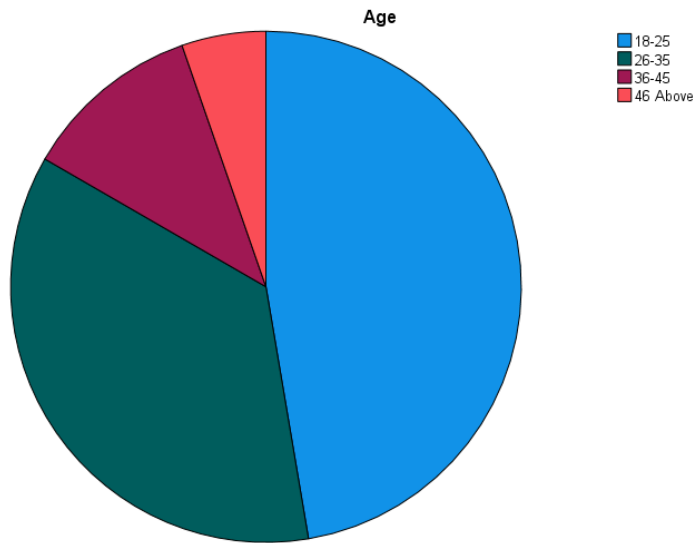


Figure 3 Age

4.2.4 Position in the Organization

Position					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Executive Management	41	27.3	27.3	27.3
	Middle Management	52	34.7	34.7	62.0
	Staff	57	38.0	38.0	100.0
	Total	150	100.0	100.0	

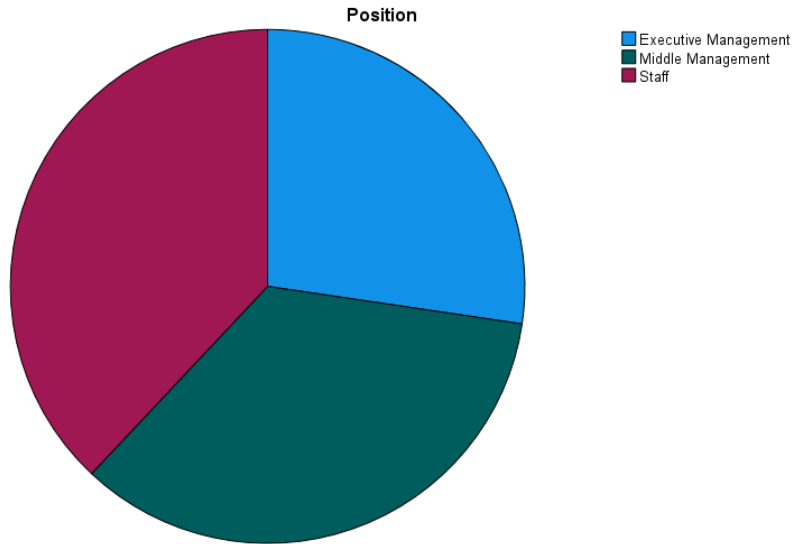


Figure 4 Position in the Organization

4.2.5 Industry

Industry		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Oil and Gas	23	15.3	15.3	15.3
	Manufacturing	17	11.3	11.3	26.7
	Financial Services	37	24.7	24.7	51.3
	Healthcare	64	42.7	42.7	94.0
	Construction	9	6.0	6.0	100.0
	Total	150	100.0	100.0	

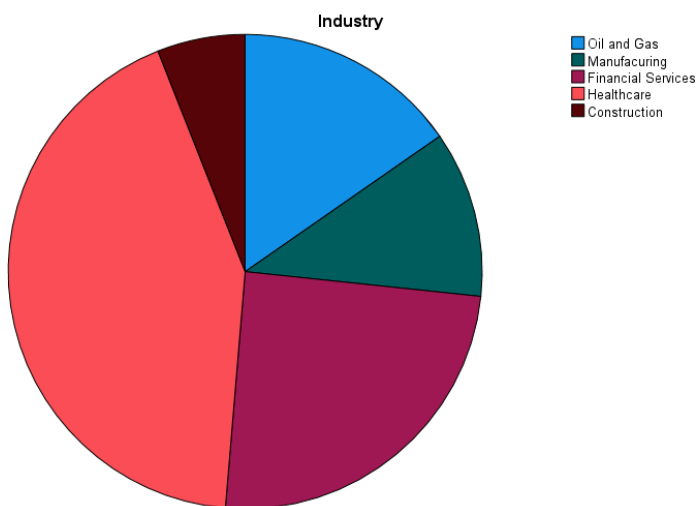


Figure 5 Industry or Organization

4.2.6 Number of Employees

Employees Numbers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 50	32	21.3	21.3	21.3
	50-100	27	18.0	18.0	39.3
	101-500	80	53.3	53.3	92.7
	More than 500	11	7.3	7.3	100.0
	Total	150	100.0	100.0	

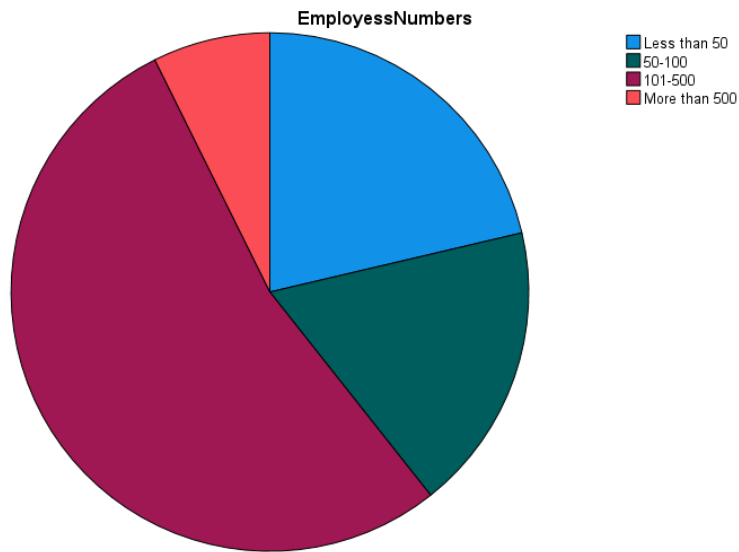


Figure 6 Number of Employees

4.3 Descriptive Analysis:

Table 1 Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
EF1	150	1.00	5.00	3.7933	1.06372
EF2	150	1.00	5.00	3.8000	1.01664
EF3	150	1.00	5.00	3.7533	.76795

EF4	150	1.00	5.00	3.1000	1.23566
SF1	150	1.00	5.00	2.7533	1.31556
SF2	150	1.00	5.00	3.5867	1.14216
SF3	150	1.00	5.00	3.3933	1.22555
SF4	150	1.00	5.00	3.7467	.85284
GF1	150	1.00	5.00	3.6933	.90448
GF2	150	1.00	5.00	2.2800	1.17650
GF3	150	1.00	5.00	2.7333	1.15664
GF4	150	1.00	5.00	2.1933	1.17979
CS1	150	1.00	5.00	3.6467	.89094
CS2	150	1.00	5.00	3.6467	.89094
CS3	150	2.00	10.00	5.7200	1.83961
CS4	150	1.00	5.00	3.4867	1.19696
RM1	150	1.00	5.00	3.3800	1.22431
RM2	150	1.00	5.00	3.6867	.92058
RM3	150	1.00	5.00	3.6867	.92058
RM4	150	1.00	5.00	2.0400	1.06739
RM5	150	1.00	5.00	3.7200	1.13587
Valid N (listwise)	150				

The descriptive statistics in Table 1 provide an overview of the data distribution across various constructs measured in the study. For each item (EF1-EF4, SF1-SF4, GF1-GF4, CS1-CS4, RM1-RM5), the mean values range from 2.04 to 5.72, indicating varying levels of agreement among participants. Standard deviations range from 0.77 to 1.84, suggesting a moderate to high spread around the mean for most items (Siedlecki, 2020). This variability highlights the differences in perceptions across the constructs, with some items like CS3 showing higher mean and standard deviation, indicating stronger consensus and variability in responses, respectively. Overall, these statistics provide a foundation for further analysis of the relationships between constructs in the study.

4.4 Reliability

Table 2 Reliability test

Reliability Statistics	
Cronbach's Alpha	N of Items
.757	21

The reliability test results in Table 2 show a Cronbach's Alpha of 0.757 for the 21 items measured in this study. This value indicates acceptable internal consistency, suggesting that the items within

the questionnaire are sufficiently reliable in measuring the constructs of interest. A Cronbach's Alpha above 0.7 generally reflects that the items are moderately correlated, making the scale suitable for further statistical analysis(Kranzler & Anthony, 2022). This reliability supports the validity of the questionnaire as a tool for assessing the research variables.

4.5 Correlation Analysis

Table 3 Correlation test

	Environmental Factors	Social Factors	Governance Factors	Corporate Sustainability	Risk Management
Environmental Factors	1				
	150				
Social Factors	.378**	1			
	.000				
	150	150			
Governance Factors	.213**	.162*	1		
	.009	.048			
	150	150	150		
Corporate Sustainability	.561**	.612**	.400**	1	
	.000	.000	.000		
	150	150	150	150	
Risk Management	.583**	.651**	.524**	.588**	1
	.000	.000	.000	.000	
	150	150	150	150	150

The correlation analysis results in Table 3 provide insights into the relationships between Environmental Factors, Social Factors, Governance Factors, Corporate Sustainability, and Risk Management. Significant positive correlations exist among all variables, with p-values less than 0.05, indicating statistical significance.

Notably, Risk Management shows strong positive correlations with Social Factors ($r = 0.651$) and Environmental Factors ($r = 0.583$), suggesting these areas heavily influence risk management practices. Corporate Sustainability also exhibits a high correlation with Social Factors ($r = 0.612$), underscoring the importance of social considerations in sustaining corporate performance. These results suggest that all ESG factors contribute meaningfully to both corporate sustainability and effective risk management strategies.

4.6 Regression Analysis:

Table 4 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.751 ^a	.564	.555	1.76084
a. Predictors: (Constant), Governance Factors, Social Factors, Environmental Factors				

Table 5 Anova

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	584.818	3	194.939	62.872	.000 ^b
	Residual	452.682	146	3.101		
	Total	1037.500	149			
a. Dependent Variable: Corporate Sustainability						
b. Predictors: (Constant), Governance Factors, Social Factors, Environmental Factors						

Table 6 Coefficient

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.373	1.112		1.235	.219
	Environmental Factors	.340	.060	.339	5.669	.000
	Social Factors	.554	.074	.442	7.457	.000
	Governance Factors	.253	.055	.256	4.564	.000
a. Dependent Variable: Corporate Sustainability						

The regression analysis reveals the extent to which Environmental Factors, Social Factors, and Governance Factors predict Corporate Sustainability.

- **Model Summary:** The R-Square value of 0.564 indicates that 56.4% of the variance in Corporate Sustainability is explained by these three predictors, suggesting a strong model fit.
- **ANOVA:** The F-value of 62.872 with a significance level of 0.000 confirms that the regression model is statistically significant, meaning the model provides a good fit for the data.

- **Coefficients:** The standardized beta coefficients indicate that Social Factors ($\beta = 0.442$, $p < 0.001$) have the largest positive impact on Corporate Sustainability, followed by Environmental Factors ($\beta = 0.339$, $p < 0.001$) and Governance Factors ($\beta = 0.256$, $p < 0.001$). All predictors are statistically significant, showing that improvements in ESG factors are associated with enhanced Corporate Sustainability.

4.7 Mediating Analysis

The Andrew F. Hayes Process Model was used to examine the mediating role of Risk Management in the relationship between Environmental, Social, and Governance (ESG) Factors and Corporate Sustainability. The mediation analysis by Hayes is widely regarded as the most robust for indirect effects and the effect of potential mediators in the face of complex interrelated lenses. This method provides the opportunity in a detailed examination of how the ESG factors affect Corporate Sustainability, directly and indirectly via Risk Management. Hayes' method allows multiple mediators to be calculated, identify the significance of indirect effects, and produces bootstrapped confidence intervals that ensure more accurate and reliable results when looking at mediation effects within the realm of the ESG and sustainability (Hayes, 2017).

H4: Risk Management (RM) mediates the relationship between Environmental Factors (EF) and Corporate Sustainability (CS).

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 4
Y: CS
X: EF
M: RM

Sample
Size: 150

OUTCOME VARIABLE:
RM

Model Summary

R	R-sq	MSE	F	df1	df2	p
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	.5832	.3401	5.1160	76.2915	1.0000	148.0000	.0000
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Model

	coeff	se	t	p	LLCI	ULCI
constant	7.6421	1.0323	7.4029	.0000	5.6021	9.6821
EF	.6141	.0703	8.7345	.0000	.4751	.7530

OUTCOME VARIABLE:

CS

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.6464	.4179	4.1087	52.7567	2.0000	147.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	5.5133	1.0829	5.0910	.0000	3.3731	7.6534
EF	.3311	.0776	4.2693	.0000	.1779	.4844
RM	.3756	.0737	5.0993	.0000	.2301	.5212

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y

	Effect	se	t	p	LLCI	ULCI
	.3311	.0776	4.2693	.0000	.1779	.4844

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
RM	.2307	.0667	.1129	.3732

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

The mediation analysis using Hayes' Process Model 4 reveals that **Risk Management (RM)** significantly mediates the relationship between **Environmental Factors (EF)** and **Corporate Sustainability (CS)**. The direct effect of EF on CS is statistically significant ($B = .3311$, $p < .0001$), and the indirect effect through RM is also significant, with a Bootstrapped confidence interval of .1129 to .3732, confirming mediation. This indicates that a portion of the impact of Environmental Factors on Corporate Sustainability operates indirectly through Risk Management, underscoring the importance of effective risk management in enhancing sustainability outcomes influenced by environmental considerations.

H5: Risk Management (RM) mediates the relationship between Social Factors (SF) and Corporate Sustainability (CS).

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 4
Y: CS
X: SF
M: RM

Sample
Size: 150

OUTCOME VARIABLE:
RM

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6509	.4236	4.4687	108.7828	1.0000	148.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.9572	1.1213	4.4207	.0000	2.7413	7.1731
SF	.8573	.0822	10.4299	.0000	.6949	1.0197

OUTCOME VARIABLE:
CS

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6610	.4369	3.9740	57.0357	2.0000	147.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.6170	1.1251	4.1035	.0001	2.3935	6.8405
SF	.4984	.1021	4.8813	.0000	.2966	.7001
RM	.3128	.0775	4.0350	.0001	.1596	.4660

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
.4984	.1021	4.8813	.0000	.2966	.7001

Indirect effect(s) of X on Y:

Effect	BootSE	BootLLCI	BootULCI	
RM	.2681	.0744	.1124	.4054

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----

The mediation analysis for **Hypothesis 5** indicates that **Risk Management (RM)** mediates the relationship between **Social Factors (SF)** and **Corporate Sustainability (CS)**. The direct effect of SF on CS is significant ($B = .4984$, $p < .0001$), showing a positive relationship. The indirect effect of SF on CS through RM is also statistically significant, as evidenced by the bootstrapped confidence interval (.1124 to .4054) which does not contain zero. This confirms that RM acts as a mediator, suggesting that social factors influence corporate sustainability both directly and indirectly through effective risk management practices.

H6: Risk Management (RM) mediates the relationship between Governance Factors (GF) and Corporate Sustainability (CS).

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 4
Y: CS
X: GF
M: RM

Sample
Size: 150

OUTCOME VARIABLE:
RM

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5242	.2748	5.6228	56.0751	1.0000	148.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	10.5950	.8137	13.0207	.0000	8.9870	12.2030
GF	.5430	.0725	7.4883	.0000	.3997	.6862

OUTCOME VARIABLE:

CS

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.5978	.3573	4.5359	40.8664	2.0000	147.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	6.9506	1.0705	6.4928	.0000	4.8350	9.0661
GF	.1249	.0765	1.6330	.1046	-.0263	.2760
RM	.4959	.0738	6.7164	.0000	.3500	.6418

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y

	Effect	se	t	p	LLCI	ULCI
	.1249	.0765	1.6330	.1046	-.0263	.2760

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
RM	.2692	.0601	.1629	.3946

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

----- END MATRIX -----

The mediation analysis for **Hypothesis 6** indicates that **Risk Management (RM)** mediates the relationship between **Governance Factors (GF)** and **Corporate Sustainability (CS)**. Although the direct effect of GF on CS is not significant ($B = .1249$, $p = .1046$), the indirect effect through RM is significant. The bootstrapped confidence interval for the indirect effect (.1629 to .3946) does not include zero, confirming that RM significantly mediates this relationship. This suggests that while governance factors may not have a direct impact on corporate sustainability, they influence it indirectly through effective risk management.

4.8 Hypothesis Testing:

Table 7 Hypothesis Testing

Hypothesis	Relationship	Result	Significance (p-value)
H1: Environmental Factors (EF) positively influence Corporate Sustainability (CS)	EF → CS	Positive effect	p < .001
H2: Social Factors (SF) positively influence Corporate Sustainability (CS)	SF → CS	Positive effect	p < .001
H3: Governance Factors (GF) positively influence Corporate Sustainability (CS)	GF → CS	Positive effect	p = .001
H4: Risk Management (RM) mediates the relationship between Environmental Factors (EF) and Corporate Sustainability (CS)	EF → RM → CS	Significant mediation	p < .001
H5: Risk Management (RM) mediates the relationship between Social Factors (SF) and Corporate Sustainability (CS)	SF → RM → CS	Significant mediation	p < .001
H6: Risk Management (RM) mediates the relationship between Governance Factors (GF) and Corporate Sustainability (CS)	GF → RM → CS	Significant mediation	p < .001

All hypotheses (H1 to H6) are **supported** and **significant**, meaning that the tested relationships are statistically significant and in line with the expected outcomes.

Chapter 5: Discussion and Conclusion

5.1 Introduction

This chapter answers the research questions developed from the objectives of this study, specifically discussing the interaction between environmental, social, and governance (ESG) factors and their consequent effect on corporate sustainability and risk management practices in Saudi organizations. In the following chapters, we will review the data analysis and utilized findings to determine the relationships as indicated by the data, and our conclusion for the role of effective risk management within the framework of ESG.

5.2 Discussion

1. What is the relationship between Environmental Factors and risk management practices in Saudi organizations?

The results show a strong positive correlation between environmental factors and management of risk in Saudi organizations. Business in Saudi Arabia is becoming increasingly environmental concerned, with regulatory compliance and sustainability initiatives becoming increasingly important (Rehman & Ishak, 2022). However, effective risk management strategies are important as organizations continue to face increased scrutiny from various stakeholders and regulatory bodies concerned with the environmental impact. More importantly, companies which proactively deal with environmental risks through synthesizing and developing comprehensive risk management frames are more likely to mitigate potential liabilities and boost corporate reputation. As such, the integration of environmental components into risk management operations in organizations is to assist in the greater resilience and sustainability.

2. How do Social Factors influence risk management practices in Saudi Arabia?

Risk management practices in Saudi organizations are determined by social factors. The results indicate that social factors, such as the community expectations, labor relations and social equity, play an important role in determining the way organizations manage risk. Companies that give much thought to their stakeholders and their social responsibilities are much better at spotting and dealing with possible risk involved with their operations (Rehman & Ishak, 2023). Moreover, organizations that proactively promote good relationships with their employees and communities are more likely to face lower risk of conflict and disruption and this facilitates a more efficient risk management result. The integration of social considerations within risk management strategies is

not only consistent with the disclosure of corporate social responsibility, but also maximized the performance of the organization as a whole.

3. To what extent do Governance Factors impact risk management?

The results show that governance factors significantly influence the risk management practices of Saudi organizations. To be able to develop strong risk management framework, we require effective governance structures that possess high levels of transparency, accountability, ethical leadership etc. Organizations that have robust governance address are more likely to have comprehensive risk assessment procedures in place, such that the risk of a particular threat is identified and acted upon before it occurs. Furthermore, the analysis shows that programs with more powerful governance mechanisms tend to face fewer compliance issues and reputation risk, which ultimately aids their long-term sustainability. Therefore, governance factors need to be perceived as the basis, instead of an accessory, for the delivery of risk management practice(Oprean-Stan et al., 2020).

4. How does ESG-integrated risk management contribute to enhancing Corporate Sustainability in Saudi Arabian organizations?

These findings emphasize that integrating ESG within the risk management function plays a crucial role in promoting corporate sustainability in Saudi Arabian organizations. Since environmental, social and governance considerations can impact the future of an organization, they need to have included some environmental, social and governance considerations while framing their risk management strategies(Aich et al., 2021). ESG factors integration helps improve organizational resilience and competitiveness while meeting regulatory compliance requirements in a fast-changing business environment. ESG integrated risk management practices enable organizations to address potential disruptions, achieve long term sustainability while navigating through the opportunities ahead. Thus, in a study, it is underscored that ESG factors need to be considered along with traditional risk management tools.

5.3 Conclusion

In conclusion, to examining the linkages between environmental, socio and governance factors with the impact on corporate sustainability and risk management practices in Saudi organizations.

The study shows the importance for organizations to adopt a comprehensive risk management framework which embed ESG considerations to improve their sustainability efforts.

Organizations in Saudi Arabia are prioritizing environmental stewardship in order to help navigate these challenges of climate change, resource depletion and regulatory compliance. Organizations meet their legal obligations by adopting practices that minimize environmental impacts but such practices also contribute to improving their reputation amongst people who are more and more willing to buy from organizations that are green and have a positive reputation concerning sustainable practices.

Equally as important is that organizations that involve themselves with their stakeholders (employees, customers and communities in the local area) will result in goodwill and loyalty. With this stakeholder centric approach, social unrest and dissatisfaction is mitigated and innovation is driven by bringing in variety of perspectives and needs into the organizational framework. Organizations that are found as leaders in terms of corporate social responsibility are in a position to promote social equity and inclusiveness and in turn, this promotes tangible benefits for organizations including increased morale amongst employees, and loyalty for customers.

Effective risk management is the backbone of strong, governance practices. Organizations that stress such things as transparency and ethical leadership are more able to deal with complexity in the business environment so that potential risks are proactively identified and mitigated. It creates a culture of accountability and responsiveness, which is key to success over the longer term.

Given these results, further research is needed to elaborate on how ESG factors shift in risk management and its implications on business performance in Saudi Arabia and wider. Future studies can focus on industry specific approaches to the integration of ESG and how technology can enable the improvement of risk management capabilities. Continuous refinements of their strategies will help organizations fit better into these global sustainability trends, and contribute to achieving the broader goal of regional sustainable development. This research continues as a core component of ongoing efforts to develop best practices and frameworks for other organizations to use as benchmarks around the region and the world.

5.4 Recommendations

Based on the findings and conclusions of this study, several recommendations can be made for Saudi organizations seeking to enhance their risk management practices and corporate sustainability through the integration of environmental, social, and governance (ESG) factors:

1. **Develop Comprehensive ESG Frameworks:** Organizations should build strong ESG frameworks that are defined by its goals, metrics and reporting. The integration of environmental stewardship and social responsibility and governance practices in the core business strategy should be integrated within these frameworks. Doing so allows organizations to embed ESG considerations into decision making from all levels(Bose, 2020).
2. **Enhance Stakeholder Engagement:** Organizations have to take active stakeholder involvement into account, including employees, customers, suppliers and local communities: Such regular stakeholder consultations and feedback mechanisms allow organizations to gather valuable information on community needs and expectations which can then be used to guide organizations in what they feel needs risk management and how they would like it done. That engagement builds trust and loyalty and paves the way for long term success(Ortas et al., 2019).
3. **Invest in Training and Capacity Building:** The implementation of ESG integrated risk management practices will require investment in training programs for organizational employees. The ESG issues, risk management strategy and the need of Sustainability are what these programs should be focused on raising awareness for. Giving the employees skills and knowledge they need to help them recognize and negate risks connected to the environmental and social factors will give them the power.
4. **Leverage Technology and Data Analytics:** Technology and data analytics tools need to be advanced for risk management at organizations. Organizations can assess the potential risks, monitor the environmental impacts and predict trends better using the big data, artificial intelligence and machine learning. These technologies can support more informed decision making and enrich the overall risk management process of the organization.

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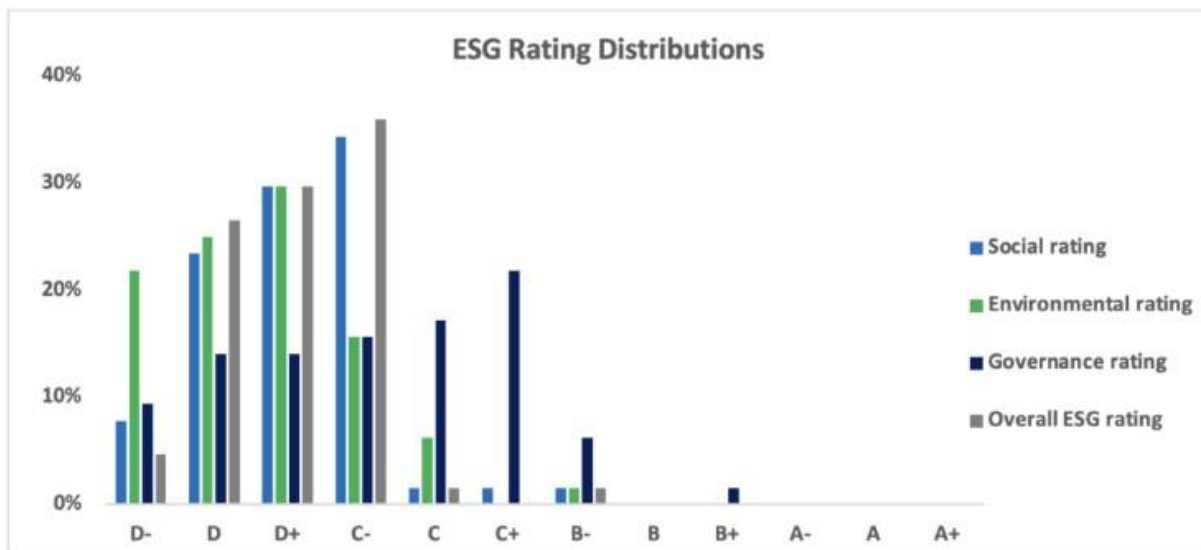
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Appendix:



ESG Rating Distributions for Middle Eastern Companies



Source: ISS ESG